ISSN 2334-7171

ISSN 2334-7058 (Online)
DOI 10.12709/issn.2334-7058

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MEST Journal

Edited by
Zoran Čekerevac

MESTE Vol. 10 No. 2 July 2022

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ISSN 2334-7171
ISSN 2334-7058 (Online)
DOI 10.12709/issn.2334-7058
This issue:
DOI 10.12709/mest.10.10.02.00

MEST Journal

Management
Economics
Education
Science & Society
Technologies

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MEST Journal Vol. 10 No. 2 July 2022

CIP – Каталогизација у публикацији
Народна библиотека Србије, Београд

005+37+3+66

MEST Journal : Management, Education,
Science & Society, Technologies /
editor-in-chief Zoran P. Čekerevac. –
[Štampano izd.]. – Vol. 10, no. 2 (2022) –
– Belgrade : MESTE NGO : Faculty of Business
and Law of the "MB" University in Belgrade ;
Toronto : SZ & Associates, 2013- (Belgrade :
ICIM+). – 30 cm
Polugodišnje. - Drugo izdanje na drugom
medijumu: MEST Journal (Online) = ISSN
2334-7058
ISSN 2334-7171 = MEST Journal (Štampano Izd.)

COBISS.SR- ID 196182028

Circulation: 100 copies

MEST Journal online

www.mest.meste.org

DOI 10.12709/issn.2334-7058

Current Issue: DOI 10.12709/mest.10.10.02.00

MEST Journal is an international academic journal, the official journal of the non-profit organization MESTE, published online, as well as print, which publishes scientific and professional research articles and reviews in the English language. MEST Journal is published from Belgrade - Serbia and Toronto - Canada. The focal point of the journal is at international level, with the view on matters from a global perspective, but, also, some papers concerning some local specific events could be published. The science and technological advancements and their socio-political impact that happens all over the world can find a place in the MEST Journal. The journal is indexed by Index Copernicus in ICI Journals Master List ICV from 2015, in ERIH PLUS from 2017, in Google Scholar, CrossRef, COBIS.SR, COBIB.RS, Kobson, Scilit, CiteFactor, etc.

Publishers

- **MESTE NGO** – Belgrade
- **Faculty of Business and Law** of the "MB" University in Belgrade, Belgrade, Serbia
- **SZ & Associates**, Toronto, Canada

Editorial board – Scientific Board:

Editorial staff – Production:

Printed by: **ICIM+, Belgrade** Circulation: 100 copies
The journal was published online at URL: https://www.meste.org/ojs/index.php/mest/index

The MEST Journal is registered in doiSerbia of the National Library of Serbia, COBIB.SR, Matica Srpska Library, COBISS.SR, Google Scholar, CrossRef, OALIB, EleCas base of KoBSON, the Index Copernicus ICI Journals Master List from 2015 (*ICV 2020 =100.00*), Scilit, ROAD, ERIH PLUS, CiteFactor, and in the ResearchBib (IF: 2022 Evaluation Pending).

All published papers have been internationally reviewed

Two issues of journal are published annually, on January 15th, and July 15th.

ISSN 2334-7058 (Online) &
ISSN 2334-7171

MEST Journal
Year X, Vol. 10, Issue 2
DOI: 10.12709/mest.10.10.02.00

Editorial on MEST Journal 2022-2

Prof. Dr. Dr. h. c. Zoran Čekerevac[1]
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Belgrade, July 15th, 2022

We published this issue of MEST Journal under completely different circumstances compared to previous issues. In January, the world battled the Omicron strain of the coronavirus and the pandemic, which continued to claim lives and destroy economies. In February, a real war broke out in Europe, the first after the wars in SFR Yugoslavia and the NATO bombing of FR Yugoslavia. Everyone forgot about the pandemic for a moment, but the virus is constantly mutating. Currently, the most common subvariants are BA4 and BA5. How many more species and subspecies will appear and what they will be like, no one knows. Many countries, protecting their economies, have estimated that they can lift the covid measures, and people circulate more, so the virus spreads more easily.

The war has been raging in Ukraine for 141 days, with great human casualties and the destruction of infrastructure facilities. The end of the war is not in sight, but the continuous growth of hate speech in the media and the statements of politicians is visible. Everyone is competing to have a more belligerent policy. It seems as if the politicians do not see where it's all going. Their willingness to lead their countries and those who elected them to poverty and shortages of fuel, energy, and food is astonishing. Soldiers have become just numbers of dead, wounded, and remaining potential who will fight, be wounded, or die. Politicians publicly announce a cold winter in Europe, but it seems that this has not yet resonated with the people, so the situation in most European countries is calm. People pay more attention to annual vacations than what awaits them. What will it be like when winter and short days come? We will see.

The pandemic has led to a decline in economic growth, printing huge amounts of money without cover, and inflation reaching record values in some developed countries. The war in Ukraine has become a good excuse for rising prices and falling living standards. Some underdeveloped countries are on the verge of bankruptcy, and mass rebellions have begun.

In recent decades, there have been wars worldwide, but none caused such consequences as the current one. Those currently making huge profits are arms manufacturers and sellers. This branch of the economy is again on the rise. Energy producers are also in a favorable position. Even with reduced production, profits are growing in absolute terms.

The free market and globalization proclaimed in the previous decades, by the decisions of the governments of developed countries, received numerous restrictions. Ramps to free trade have been set up. At the same time, no rational alternative is offered for the introduced restrictions. To an ordinary person, it may seem that some parts of the government are racing to put up bans while others have no solution to get out of the situation. The laws of economics seem to have ceased to apply. The experience that if you ban the free movement of goods, you will have less, and it will be more expensive is no longer valid either. Simply, there will be no goods. The law of the stronger comes to the fore again. Huge divisions are taking place in the world. A very turbulent time and a new regrouping are on the horizon.

Even in such conditions, the MEST Journal successfully worked, published, and collaborated with the authors. Life is going on. We need to find answers to new challenges. That is why we invite experts to analyze the current state of the economy and submit their works to us so we can present their ideas.

This edition is published online and in paper form. In this issue, we have published 22 works. Seven of them are original research articles. Eleven articles belong to review papers, three articles are scientific critiques, and one is a position paper.

One of the papers analyzes the legal aspects of surrogate motherhood. One presents an analysis of the liability of online platforms for the illegal uploading and hosting of protected works. There is also a paper that analyzes a method for parameter estimation of the photovoltaic model, but most are in economics and management.

We thank authors and reviewers who did their job well and conscientiously to preserve the quality of the MEST journal and the works we publish. We especially thank the authors from Ukraine and the Russian Federation, with whom we have been in frequent contact in the previous months, and we wish them to stay safe.

We invite you to publish your works in the MEST Journal. We will help you with that.

Zoran Čekerevac

Prof. Dr. Zoran Čekerevac

Economics and Law

Economics and Law

Economics

Management in economics

Public management

Management in industry

Entrepreneurship

Management in crisis situations

Management in transport

Technologies and quality tools in management

IT use in the management

Management in ecology

Management in sport

Economic education and teaching of economics

Information security and information system security

Business information system

Innovation and technology

Legal aspects of management

Law

These are basic, but not exclusive themed areas.

MEST Journal
doi: 10.12709/mest.10.10.02.01

MEANING AND ROLE OF HIGHER SCHOOL FOR BULGARIAN REGIONS' SUSTAINABLE DEVELOPMENT

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JEL Category: **I21, I23, I25, R12**

Abstract

This article is a partial picture of higher education in Bulgaria and the need to provide quality educational services at the regional level. The exhibition presents the importance and role of higher education for the recruitment of the regional elite and the quality of staff. A methodological framework that is proposed, assumes the systematization of the accumulated theoretical and practical experience in the field of higher education. Some deficiencies have been systematized, which affect the quality of education and the mismatch between business expectations at the level of planning regions, as well as the impact on municipalities and the need for staff for higher education graduates in the country. The main trends and conditions in which higher education in Bulgaria is developing and the search for opportunities to increase its role within the Bulgarian regions are outlined. In practice, regional development can become a national priority by building a quality educational environment and having a balanced regional development.

Keywords*: education, higher schools, business, municipalities, regions, services, model*

1 INTRODUCTION

The evolutionary state and organizational nature of social systems are verified in territorial structures, which is why they are the subject of governance and regional sciences. The intensity of the recruitment of regional social elites shows the extent to which local communities can build sustainable systems. In practice, the development of territorial systems aims to outline their social status, which creates the world socio-cultural map, in which education has a significant place.

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This forms the regional focus and the need for the regional institutions functioning to set a sustainable model of the system's reproduction. This is how the territorial communities are typified, which, according to the scenarios for social transformations, help to differentiate the territories, as well as for their appropriate management. In this context is our interest in the topic, provoked by a certain discrepancy between the rapidly changing environment and the relatively slow changes in the regional development of countries in transition such as Bulgaria. The focus of our research is to bring out the role of higher education institutions at the regional level and how they affect regional development and play a role in promoting the socio-economic development of individual regions. Our presentation aims to highlight the need to create an effective spatial saturation of Bulgaria with universities that support regional economic and social development. In this direction, we set ourselves the task to examine the state of higher education in Bulgaria, analyze its effectiveness, and identify the problems it faces. Next, let us indicate for the territory of Bulgaria whether the model with the development of higher education in the individual regions or maintaining the current model of continuing centralization of higher education will continue to develop. The full answers to these tasks can hardly be found in the current presentation, but we aim to show that regional development needs its focus and opportunity for regional development. We can state that in the last 10 years the higher education system has undergone several reforms. This makes the issue of providing quality higher education services critical to a competitive national economy. This further argues the need to assess the regional specifics of higher education and whether it can have its role and importance for our national development. In addition, we can emphasize that Bulgaria is facing a demographic crisis. As a result of this crisis, there is a significant reduction in the number of students. The ongoing structural reforms in the higher education system related to the financing and accreditation of higher education institutions; unfavorable age distribution of the academic staff does not give the necessary results, which led to the withdrawal of young people from academic careers. (Andreeva & Dimitrova, 2021, p. 9). In addition, we can say that Bulgarian universities need to look for options for building their branches or regional centers with which to support regional business, local government, as well as to make efforts to implement research and development activities at the local level. This means that universities are looking for opportunities for closer dialogue with local authorities and regional businesses. The focus of this approach is to achieve a greater scope of their provision of educational services to regional businesses and support to the public sector, through the development of communication channels that allow for useful cooperation (Grimaldi, Kenney, & Piccaluga, 2020). Therefore, regionalization is one of the main drivers of cooperation between the academic and the private sector. One of the factors is the mobility of workers, as well as the people who want to get a higher education, which increases the competition to attract the best among them. Achieving acceptable levels of mobility and migration can be achieved by providing quality educational services at the local level, supporting local businesses in the direction of research and development, and forming a local elite. This means reaching higher education. In modern society, closer cooperation between the state, business, and local government is needed, which should be expressed in strengthening the relations and connections between business, universities, education, and culture. (Lis, 2021, p. 2) The emphasizing of the relation between local and regional development processes and the development of innovation means that universities are expected to develop innovations as well as to support development processes, especially in countries in transition, such as our country (Goransson, Maharajh, & Schmoch, 2009, p. 158).

2 HIGHER EDUCATION AND ITS ROLE IN REGIONAL DEVELOPMENT

At the beginning of our presentation, it is necessary to emphasize that in the last 10 years Bulgarian higher education is in constant reform. The results of these reforms cannot be analyzed due to the frequent change in the philosophy of the development of higher education in Bulgaria. The model of higher education imposed in the last few years is moving towards close profiling of Bulgarian universities and their centralization. This will undoubtedly reduce their flexibility and retreat from already won positions. In practice, the new role of universities in Bulgaria is to have a more professional profile and to provide educational services in the field of industrial production at the expense of reducing government admission in the field of services. On the other hand, with the advent of Covid - 19, the world began to change in favor of services and digitalization. In practice, in this new environment and higher education will be subject to the influence of complex factors, including the processes of digitalization and globalization. As noted by Nillsen (2005, p. 89) in the current environment universities are under enormous pressure from governments to view student learning in a purely technical setting, while teaching certain intellectual aspects with greater potential for realizing values such as integrity are not a priority. Another important issue is the emerging regional differences between the various regions in Europe. To a large extent, the lagging behind of these regions is also related to the deficit of young people aged from 18 to 25. In this age group, the population defines its professional path of development and so the probability of settling in underdeveloped regions is unlikely. In practice, depressed regions have a deficit of social perspective on the one hand and a quality institutional environment for development on the other. The processes of socio-economic and cultural strengthening of similarities and/or differences are an indispensable attribute of social transformations, with the effect of asymmetric and irreversible social stratification and the need for institutions such as universities to set a model of sustainable development. The analysis and understanding of social transformations in territorial terms is the application for a significant role of higher education institutions at the local level as a factor for a changing society. However, gaining public and scientific recognition requires not only knowledge but also ideas, imagination, and action. The prosperity of each country and the international community is linked to education at all levels. In this sense, higher education occupies an important place in the overall vision for the transformation of modern education. Bulgaria has a long tradition in the development of education. During the different periods, the society has demanded a high level of the educational process, having been upgraded both in the requirements to the separate educational levels and in their normative regulation through a comprehensive state policy. That is why in the current stage of development of the country the management of the educational process taking place in higher education is essential. The competitiveness of universities is essential and to assess it, it is necessary to evaluate its value as a market entity and the value of the products and services it offers. The competitive advantages that the respective higher education institution has in the education market are also an important element in determining its value. The value of educational services in higher education depends on the assessment of consumers, as well as on the learning process itself and its outcome (Todorova, 2019, p. 2). Our leading thesis is that regional development should not be perceived only as cataloging and inventory of resources and territories, but in the spirit of successful attempts to understand the evolution of society in the territory, the spatial relationship between nature and territorial communities, and the importance of places for active human activity. Perceiving regional science as a form of rational reflection, a combination of method and accuracy, pure reasoning and formulation of ideas, and regional development - as a science of synergetic of human society in space and time, the modern processes of globalization and regionalization in their territorial differentiation and specificity fit into the subject essence. Thus, we determine that institutions such as higher education institutions can play a significant role in determining the framework of socio-economic development of the regions in Bulgaria. In practice, this model of sustainable development of settlements in modern society passes through the reflection of higher education. Higher education institutions, with their dominant spatial-temporal paradigm, within the regional spaces can really and successfully fit in as a factor for the development of modern processes of globalization, interpreting them through the prism of spatial relations with regionalization. If the continual nature of space stimulates globalization, then the discrete one stimulates regionalization, and thus the territorial university environment is created for the promotion of the functioning of the regional elite and the significant role of higher education institutions in local development. Here is the place to outline that human nature is as connected to the territory as it is to time. This gives us grounds to entrust education as a natural object of our national development. Thus, the focus of education includes the national space with its variations and features of regional development, which defines the need for the type of knowledge, signs, and codes that grow based on spatial practices and references of social development, business, and public sector development.

3 METHODOLOGY OF THE RESEARCH ON EDUCATIONAL SERVICES

The current study assumes that the regional environment is complex, changeable, imperfect and requires the state to set mechanisms for the development and promotion of socio-economic development of the regions. In this direction, the study of the behavior of the need for staff with higher education for business, and on the other hand the capacity of higher education institutions to provide such quality services. Thus, through methods of regional analysis and questionnaire, we will analyze the state of regional systems and the importance of human capital in them. It is essential to check the state of the labor market and the opportunities for a regional system to check the extent to which there is an optimal environment for their functioning. In this direction, the spatial approach means to determine at the territorial level the factors that build the business environment and the need for educational services. In this regard, we can assume that the competitiveness of educational services is perceived as a process that is determined by changes in the business environment and the model of regional development of the country. A wide range of scientific methods is used in regional research. System analysis plays an important role. This is a method based on the step-by-step principle (setting goals, setting tasks, formulating a scientific hypothesis, a comprehensive study of the characteristics of the optimal location of industries). Through this approach, we can show more clearly how the economic sectors are structured, their internal connections, and their interaction. In the field of educational services and regionalization, we can also use the method of systematization. In practice, it is related to the division of the studied phenomena (based on the objectives of the research) and the selected criteria into aggregates, characterized by a certain community and distinctive features. This means that we will require the application of techniques such as classification, typology, concentration, etc. Sociological surveys are also essential for the evaluation and methodology of research on education and its regional significance. For this article, we refer to a survey conducted in the second half of 2021 among businesses and municipalities on the need for people with higher education. As part of the overall study, studies were conducted to reveal the main trends and opportunities for Bulgarian higher education in Bulgaria. The survey was conducted in three areas - a study of the needs and requirements of the business (more than 600 respondents were surveyed, mainly medium and large companies in the country) and municipalities. Logically, a detailed analysis of the digital platforms for labor supply and demand and the relevant requirements was performed. On this basis, the assessment and recommendations of the Bulgarian business and municipalities for the improvement of Bulgarian higher education were established. Although we must say that the goal of higher education is not limited to the economic sphere, the demand for quality graduates is determined by global capitalism (Kruss, Petepsen, Mcgrath, & Gastrow, 2015, p. 29).

In the survey, 70% of employers do not have preferences for their employees where they have completed their education, and over ¼ prefer those who receive their degree in Bulgaria. Only 4% favor those graduates of foreign universities. Based on these data, we can conclude that in 96% of employers, their employees may have graduated in Bulgarian country, which proves the important role of higher education in Bulgaria, as well as what specialists they train. For example, in a company where the average working life of employees is 10-15 years, there is a jump in turnover among those who have worked for five to seven years (i.e., in one of the most valuable categories of workers). The models of the economic base are quite simple both in terms of theoretical justification and in terms of development. For their construction, only indicators of economic activity (mainly employment indicators) are needed for two periods of time. The analysis of the economic base is an accelerated method for forecasting regional economic growth, using a simplified theory of growth and minimal information needs. The results obtained are limited to forecasting the development of the main and service sectors. A more detailed analysis may show that this is due to the lack of a career development system in the organization, i.e., employees do not see prospects for their growth here and therefore leave. On the other hand, the choice of young professionals from one or another higher school shows that companies see in the training process young professionals acquire the necessary education. It is important to note that in Bulgarian country there is still a large share of employers, nearly 57%, for whom the university where their staff was trained is irrelevant, which can be seen from Figure 1.

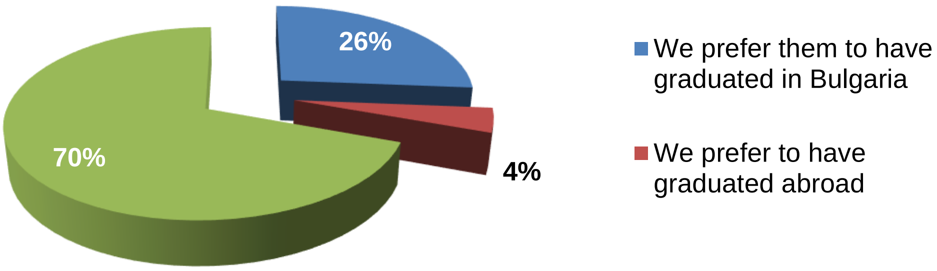

Figure 1. Preferences of employers where their employees graduated
Source: Authors' Research

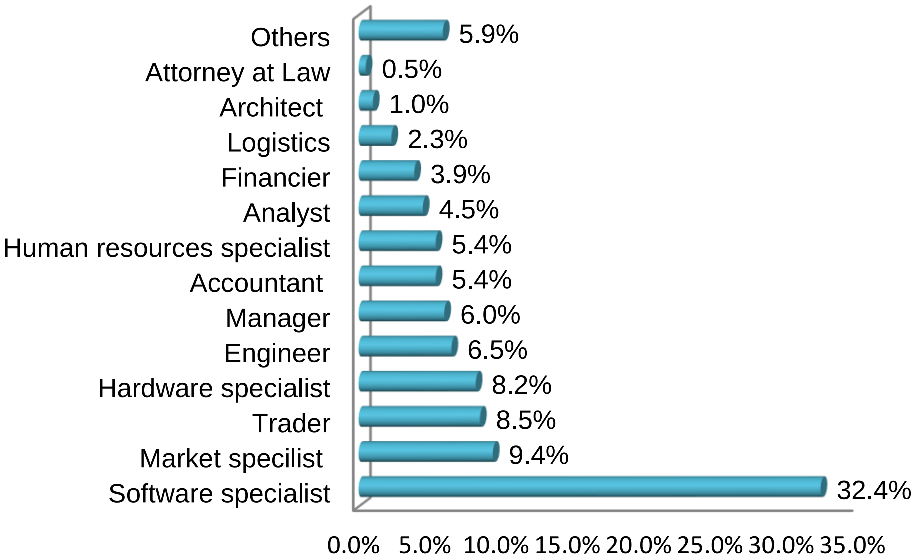

Figure 2. Percentage distribution of job positions
Source: Authors' Research.

Figure 2 shows that the demand for *lawyers* is 0.5% of all advertisements, which shows that due to the existence of 13 law faculties in Bulgaria there is a saturation of the market. There is little interest in the position of *architect*, which is understandable due to the scope of this specialty and the role in the construction industry. Next, the profession of *logistics* occupies only 2.3% of the ads, but on the other hand, in a covid crisis, this is one of the most dynamically developing areas. In our opinion, the crisis has affected the demand for these specialists, because the transport industry is one of the most severely affected. Arguments in this direction are also the statistics, which show that transport and logistics are structurally determining for the Bulgarian economy. Moreover, this industry is competitive on a European scale. That is why we believe that with the recovery of the Bulgarian state and the European economy from the crisis, the demand for specialists in the field of logistics will increase. Other positions such as *financier*, *analysts*, *accountant,* and *human resources management* are in the range of 5-6%, which in practice shows moderate demand given the development of the services sector. The most probable problem with these professions is that the demand for staff is mainly in the 7 big cities in Bulgaria. The demands for *designers*, *engineers*, *traders*, *hardware specialists*, *managers*, and *marketers* are more intensive, which is within 6-9%. This shows that the economy has development opportunities, but on the other hand most of the positions offered are mainly in Sofia and the regional centers in the country. We can give several arguments for this fact. For example, Sofia-city has the largest and most developed economy. A large part of the active population is concentrated in Sofia. And finally, the Bulgarian capital has the largest number of universities. The largest university of economics in Bulgaria is also located in Sofia. At the same time, this group of professions in practice can expand its scope and continue to produce a moderate number of specialists with higher education. The proposed figure shows that the most sought specialty is *software* as it practically covers almost one third of all ads. The humanities are increasingly giving way to technical and scientific disciplines (Casado, Martinez, & Patrao Neves, 2018, p. 66).

In practice, the study of educational services at the local level is too modest. One of the reasons is the chaotic transition in Bulgaria, which has led to diverse economic activity in many industries with short-term and partial success, which is carried out in various geographical aspects. Bulgaria's lagging in the field of regional training and the implementation of the concept of lifelong learning is an additional argument to seek a comprehensive mechanism for coordinating efforts in this direction. Serious attention and attitude are required, both in theory and in practice, of universities and public administration structures as direct users to make sense of the quality functioning of the nation-state. In the training of staff with higher education, it is necessary, in our opinion, the widespread use of research in the management process, as it is higher education that implements all elements of management processes, both nationally and locally. Achieving the efficiency of educational services means applying the strategic approach as an ongoing process of making sense of the full cycle of governance, which will define a sustainable model of regional governance of individual regions. Here is the role of the university as a necessary work of the teaching teams and scientific potential in them to make the regions more attractive for young people.

4 ANALYSIS AND ESTIMATION OF EDUCATIONAL SERVICES' NEEDS AT THE REGIONAL LEVEL

As it became clear from the research of business and municipalities, there is an urgent need for trained and qualified specialists with higher education. There is an objective need for engineers, computer specialists, managers, educators, doctors, nurses, cartographers, agronomists, and others. The focus of the study is on more planning regions in Bulgaria. Generally, the results show that the need for graduates with specific education corresponds to the sectoral and territorial structure of regional farms in Bulgaria. It is imperative that improving the link between business and higher education implies strengthening the role of universities in regional development. This goal is set in the adopted Strategy for the Development of Higher Education in Bulgaria 2021 - 2030. This goal can be achieved by strengthening the connection of higher education with the relevant environment at the regional level. And of course, this includes creating good partnerships and networks for cooperation between individual universities and even with vocational high schools. To improve the territorial location of higher education institutions, the idea of strengthening their cooperation with regional schools should be considered.

The process of electronification is likely to lead to an increase in the salaries of these specialists due to the high level of their demand. In practice, the current data show the need to be compared with the assessment ratings of the rating system. According to the rating system, the highest degree of application of the acquired higher education has the graduates of the professional fields of Military Affairs (99%), Pharmacy (95%), Medicine (95%), Dentistry (93%), Veterinary Medicine (73%) and Pedagogy (72%). One possible explanation is that the demand is higher because of the high degree of regulation of these areas and the planning of public procurement according to needs. Significantly lower is the application of the acquired higher education to the graduates of the professional fields with the largest number of students - Economics (38%) and Administration and Management (37%), (Smetnata palata (Protokol № 15), 2017, p. 14). In practice, however, the supply and demand of labor is a dynamic feature. In this sense, the professional fields of administration, management, and economics should not be neglected. In this regard, the better approach is to create more "hybrid" specialties and even separate courses and curricula that translate into more than one professional field. This may be a solution because the number of higher education graduates has generally decreased in recent years. Demographically, in the period 2022-2030, we can have a retention of the trend and a slight increase in student enrollment. After the period 2030, we will witness a drastic reduction in students for purely demographic reasons with reduced birth rates in the period 2011-2021. This implies further reform of higher education in addition to imposing the competency model.

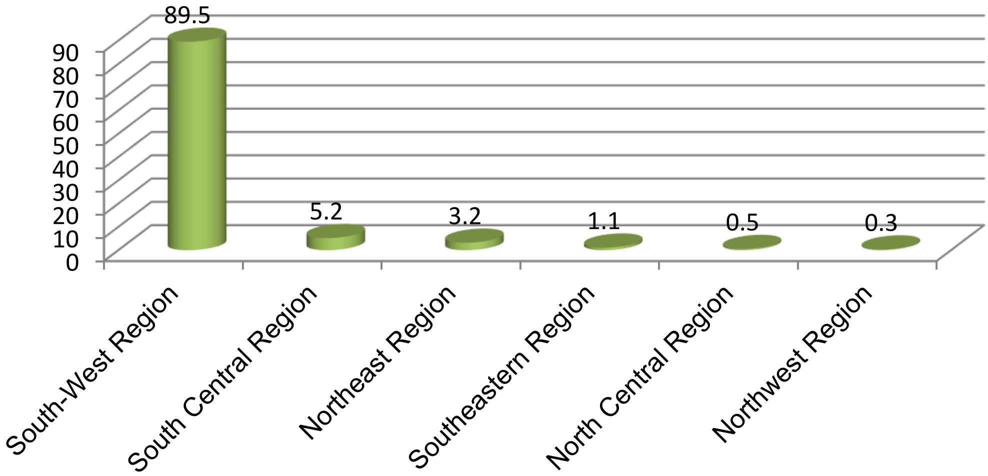

Figure 3. Percentage distribution according to the offered work

Source: Authors' Research

In terms of the percentage distribution of work offered by regions, the South-Western Planning Region is leading. The advertisements offered in it are almost 89.5% of all electronic job offers. Here is the place to say that the Southwest region occupies a leading position in the formation of the country's total GDP. The coefficient of economic activity of the population aged 15-64 on 31.12.2020 is - 77.5% and is the highest in the country. The region takes first place in terms of investment growth compared to the same period last year, as well as the number of newly created vacancies. Sofia-city continues to be among the leaders on the industrial map of Bulgaria, occupying a leading position in the manufacturing industry. Micro, small and medium-sized businesses account for 70% of Sofia's output, and trends over the past few years suggest that its share is likely to increase soon.

In second place is the South-Central Planning Region with 5.2%, which has positive trends in the development of its economy in recent years. According to Eurostat data, the registered unemployment in the labor offices in the South-Central region covers 48,957 people on average per month in 2020. The average unemployment rate in the South-Central region in 2020 was 7.63%, compared to 7.4% for the country. This fact shows that the region has greater opportunities for spatial development, which is likely to lead to increased demand for labor in this planning region. Analyzing the region, it is important to consider the role and importance of the higher education institutions that are in it. Plovdiv Technical-, Medical-, and Agricultural University, and the University of Food Technologies, as well as some smaller parts of higher schools, are in Plovdiv.

In smaller cities in this district, there are external branches or other units of higher education. In third place is the Northeast Planning Region with 3.2% of ads. This is natural because the economic situation in the Northeast region is determined by seasonality in labor supply and demand, which is determined by the structure of the economy. According to Eurostat data, the largest share belongs to industries that are seasonal in nature - agriculture, tourism, trade, processing industry (food, clothing, glass, porcelain, and earthenware industry). The active period for them is the summer and accordingly, a high level of employment is reported. During the autumn-winter season, there is a lower business activity, and demand for labor decreases (EC, Union, An official website of the European, 2020). It is important to mention that the leader in the Northeast Planning Region is the city of Varna, which is also one of the leading university centers. This suggests that the region has large reserves in terms of labor resources and opportunities to attract investment. The other three planning regions have a very small share of the ads. According to our views, the North Central Planning Region has the potential to attract additional investment, especially in the cities of Ruse, Svishtov, Veliko Tarnovo, Gabrovo, and Silistra, where there is a concentration of young people due to the availability of universities. This implies further efforts to support the development of the potential of the North Central Planning Region. Close to this state is the Southeastern Planning Region, where the Thracian University - Stara Zagora, Burgas Free University, and the University "Prof. A. Zlatarov - Burgas", as well as branches of several other universities, which generally make efforts to develop human capital in the region. It is important to emphasize that in our society it is difficult to understand the philosophy of sectoral conditionality of the national economy because according to the state professional fields 3.7 "Administration and Management" and 3.8 "Economics" are saturated, provided that the annual need for specialists in tertiary sector annually amounts to the order of 18-20 thousand people. It is normal in such cases, before reducing the state reception in these areas, to give a clearer and more definite assessment of the reasons for such a reduction, rather than the bureaucratic approach. Of course, we should not go to extremes on one or another topic in the field of higher education, but to carry out the reform by looking for arguments and finding quality solutions. At least, because in recent years, given the introduction of new technologies, a new student profile has come to the fore, in which marketing, financial austerity, and other changes are leading, this certainly means a new environment for higher education. The manner of realization of university graduates shows that in the labor market higher education is important not only through the specialized training it provides but also in its more general quality of higher education (Boyadzhieva, 2012, p. 26). Improving quality is an endemic problem for all four sectors (culture, education, health, social security, support, and care). As a rule, public assessments of the quality of services are low and expectations are high. For example, the quality of social services, measured by the indicator of *satisfaction* of consumers and their families are consistently low - 75% of people with disabilities believe that they are not perceived as equal by others, 85.7% assess public transport as inaccessible, 77% cannot visit cultural centers" (Penkova et al., 2019: 224-225).

5 TENDENCIES AND PERSPECTIVE FOR DEVELOPMENT OF HIGHER SCHOOLS AT THE REGIONAL LEVELS

The aspiration of the individual to maximum professional realization, as well as the process of realization, is largely dependent on the social structure of society, the individual right to free choice of education, profession and expression in it, the individual's ability to take social responsibilities itself, in front of the family and the professional group whose interests it defends. In this new reality, higher education has virtually no boundaries, our higher education institutions need serious investments from the state and the private sector in higher education to survive in this new highly competitive environment. Universities are under enormous pressure to look at student learning in purely technical terms. This fact can be explained because they do not have a holistic overall perspective. Governments see the primary function of universities for the most part as meeting the technical needs of society. And modern society is more complex and is becoming more complex through the growing set of technologies and the further activities that these technologies make possible. Eventually, many higher education institutions lose their role as institutions training future leaders in various fields and instead are perceived as factories producing workers to meet the most immediate needs of society (Nillsen, 2005, p. 89). We need to move towards a new type of development policy, which should orient higher education towards more practical training, research, creation of products in higher education related to the production of information and technology. Although such efforts are slowing down the reduction of public funds. The perception of the university as one of the key players in society and the economy is a great opportunity today and the Bulgarian state should not miss this opportunity.

In addition, we must be aware that the market of educational services in the Bulgarian state is very specific, and the aim is to be fully linked to the labor market. However, this must be accompanied by a vision of the adaptability of educational services to the new knowledge-based global economy. This means more research, innovation, and technology, an increased need for talented researchers and a skilled workforce, and therefore more roles for universities. There are also downsides to these promising developments and changes in the world of higher education. There is no clear evidence that the proliferation of higher education and the use of information technology is expanding the access of low-income, immigrant or ethnic students to higher education. Here is the role of the state to promote a more detailed study of the demographic situation in the modern nation-state, but also what kind of immigrant stream flows into the economy. This further highlights the importance of university education, which also has an educational role, but also as an engine of economic development.

In this direction, the role of the university is divided, at the same time to train staff and seek innovation. In practice, this complex role, which is assigned to it, means that higher education will be closer to the regions. Being closer to business also means increasing access to higher education, improving quality, mobility, international networking, and cooperation, among other things, will also complement and change these developments. So higher education institutions need to pay attention to the issue of fair access to education and reconstruct their way of providing services according to the different student groups. Of course, governments have a great responsibility to do this through legal and financial instruments. On the agenda is the need to engage the state with solutions and significant financial support for reforms in higher education to achieve the desired results - a competitive separate educational product, opening universities to cooperation and developing joint programs with Bulgarian and foreign universities, building working and effective relations with business representatives and all users of personnel, improving the quality of education and research, stimulating the participation of universities and business in joint actions and work on projects of practical and applied nature, building a functioning system for access of students to practical training, internships and part-time work in the specialty and the transformation of universities into regional and national centers, contributing to local and national economic development. (Slaveva, 2021, p. 21) It would be not only ruthless but also unwise to make higher education available only to those people who have money, because creativity, innovative thinking, and/or disciplined work are not shared only among them.

It is important to point out that the educational system in Bulgaria has always had its social role. This is an important milestone that must always be set in the current and future changes in the higher education system. The opinion of the employers about the quality of the specialists trained in the different higher schools is categorical - more than half of the respondents indicate only 4 higher schools - the Sofia University, the University of National and World Economy, the Technical University - Sofia and the Medical University - Sofia. (Boyadzhieva, 2012, p. 22). Undoubtedly, in recent years the imposed model of state centralization has led to the concentration of higher education in the biggest cities in Bulgaria – Sofia, Plovdiv, and Varna, which is also noted by the local government, regional business, and recently by the state. This once again shows that the educational system in Bulgaria is related to the demographic situation of the regions. The imposed model of labor migration has increased many times the number of students from Bulgaria in Western Europe, which in practice will have an additional negative impact on the development of Bulgarian regions, and subsequently will affect the capital and major cities. This trend can be mitigated provided that our higher education responds to emerging trends with a more effective model of governance and training for the regional economy. It is often stated that measures to increase the applicability of acquired education are not sufficiently tailored to the needs of the labor market (European Commission, 2019, p. 9). However, focusing mainly on this relationship creates and reinforces other negative aspects. There is an urgent need for policies that would allow higher education institutions better to consider the trends in the development of the economy and society. However, it is difficult to expect that this is an easily achievable task in the conditions of the modern dynamically changing labor market. Therefore, it is worthwhile for universities to rethink their educational philosophies and make efforts to develop curricula that focus on the acquisition of key and transferable competencies, skills, and knowledge. (Boyadzhieva, 2012, p. 27)

The pursuit of education is a matter of personal choice that should not be ignored. What matters here is motivation and quality, not number and quantity. Life requires to have more highly educated and more people with high professional qualities. A high level of public education is one of the prerequisites for a stable and functioning economy with high potential. The prosperity of an economy depends on the quality of the workforce, which is determined by the level of education. The level of education of the individual and society is becoming a major factor that can ensure sustainable development. The research conducted by Jigaska and Dobrilova found that 89% of the surveyed students believe that the teacher has a role in improving the quality of education. (Dzhiganska & Dobrilova, 2015, p. 441). The Bulgarian Higher School is a school of knowledge. As before, so now, it continues to be based on the famous classical principles: fundamentality, systematicity, consistency, continuity. In terms of formal, normative, and institutional indicators, higher education in the Bulgarian state is harmonized with that in the member countries of the European Union. This makes it possible for it to join the pan-European higher education area.

In addition, it should not be forgotten that the Bulgarian educational system has sent to the West about 15,000 - 17,000 students who are well trained in elite schools. Unfortunately, the tendency is for these students to stay and be realized there - everything possible must be done to return and work in Bulgaria. The second conclusion is that the future lies in the networks - several large parent universities to manage professionally and competently training in smaller centers. And thirdly, modern legislation is needed, as the current law on higher education does not allow universities to develop. This means that Bulgarian business learns to invest in the education and practical training of its staff in universities. Respectively, this change concerns the strengthening of the higher education-business relationship. In this way, an innovative economy with high added value will be developed. The role and importance of Bulgarian higher education institutions will not decrease in the conditions of intelligent development, specialization, and the concepts of continuing education and lifelong learning. Given the clear trends observed in Bulgaria related to the outflow of Bulgarian young people going to study in other European countries, as well as a sharp decrease in secondary education, universities need to focus more on creating science. The new conditions suggest that Bulgarian universities become more innovative and flexible by accepting more business professionals to share their experiences with students. Working in this direction the business will see a clear benefit for itself - access to staff. This internship will also provide prepared students for specific business sectors. The final stage of this process is the conclusion of contracts for work with graduating students and technology transfer.

6 CONCLUSION

According to our understanding, higher education should receive its regional and local focus. The vision of educational quality is a vision for the development of the educational system. This policy is strongly connected to the vision of overcoming regional imbalances and creating more sustainable regions with a young population. Although the reduction of the birth rate in Bulgaria has consequences for the whole economy. The education sector may be leading in facing the consequences and imposing the model of new development on our national territory. This new policy includes the model of decentralization implementation. This process, as established by the study of the needs of municipalities and businesses, affects some professions and specialists that must be provided for their normal functioning and development. The main issue here is administrative capacity. This capacity will allow the formation of a critical mass of well-educated staff and a network of active units and institutions for municipalities. This should be a priority of state policy through effective higher education policies, which will have a significant positive effect in the long run. In this sense, the minimum necessary condition for the development of businesses and municipalities is to attract and retain quality staff with higher education. They will guarantee the improvement of human capital and territorial targeting of investments in Bulgarian municipalities. And this policy, in turn, will result in the transformation of municipalities into places with a focus on highly educated people. It is necessary to differentiate the tasks, content, and forms of work with students by their professional attitude and to define the needs of regional development with the presence of academic personnel at the municipal level with a population of more than 80 thousand people. It is important to determine that within the preparatory school students build themselves as professionals, which requires the formation of an active regional economic environment related to the adaptation of young people to the business environment at the local and regional level.

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Received for publication:	23.02.2022
Revision received:	27.02.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Berberova-Valcheva, T., Petrov, K., & Tzonkov, N. (2022, 07 15). Meaning and role of higher school for Bulgarian regions’ sustainable development. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 1-13. doi:10.12709/mest.10.10.02.01

Style – **Chicago** *Sixteenth Edition:*

Berberova-Valcheva, Tsvetelina, Kamen Petrov, and Nikolai Tzonkov. "Meaning and role of higher school for Bulgarian regions’ sustainable development." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 1-13.

Style – **GOST** *Name Sort:*

Berberova-Valcheva Tsvetelina, Petrov Kamen and Tzonkov Nikolai Meaning and role of higher school for Bulgarian regions’ sustainable development [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 1-13.

Style – **Harvard** *Anglia:*

Berberova-Valcheva, T., Petrov, K. & Tzonkov, N., 2022. Meaning and role of higher school for Bulgarian regions' sustainable development. *MEST Journal,* 15 07, 10(2), pp. 1-13.

Style – **ISO 690** *Numerical Reference:*

Meaning and role of higher school for Bulgarian regions' sustainable development. **Berberova-Valcheva, Tsvetelina, Petrov, Kamen and Tzonkov, Nikolai.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 1-13.

MEST Journal
DOI 10.12709/mest.10.10.02.02

BLOCKCHAIN AND THE APPLICATION OF BLOCKCHAIN TECHNOLOGY

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JEL Category: **E41, E51, L86, O33**

Abstract

Thanks to cryptocurrencies, blockchain technology has recently become the focus of interest of both scientists and the public. The paper presents the principles on which blockchain is based and analyzes the possibilities of the application of blockchain technology in more detail. In a part of the analysis, some of the most common cryptocurrencies were considered, such as Bitcoin, Ethereum, USD Coin, Ripple, and ADA. Blockchains' applicability in supply chains, finance, real estate, health care, voting, and smart cities the authors discussed in the chapter about the application of blockchain technology. A separate chapter discusses the limitations of blockchain technology. Based on the analysis, at the end of the paper, the authors conclude that blockchain technology has great potential in automating and optimizing business processes and protecting the information and privacy of users. Given the demonstrated interest of companies in blockchain technology, investments, and demand for staff who understand it and can create applications, the authors concluded that the time of blockchain is yet to come.

Keywords: *blockchain, Bitcoin, Ethereum, Ripple, voting, smart city.*

1 INTRODUCTION - BLOCKCHAIN

The blockchain and the principles on which it is formed are still little known not only to the general public but also to the most blockchain technology users, although more than 30 years have passed since the emergence of the blockchain as a research project (1991) and more than a decade since its first mass use (Bitcoin - 2009). Many have heard of the blockchain, and even the definition that it is a "distributed ledger that facilitates the process of recording transactions and tracking assets in the business network" (Gupta, 2017), but what the blockchain is and how it works is unknown to the vast majority.

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Therefore, we note here that a blockchain is a distributed database shared among the nodes of a computer network. The main difference between a classic database and a blockchain is how data is structured. Classic databases collect data and store it in tables, but blockchains collect information in blocks. A filled block closes, compiles, and links to the previously filled block. All future new information will also be compiled into blocks and added to the previous blocks. In this way, data forms a chain, a blockchain as a timeline in which each block gets the correct timestamp when it adds to the chain. (Hayes, 2022)

For ease of understanding, Gupta (2017) suggested looking at blockchain as an operating system such as Microsoft Windows or macOS and bitcoin consider one of the applications that can run on that operating system. Bauerle (2018) used Wikipedia Free Encyclopedia with the same goal of explaining blockchain. Unlike the usual encyclopedias that are the product of one publisher, data is entered into Wikipedia in a distributed way, i.e., each user can enter data according to their authority, and the community controls the quality of the data. A Wikipedia user receives an updated version of the "master copy" from centralized servers each time he logs in. However, this is where the possibility of identifying the principles of Wikipedia and blockchain ends. Both Wikipedia and blockchain technology are realized on a distributed system, the Internet. Wikipedia is embedded in the World Wide Web (www) using client-server models. Wikipedia's digital structure is like centralized databases used by banks and insurance companies, the military, and the police. It is a centralized system. With blockchain, each node on the network receives valid information about the transaction, confirms it, updates and registers it, and the most popular record de facto becomes the official record. That is where one can see the main difference between such a record and the main copy of the record. The blockchain does not have a centralized server but distributes the data to all nodes.

2 CRYPTOCURRENCIES AND BLOCKCHAIN PLATFORMS

2.1 Bitcoin

When Bitcoin.org appeared in August 2008, and "Satoshi Nakamoto" posted his paper on a cryptography mailing list on October 31st of the same year, Bitcoin aroused interest in a very limited circle. Barely anyone understood what this is all about. Over time, many have focused more on the identity of Satoshi Nakamoto, the author of *Bitcoin:* A Peer-to-Peer Electronic Cash System (2008), than on what he wrote there. It took more than two years for Bitcoin to reach $ 1 since the first bitcoin ledger[1] appeared in January 2009. That represented an enormous increase in value. But there was a small number of Bitcoins. With smaller and larger oscillations, the value of Bitcoin grew until October 2013. Then it reached a value of about $ 120 and in the next month its first maximum of about $ 1,000. In February 2017, with a series of declines and rises, it reached $ 1,000 again. Soon, Bitcoin skyrocketed to its maximum of over $ 17,500. Its value dropped by half in the next three months. In December of the same year, Bitcoin reached its maximum of close to $ 20,000.

After that, the value of bitcoins dropped so that in December 2018, it was worth $ 3183. From September 2020, the value of bitcoin began to rise rapidly. In March 2021, it reached the value of $ 61,283. Bitcoin reached a new maximum in the middle of November 2021, $64,400. At the end of April 2022, bitcoin was worth just below $ 40,000.

Fig.1 Value of Bitcoin in the period May 2017-May 2022

[1] Ledger - a book or a computer document in which a company's accounts are recorded, especially the money it has spent and received (Cambridge Dictionary)

Figure 1 shows that in the five years from May 2017 to May 2022, the value of bitcoin increased over 24 times and that it was occasionally over 40 times higher than the value at the beginning of the observed period.

2.2 Other cryptocurrencies and blockchain platforms

Although Bitcoin has become a well-known term, almost 14 years since the idea appeared, most people, even bitcoin wallet owners, are still unfamiliar with Bitcoin mining and transferring technology, and the principles on which the technology is based. The term cryptocurrency has meanwhile become very common. New cryptocurrencies have appeared together with guessing which of them are promising and which will prove to be just a fad. There are tens of millions of indexed webpages on cryptocurrencies and they have been and are being studied by many authors, including (Čekerevac & Čekerevac, 2015), (Cekerevac, Dvorak, Prigoda, & Cekerevac, 2015), (Prigoda & Cekerevac, 2016), etc.

Here we will only mention some characteristics of the most common cryptocurrencies:

- *ETH – Ethereum*; ETH is the second most well-known cryptocurrency. It is significantly different from Bitcoin. At the end of 2021, over 188 million Ethereum tokens were in circulation, over ten times more than BTC. The coin was created in 2013 and launched in 2015. The creators are known. Bitcoin acts like digital gold, but Ethereum is a technology platform for applications not run by governments or companies. In 2021, the Ethereum blockchain accounted for more than half of the decentralized finance (DeFi) market, so price movements of this cryptocurrency could significantly impact on DeFi. (Best, Ethereum (ETH) - statistics & facts, 2021)
- *USDT – Tether USD - ERC-20 & TRC-20 protocol*; The cryptocurrency exchange Bitfinex developed Tether. Tether belongs to the stable cryptocurrencies[2] whose goal is to maintain its value stable. That allows USDT to be a means of exchange and a way of storing value, instead of being used as a medium for speculative investments. Tether (USDT) is based on a blockchain, and an equivalent number of US dollars, euros or the Japanese yen backs all tokens. One USDT is worth $ 1.00. (Frankenfield, 2022) TRC20-USDT and ERC20-USDT refer to USDT issued on the TRON and the Ethereum network respectively. They are both identical, but transfer fees are significantly cheaper with TRC20. (Emma, 2022) TRC20 offers moderate safety, and it is good enough for small amounts and high-frequency transactions. ERC20 offers high safety and is suitable for medium amounts and trading. (daisy-support, 2021)
- *USDC – USD Coin* is a USD-backed stablecoin created and issued by Coinbase and Circle in 2018 with a $1 fixed price. Each USD Coin in circulation is backed by one US dollar or other cash equivalents held in a US bank account and can be redeemed for USD at any time. Only approved regulated financial institutions that meet Circle's membership framework can issue USDCs. Like USDT, USD Coin can be sent and received by any wallet or exchange that is ERC-20 (Ethereum) compatible, along with many other blockchains (Barchat, 2021).
- *XRP – Ripple*; Ripple is a technology that operates in two ways: as a cryptocurrency and as a network for digital financial transactions. Ripple works on a decentralized, open-source, peer-to-peer platform that allows seamless transfer of any money type. Ripple is a global payment network similar to the SWIFT system for international money and security transfers, used by banks and financial intermediaries operating in different currencies. The technology is based on a blockchain with its cryptocurrency, XRP. Instead of using block mining, Ripple uses a consensus mechanism through a group of bank-owned servers to confirm transactions. Ripple transactions consume less energy than

[2] Stablecoins follow traditional fiat currencies, such as the dollar, the euro, or the Japanese yen, which are held in a specific bank account. In this way, they differ significantly from large fluctuations in the prices of other popular cryptocurrencies, e.g., BTC or ETH.

bitcoin, can be confirmed in a few seconds, and cost a little. Ripple (XRP) ranks among the most valuable blockchain-based tokens by market capitalization. (Frankenfield, 2021)

- *ADA – Cardano*; Cardano is a third-generation, decentralized proof-of-stake (PoS) blockchain platform designed to be a more efficient alternative to proof-of-work (PoW) networks as Ethereum is. PoSs are operating cheaper and have better scalability, interoperability, transaction times, and sustainability than PoW networks. The ADA token and the Cardano platform were launched in 2017. The platform runs on the Ouroboros consensus protocol which was the first PoS protocol that not only was proved to be secure but also was the first to be informed by scholarly academic research. (Conway, 2021) At the end of April 2022, the ADA market cap was $27.69B giving it a ninth place in the cryptocurrencies ranking. (Goldprice, 2022)

3 OTHER BLOCKCHAIN TECHNOLOGY APPLICATIONS

In the shadow of stock exchanges and cryptocurrency price fluctuations, new ideas about the application of bitcoin technology and its blockchains have emerged. There are more and more attempts to change the current functioning of the Internet and introduce improvements.

With the advent of Google, Facebook, Twitter, and other services, the world gained a powerful source of data and a powerful means of communication. At the same time, it was exposed to the risk of control and manipulation because these sources are centralized and subject to control from one uncontrolled center. Most users, satisfied with what they have at their disposal, do not understand the size of risks they are exposed to. More devices on the network cause more risks. The number of Internet users is growing dramatically with the development of the Internet of Things (IoT) and the Internet of Services (IoS) in all its forms: Infrastructure as a Service (IaaS); Software as a Service (SaaS); Platform as a Service (PaaS); Mobile "backend" as a service (MBaaS); or server-based cloud computing. Some users, more concerned about privacy or out of pure curiosity, turned to decentralized Tor, free software that allows anonymous communications, and Tor Browser, I2P, Freenet, Tails, Firefox, or some of those listed in (SOCRadar, 2020). Tor users can enjoy a sense of relative freedom and privacy at the expense of comfort.

For specific purposes and/or users, there is also a deep or invisible, or hidden network (Deep Web, Deep Net, Invisible Web, Hidden Web) that is not indexed by the world's leading commercial search engines. [3]. Because it is uncontrolled, this network is the most attacked by those who want control over the Internet, but it is also the most inconvenient to use, or rather, search. All these communications use encrypted connections, and instead of centralized servers, many ad-hoc nodes are used, which volunteers provide to the network. A similar principle is with blockchain. Transactions are performed by forwarding the encrypted information to be verified to the peer-to-peer network of available computers, regardless of their location. The network then performs computational operations to confirm the validity of the information transaction. After the network verifies the transaction as legitimate, the information forms into blocks. The blocks then join the existing chain, and the transaction becomes permanent. That completes the process of adding new information. Computers that are not online during the transaction will receive a verified chain at the very next transaction, when available. If a node has incomplete information or if it tries to enter incorrect information, it will be detected very quickly. In this way, redundancy and transparency are achieved. The posted information and history are irreversible. One can see that the whole system can function in a decentralized manner. To prevent bad actors from validating bad transactions or double spends, blockchains are secured by a consensus mechanism such as proof of work (PoW) or proof of stake (PoS) (Hayes, 2022).

So far, blockchain technology is most frequently used for cryptocurrency transactions. But there are no obstacles to using blockchain for other purposes, such as storing information on legal contracts, inventory of products and warehouses,

[3] More details about the Deep Web and its subgroup Dark Web can be found in (Čekerevac, Dvorak, & Čekerevac, 2016), (Yale, 2014), (Avast, 2022), etc.

transport of goods monitoring, various identifications, a realization of voting, etc. Given the potential of blockchain, now almost everyone who has an entrepreneurial spirit and understands blockchain is trying to devise some application of blockchain in society and work. Tens of thousands of applications are being developed or under development. The 10,397 cryptocurrencies were active in February 2022. (Statista, 2022A) For the sake of comparison, according to the same source, in 2013, there were 66 cryptocurrencies.

In cases that are not of general interest, it is possible to limit the blockchain to stakeholders, the entities who are in some way involved in the project. In this way, the number of participants significantly reduces, and transactions can perform faster without burdening the network unnecessarily. Some companies, such as Siemens, Walmart, Pfizer, AIG, Unilever, IBM, and others (Hayes, 2022) have already incorporated blockchain into their business.

3.1 Supply chains

The application of blockchain is very suitable for supply chains. If we add the use of the Internet of Things (IoT) to it, we can create a complete logistical solution. The application of IoT in supply chains has been written in detail by (Cekerevac, Prigoda, & Maletic, 2018), and here we will only quote that ”the IIoT with its transparency can revolutionize the supply chain, and at the same time to give both operational efficiency and revenue opportunity. The companies that understand that the supply chain isn't only a way to keep track of a shipment can gain an edge over their competitors“. As an example, we will mention the Food Trust™. IBM created the blockchain Food Trust™ as a collaborative network of growers, processors, wholesalers, distributors, manufacturers, retailers, and others, enhancing visibility and accountability across the food supply chain (IBM, 2021). The goal was to ensure (IBM, 2021):

- *Increased supply chain efficiency* – To run a more efficient food network by helping to eliminate bottlenecks in the supply chain.
- *Greater brand trust* – To enhance the reputation for safety and quality through transparency.
- *Compliance confidence* – To ensure safety and regulatory compliance and avoid recalls.
- *Enhanced sustainability* – To increase awareness of sustainability opportunities and practices in each step of the food chain.
- *Improved safety monitoring* – To monitor food products in the supply chain to accurately judge remaining shelf life.
- *Fraud prevention* – To make supply chains less susceptible to fraud and errors with end-to-end traceability.
- *Reduced waste* – To better track food wasted and food rescued while minimizing waste hot spots.

To further develop supply chains, in addition to the efforts of participants, changes in the legislation at the world level are necessary. The regulation should evolve in terms of supporting change. Of key importance is that all, sensors, devices, methods, and software platforms stay transparent (Cekerevac, Prigoda, & Maletic, 2018).

The use of blockchain in supply chains enables the monitoring of products from the beginning of production to end-product delivery. Until recently, this was applicable only in special-purpose industries, and now that possibility is available to everyone, above all, to the food industry. Time tracking of products from the farm to the end-user is enabled.

3.2 Finance

Blockchain has the potential to have a significant role in finance, especially in the provision of banking services. In modern banking, there are still limitations in the provision of services. The working hours of banks are a significant element here because banks are physically available only within their work hours. Thus, banks are unavailable on weekends and holidays and when they have organizational changes to a greater extent. Even e-banking can have restrictions like "transactions up to $XXX we will execute immediately, and larger payments we will execute the next working day.". Even heavier restrictions can appear in international transactions due to different legal regulations and differences in time zones. Transactions on hold for a day or two and in international traffic for longer are not uncommon. As a result, banks and customers are exposed to unnecessary risks. Blockchain has no such restrictions. It can execute transactions at any time and in about ten minutes. The duration of the transaction itself depends on the time required to create a new block and add it to the blockchain. Improvements in hardware and communications will have a positive impact on transaction speed.

Another great advantage of blockchain and cryptocurrencies lies in cryptocurrencies' independency from banks and states. The dollar, the euro, the yuan, the ruble, and other local currencies are managed by central banks. If a client has money in countries with unstable management, he faces a high risk of losing the value of his money. Even in ideal conditions, there is always a risk bank will be hacked and that the client's data will be compromised. The bank may go bankrupt, and the client loses his money. Most of these risks are much lower or do not exist in the field of cryptocurrencies on the blockchain. Crypto wallet owners can dispose of their money in a way that suits them regardless of their location. The owners are fully protected, in theory. Cases of cryptocurrency exchangers hacking are also known. But, luckily, although unpleasant, they are rare and do not tell us much about the safety of the blockchain itself, since exchanges are considered centralized entities with points of failure that are not on the blockchain itself. Some of them are discussed in (Newman, 2022), (Kharpal & Browwne, 2021), (Hern, 2014), etc.

Another, more realistic risk for cryptocurrency owners is frequent changes in the value of cryptocurrencies. Due to the small share of cryptocurrencies[4] in the total value of currencies, changes in the value of individual cryptocurrencies are frequent and with big ups and downs, although in the long run, the owners of the most famous cryptocurrencies have achieved significant (and some enormous) gains. As the market capitalization increases, the value of the most used cryptocurrencies will be more stable and the oscillations less important

3.3 Real estate

Selling and buying real estate is always a challenge for both, the seller, and the buyer. They are most often related to the need to involve intermediaries, lawyers, and the state through its representatives, banks, and cadastres. That takes a lot of time. The multitude of participants in the process increases the risk of inefficiency and human error. Correcting every mistake in such cases requires time but also financial losses. In some cases, it may happen that, e.g., due to the war situation or natural disasters, or the destruction of the cadastre, the owner cannot even prove his right of ownership.

The application of blockchain technology can eliminate most of the mentioned shortcomings. Interested users can create their blockchain or join an existing one. In that way, they can record their property, which will be generally recognized. By applying smart-contract technology, the seller and the buyer can contract all the necessary elements, and the contract will be activated automatically. As soon as the buyer pays the agreed price, the blockchain will note the property, and the subject of the contract will change the owner, which will be generally recognized. The smart contracts can incorporate elements of security deposits which will be automatically activated in the case of a deviation of one party from the contract. All this can take place at incomparably lower costs than the costs associated with the classic buying and selling processes.

Stakeholders do not have to use 'smart' contracts only to buy or sell real estate. They can use 'smart' contracts wherever existing paper contracts apply.

3.4 Health care

Blockchain technology is very applicable in healthcare. Classic systems, which are currently in mass use, include a centralized system that covers all policyholders and to which users access their user accounts and passwords. This system can be comfortable to use but carries all the risks of centralized systems. In case of server failure, the entire system is compromised, if not unusable. On the other hand, the server owner can access all user data. It can be a means of controlling all users, both patients and doctors, pharmacists, and other participants.

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[4] In early April 2021, the total market cap was 2.08 trillion U.S. dollars. At the beginning of November 2021, it was 2.87 trillion U.S. dollars. (Morris, 2022) (Statista, 2022B) On December 31, 2021, there was around $40 trillion in physical money present globally. This amount can touch a quadrillion if cryptocurrencies, broad money (M2 and M3), and investments and derivatives are added to that total. (Jeffries, 2022)

Blockchain technology can offer the creation of individual chains that will include only those connected to the patient and his treatment. Every medical record regarding the patient will be encrypted and written in a blockchain without the possibility of modification or removal and stakeholders will be able to access the records using their private keys. That better protects patient privacy while preserving data integrity.

3.5 Voting

There are always organizational problems at elections, starting from the voting place where the elections will be held, through printing ballots, keeping records, and controlling the regularity of the voting process, up to counting votes and final reporting on election results. Depending on the importance of voting, doubts about whether voting was regular or not can last for years. One such case was the US presidential election in 2016. The defeater usually uses the suspicion of irregularity to shift the "blame" for the failure to an external factor. That has become a practice and is not favorable for the voting system functioning and the 'normal' work of the selected candidates after the elections.

Blockchain can offer a suitable solution here as well. Each voter creates their own "coin" and "pays" it to the account of one of the candidates. Blockchain registers the payments, and after the voting is over, the results can be published practically immediately. At the same time, with the provided transparency, there is no risk of falsifying the results. Such an experiment with 144 voters located worldwide was conducted successfully in West Virginia voting in 2018. “This is a first-in-the-nation project that allowed uniformed services members and overseas citizens to use a mobile application to cast a ballot secured by blockchain technology” (Wood, 2018).

3.6 Smart cities

Migrations have always existed and will continue to exist. In recent decades, we have witnessed mass migrations and significant population growth in large cities as a result of newcomers' hopes of living better in the big city than in their current place of residence. The most urbanized regions in 2018 were North America (82% of the urban population), Latin America and the Caribbean (81%), Europe (74%), and Oceania (68%). The rate of urbanization in Asia is approaching 50%, and Africa is still predominantly rural with 43% of the urban population. According to forecasts, by 2030, the world will have 43 megacities with more than 10 million inhabitants, most of whom will be in developing regions. About half of the world's urban population lives in communities of less than 500,000 people. (Cekerevac, Prigoda, & Bogavac, 2022)

Cities must become smart to survive. In smart cities, it is necessary to use smart devices and equipment, tools, and machines with computer capabilities. Increasingly, these are IoT devices. Their memory enables data storing from sensors and performing operations for which devices are programmed. Smart devices include (Cekerevac, Prigoda, & Bogavac, 2022):

- sensors for monitoring the situation and notifying about changes in the environment.
- actuators that, based on observed changes in the environment, do physical actions through management actions.
- microcontrollers (usually microprocessors) with built-in memory, clocks, and equipment for connecting to external devices such as sensors, actuators, and transceivers for wireless data transmission.
- microcomputers with microprocessor, memory, and I/O devices on the same chip.

For the city to be 'smart', it must process and store a large amount of data. In doing so, it is necessary to perform appropriate transactions between unreliable participants. Blockchain technologies are needed to address transparency and security issues.

The blockchain industry is growing at an extraordinary rate due to the growth of the API economy. According to Cisco estimates (Heal, 2019), it is expected that 10% of global GDP will be stored on blockchains by 2027. In an attempt to ensure sustainability, cities are becoming 'smarter' every day.

In the case of smart cities, the following advantages of blockchain technologies stand out (Safonov, Kirsanov, & Palamarenko, 2022, p. 131):

- the trust of blockchain entities towards each other.
- the possibility of effective control of performed operations.

- stability of stored data integrity; and
- transaction speed.

Smart-city management systems in Great Britain, India, Korea, Singapore, Finland, and Switzerland, have already accepted blockchain technology, and this list will constantly grow. Blockchain has the potential to make cities smart - it allows the city to increase the efficiency of urban structures. (Woetzel, et al., 2018)

Sam Mire (2018) lists 12 possible uses of blockchain:

1. universal ID cards,
2. prioritizing local commerce,
3. land, property, and housing management,
4. energy / water / pollution management,
5. improving public transit,
6. interoperability for smart devices,
7. security for IoT devices,
8. rewarding citizenship,
9. urban planning,
10. departmental transparency,
11. universal data storage platforms, and
12. KSI – keyless signature interface for hosting government services and records.

Here, the blockchain is not considered just a platform on which a mass of new data can be securely stored and accessed by those authorized. Blockchain can be used as an interoperable platform that allows smart city dwellers to demand a certain standard from individuals and businesses when it comes to communal and environmental care. Also, such a platform can give greater voting rights in decisions that affect their hyper-local communities, from budgeting to elections, etc. (Mire, 2018)

4 LIMITATIONS OF BLOCKCHAIN TECHNOLOGY

One of the technological shortcomings of the bitcoin technology is the speed of transaction processing, i.e., the small number of transactions per time unit that can be considered insufficient for efficient use. Bitcoin users were the first to notice this. Many did a lot of work on creating models with increased transaction speed. Table 1 shows the average duration of transactions of cryptocurrencies with the highest market cap in March 2022. Bitcoin has the largest market share, so it survives even though the transactions take a long time. However, one can see that followers in terms of market share are significantly faster, which gives them a competitive advantage.

Table 1 Average transaction speed of cryptocurrencies

Characteristic	Time [min]
BTC – Bitcoin	40
ETH – Ethereum	5
USDT – Tether USD - ERC-20 protocol	5
USDT – Tether USD - TRC-20 protocol	2
USDC – USD Coin	5
XRP – Ripple	n-i.
ADA – Cardano	10
LUNA – Terra	n-i.
SOL – Solana	n-i.
AVAX – Avalanche	1
DOT – Polkadot	2
DOGE – Dogecoin	40
UST – TerraUSD	n-i.

* *n-i. means near-instant*

Source: (Best, 2022)

The slowness of transactions is a consequence of the multitude of computational operations that need performing when validating a transaction and the demand for computing resources. Computer time is directly related to electricity consumption, affecting both the country's energy stability and environmental pollution. Thus, for example. China, a country that has long been at the forefront of Bitcoin mining and had a 75% share in total mining in September 2019, introduced a ban on further Bitcoin mining in June 2021. After that, the United States, Kazakhstan, and Russia took over. (EB, 2021)

Another problem with blockchain technology is related to the limitations of storage capacities. The total memory capacity is practically unlimited, but the capacities of individual nodes are limited. Also, the flow capacities of local networks are limited. All this affects the slowness of large blockchains. In the case of private blockchains with a small number of participants, these problems do not exist.

Legislation in the field of blockchain technology and cryptocurrencies is still undefined. There is no uniform attitude of state administrations towards cryptocurrencies in the world. It is clear to everyone this must be resolved. Many are researching, but concrete results are rare. The regulatory situation is changing over time. For example, in September 2021, China declared all the cryptocurrencies' payments illegal. Previously, China was seriously dealing with cryptocurrencies. (BBC, 2021) This ban is explained by the concern that cryptocurrencies "seriously endanger the security of people's property". In Serbia, the Law on Digital Property of June 29, 2021, recognized the field of digital property, cryptocurrencies, etc. The law defines digital assets as 'digital value records that one can digitally buy, sell, exchange or transfer'. One can also use it as a "medium of exchange for investment purposes". There are two types - virtual currency and digital token. Blockchain is recognized as a system used for transactions and ensures that each transfer of value occurs only once. According to this law, legal entities can receive cryptocurrencies. The only condition is that the value paid in cryptocurrency converts into dinars through an exchange office. In that way, though the buyer paid with cryptocurrencies, the legal entity will receive dinars to the account. (Maksimović, 2021)

When it comes to individuals, the possession of cryptocurrencies is considered the possession of the property, so taxpayers need to apply any capital gains from the sale of digital assets. In Serbia, one must apply within 120 days from the end of the quarter in which he realized the income from the transfer of digital property. This deadline should enable the citizen to submit a collective application for transactions performed in the previous period. The problem is that, even in March 2022, the citizen could apply only in paper form. Just filling out the application is quite creative and determining the amount of tax will be even more creative. If someone bought, e.g., Bitcoins on several occasions, he likely bought them at different exchange rates. When selling, he sold them at the rate stated in the application. But a huge difference can arise due to the reporting of the price at which he bought them. It is not the same whether the application will state, e.g., $ 1 or $ 25,000. Rilakovic (2022) proposes that a tax rate of 15% be applied to the entire sales revenue if there is no data on the purchase price. According to the valid Serbia laws on games of chance and personal income tax, the games via the Internet and telecommunications are exempt from paying taxes. The winner gets the entire amount he wins. Given the stochastic changes in the market, buying cryptocurrencies is very similar to the game. The citizen is the only one who is at risk. The state of Serbia generates less than 1% of public revenues from capital gains tax. We believe that the state could waive this tax until the market stabilizes. That would relieve both taxpayers and government employees of activities related to determining the amount of taxes, and the comfort of the citizens would increase, but it would also accelerate the development of new technology.

Significant obstacles to the introduction of blockchain technology in the companies' business include the lack of understanding of the technology itself by the management of these companies. A survey that included 1,000 directors from seven countries found that directors in the United States and some EU countries were ready to implement the blockchain in 2019 in the next few years. In the countries of Central and Eastern Europe, the use of blockchain was only announced. About 70% of respondents saw the blockchain as more than a payment technology, and 76% believed that the use of blockchain would be widely present. However, only 27% expressed a willingness to replace their existing system, or at least part of it, with blockchain technology. 42% of respondents thought that their management team understood this technology. (Deloitte, 2019) Provided that the survey results can be considered relevant, 42% is a respectable figure.

5 CONCLUSIONS

Blockchain technology has great potential in automation, exchange enhancement, process optimization, and information protection. It can be used for a variety of purposes. Due to the decentralized system, there are practically no capacity constraints. In addition to increased transaction security, blockchain allows better privacy for users. Reducing the amount of human labor involved also reduces the risks of incorrect manual data entry. Transactions can become much cheaper because "third-party" participation is not required. Transactions are at the same time more secure because the whole system is transparent. However, although transactions are generally simple, they need a lot of computer time, reliable hardware, and high consumption of power, so they cannot be free.

Blockchain time is coming. Companies announced many investments in this technology, but before they include blockchains into their business *en masse*, they need to understand it and provide staff who will successfully apply it. Given the rapid technological development of society, the speed of development of the application of blockchain will mostly depend on the building of social capacities and legal regulations.

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Received for publication:	04.05.2022
Revision received:	15.05.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Cekerevac, Z., & Cekerevac, P. (2022, 07 15). Blockchain and the application of blockchain technology. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 14-25. doi:10.12709/mest.10.10.02.02

Style – **Chicago** *Sixteenth Edition:*

Cekerevac, Zoran, and Petar Cekerevac. "Blockchain and the application of blockchain technology." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 14-25.

Style – **GOST** *Name Sort:*

Cekerevac Zoran and Cekerevac Petar Blockchain and the application of blockchain technology [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 14-25.

Style – **Harvard** *Anglia:*

Cekerevac, Z. & Cekerevac, P., 2022. Blockchain and the application of blockchain technology. *MEST Journal,* 15 07, 10(2), pp. 14-25.

Style – **ISO 690** *Numerical Reference:*

Blockchain and the application of blockchain technology. **Cekerevac, Zoran and Cekerevac, Petar.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 14-25.

MEST Journal
DOI 10.12709/mest.10.10.02.03

GREEN LOANS AND ECO LOANS IN THE BANKING SECTOR UNDER THE CONDITIONS OF CLIMATE CHANGES

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JEL category: **E5, E58, G21, G33**

Abstract

Environmental pollution and depletion of non-renewable resources are major problems at the international, national, regional, and local levels that endanger biological diversity, human health, and the further development of the economy. The economic and financial impact of climate change can lead to considerable future losses for banking financial institutions and environmental degradation is becoming a crucial dilemma globally. Climate change has become a threat to sustainable development. Mitigation and adaptation should be a priority of national policy. The increasing tendency of excessive consumption of natural resources due to intensive economic activity of corporations has led to a significant increase in greenhouse gas emissions, leading to global warming and, ultimately, to global climate change. These issues present the scientific community with the dilemma of finding a compromise between economic development and its impact on climate change. The main aim of the research is to emphasize the importance of responsible lending by promoting green banking products as green and eco loans, identify the potential environmental impact of negligent financing under the conditions of climate change, give definitions of this topic, consider current trends in the banking sector and prospects of development. Also, based on international experience, the authors tried to identify the main aspects of the environmental management policy of ProCredit Group and examine the share of the green loan portfolio at the group level, determine the environmental impact and subtract the improvement strategies and methods for implementing green lending in the Republic of Moldova.

Keywords: *banks, financial stability, green loans, environment, climate change, credit risk.*

1 INTRODUCTION

Nowadays, in the conditions of climate change responsible banking is becoming the most important direction that should be promoted among financial institutions to build a long-lasting and sustainable economic development.

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By promoting and stimulating green project investments in financial institutions it is possible to reduce negative environmental impacts and increase positive ones. The growing demand for financial products that support sustainable economic-, social-, and environmental development has created a need for adequate tools such as green and eco loans, which allow companies to finance initiatives that have a clear positive environmental impact.

Currently, environmental aspects play a crucial role in lending activities and rising concerns among banking institutions. One can explain that phenomenon by the expected fundamental climate changes in the following decades will presumably have a significant financial impact on world economic stability. Moreover, it will affect the availability and quality of water resources and press the planet's natural ecosystems, especially in coastal areas. Accordingly, it will influence all economic activities such as energy production and consumption, tourism and infrastructure, changes in demand for industrial products, and, in general, will affect the economic life of different geographical regions. All these effects imply the costs of services related to the environment and the named activities and indirect costs to public health and environmental pollution. Climate change has become a threat to sustainable development, and mitigation and adaptation measures must become a priority in national policies. The increasing population and consumption of material goods significantly contribute to the growth of the negative impact on the environment. (Stern, 2008)

Excessive consumption of natural resources has generated considerable growth in greenhouse gas emissions, causing global warming and ultimately global climate change. These issues put the scientific community facing the dilemma of finding a compromise between economic development and its effects on climate change. Finding this compromise will mean the sustainable development of humanity.

Climate and environmental risks have increasingly become important topics for central banks and financial regulators. Environmental risks can have a material impact on financial and macroeconomic stability. It is broadly accepted, and many central banks have started to develop micro and macro-prudential frameworks that incorporate risks related to climate change and the environment.

Following different analyses, climate risk is a growing financial risk worldwide. Therefore, it is necessary to take immediate and coordinated actions, at the international and national levels to mitigate the negative consequences of climate change by reducing greenhouse gas emissions and helping all countries to adapt to this impact which has already become inevitable. Unfortunately, the main problem is that most companies perceive climate change as a distant and irrelevant concept and are predominantly concerned about increasing their profitability at any cost rather than paying attention to the socio-environmental impact they could produce.

The main aim of the research is to emphasize the importance of responsible lending by promoting green banking products as green and eco loans, identify the potential environmental impact of negligent financing under the conditions of climate change, give definitions of this topic, consider current trends in the banking sector and prospects of development. Based on international experience, this research intends to identify the main aspects of the environmental management policy of ProCredit Group - in the Republic of Moldova, examine the share of the green loan portfolio (GLP) at the Group level, determine the environmental impact, and summarize the improvement strategies and methods for implementing green lending.

Moreover, the work is relevant because it illustrates the main aspects and the importance of green loans in the banking sector, and the main barriers and impediments that are slowing the process of green lending among banking institutions. It provides an overview of the environmental management policy in a banking institution considering the main trends in dynamics and the level of implementation of green lending among European and local banking institutions.

The main scope of this paper is to identify the causes, consequences, and methods of anticipating climate change and environmental degradation caused by the intensive economic activity of corporations. The influence of green lending on the quality of the loan portfolio of the ProCredit Group is investigated based on correlation analysis to reach the main subject of the researched topic. The authors used Student's T-test for understanding the level of significance and validation of the obtained results. The research is oriented toward the identification of the main obstacles to a green lending phenomenon in the banking system and the possibility of transition to a low carbon economy based on a SWOT Analysis of the green lending phenomenon.

The informational support of the research consists of the reports and publications of the international financial institutions (the International Monetary Fund, the Bank for International Settlements, the World Bank, the Basel Committee on Banking Supervision), the normative acts, the publications, and the statistical data on the official website of the National Bank of Moldova, publications on the research theme of central banks in European countries, results of scientific researches published in the Republic of Moldova, Romania and other countries, presentations included in international conferences, etc.

Research methodology is based on fact-finding, comparative analysis, correlation analysis, testing methods based on Student's T-test data validation, scientific observation, quantitative and qualitative analysis, graphic representation, classification, methods of statistics, induction, and deduction methods. The literature review on this topic was conducted by using as bibliography different sources such as legislative and normative acts, monographs and teaching papers, articles from periodical publications, and annual reports of international financial and non-financial institutions.

The value of the research is determined by the theoretical competence and practical relevance of the study, as well as the given recommendations, which implementation will contribute to reducing the negative and increasing the positive impacts on the environment.

2 PROCREDIT GROUP ENVIRONMENTAL LENDING AND PERFORMANCE IMPACT

Currently, the green lending phenomenon is a rapidly growing and promising segment of the global financial market. The analysis of the green lending activity at the level of PCB Group could strongly affirm that it is a development-oriented bank to make a significant contribution to reducing the climate change impact and acting in an environmentally responsible way by considering sustainability and responsible resource management.

Specifically, ProCredit Group consists of 12 legally independent ProCredit banks in 12 countries, Romania, Bulgaria, Serbia, Albania, Kosovo, Ukraine, Georgia, North Macedonia, Ecuador, Moldova, Germany, and Bosnia. Historically, Procredit Group issued the first green loans in 2006 within an EBRD-sponsored energy efficiency program followed by similar KfW-sponsored programs. Due to continued demand after their expiration, the group decided to continue to offer energy efficiency loans and began to develop their green lending methodology. It allowed to determine the eligibility of green investments and to calculate their impact on the Group level. Developing their approach was of high necessity as then was no industry standard for green lending.

Still, there is no harmonized definition for the kinds of lending that can be considered *green*, which makes any intercompany comparison difficult if not impossible. Fortunately, the European Union took up the fight against greenwashing and is currently developing the EU Taxonomy for Sustainable Activities. Procredit Group embedded a green lending approach within a broader green finance institutional framework developed together with the consulting company IPC in which ProCredit has its origin. Apart from definitions of what qualifies as *green*, the framework also includes a green governance structure, which consists of an environmental department in each bank and holding company that reports directly to management. At ProCredit, green lending means considering the environmental and social impact of every aspect of the performed operations and sensitizing, politicizing, and motivating the whole staff. As result, it could be concluded that even though the Group selection green criteria are becoming stricter the overall volume of lending is increasing in dynamics. (ProCredit, 2021)

According to the data analyzed, from 2016 to 2020, ProCredit Group has registered a sustainable development in dynamics focused on lending green banking products mainly to business clients. In 2020, the share of the green loan portfolio to business clients was 98% the same as in 2019.

However, the share of outstanding green loans to business clients remained the same, the volume of the green loan portfolio to private clients registered an increase by 42%, amounting to 2020 a green loan portfolio of 17 mln EUR. In 2020 the Group focused on private individuals, which resulted in a significant increase in the loans granted to private individuals. By analyzing the total volume of the outstanding green loan portfolio, one can conclude that during the period 2016 to 2020, the total volume registered an increase of 198% compared to 2016. Another aspect that needs to be mentioned is that the green loan portfolio has a positive tendency to increase each year. In 2020, the total growth of the GLP was 24% compared to the 2019 year. In 2019, the growth of the green loan portfolio was 17% in total.

By analyzing the total volume of green loans disbursed in dynamic, one can observe that the GLP is growing each year. In 2020, the new paid-off green loans, in total, registered an increase of 180% compared to the 2016 year and 16% compared to the 2019 year. These significant results are due to the efficient and proper internal policy and the high staff qualifications.

From the current analysis, one can see that the share of non - performing green loans during the mentioned period shows a positive tendency in dynamics of decrease. Because the new disbursed green loan portfolio is growing each year, the share of non-performing green loans is decreasing each year - from the non-performing loans share of 0.80% in 2016 to 0.60% in 2020. It is to conclude that the bank is well-performing. The results are proving these affirmations.

Over the last decade, ProCredit institutions have disbursed green loans to SMEs totaling EUR 1.8 bn, and as of the end of 2020, the outstanding green loans made up close to EUR 1bn or 18.7% of our total loan portfolio. With close to 20% of the loan portfolio allocated to green investments, ProCredit performs well in international comparison. The share of green loans in the total portfolio raised continuously since 2016 and it was expected to reach the 20% threshold by the 2021 year. Also, by analyzing the total loan portfolio of the ProCredit Group and the development of the green loan portfolio, one can conclude that the Group has sustainable development in dynamics with a positive tendency of increase both in absolute and relative proportion. The share of Green Loans in the Total Loan Portfolio considerably increased from 9% in 2016 up to 19% in the 2020 year. The positive dynamics of increase are kept mainly due to the internal environmental management system – oriented towards responsible banking with a focus on reducing the negative socio-environmental impact. The sustainable growth of a loan portfolio shows that the bank is more reliable and has a stable position in the market. Based on the performed analysis, we can conclude that ProCredit Bank is a responsible development-oriented bank that performs responsible banking activities. A part of this responsibility is to act by the predefined social, ethical, and environmental standards. A responsible approach to environmental protection[1] is an important part of ProCredit Bank's responsible business and social model and an integrated value in their banking philosophy. (ProCredit, 2021)

By researching the ProCredit Bank's environmental standard, one should outline that it aims to reduce the environmental impact of lending activities and integrate and implement environmentally friendly procedures in a comprehensive operating system. Also, the bank enhances the direct environmental impact on energy savings and decreases carbon dioxide releases. Thus, ProCredit Group continues to play an important role in raising environmental awareness among its employees, customers, and the public. It also supports civic initiatives for environmental protection.

Moreover, climate change risk for ProCredit Group is properly mitigated by numerous measures taken to reduce industrial pollution and enhance environmental protection. Through the actions and activities of its Environmental Committee, the ProCredit Bank is committed to implementing policies that advance the bank's approach to environmental impact management, both for the bank itself and its customers.

[1] Defined in (Law, 1993)

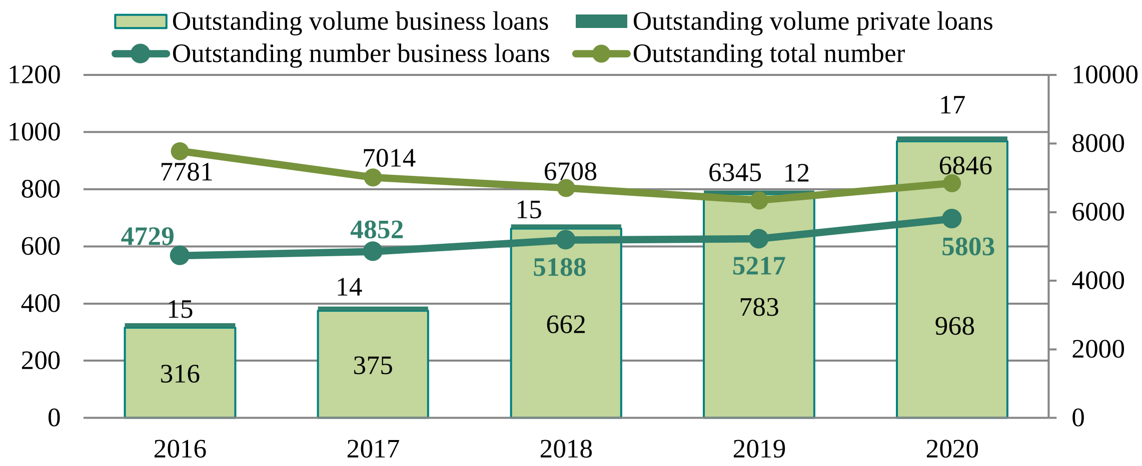

Fig. 1 The green loan portfolio of ProCredit Group during 2016 – 2020.
Source: elaborated by authors.

2.1 IMPACT OF GREEN LOANS AND ECO LOANS ON THE QUALITY OF PROCREDIT GROUP LOAN PORTFOLIO

We can define green banking as banking that takes account of environmental risks, including risks from climate change, which may have a material impact on the short and long-term stability and development of the financial sector and the macroeconomy. Financial investments are directly or indirectly affected by climate change and the harmful environmental effects of industrial processing such as air, water, and land pollution that should account for these in their risk assessments.

Environmental damages and climate-related risks affect the stability of banks, insurance firms, and other financial actors, and they need to be of concern for central banking. So far, only a few central banks and financial regulators have dealt with environmental risk, and even fewer considered it part of their systemic risk framework, although climate change risks can pose significant systemic risks to the financial sector and the economy. To determine the impact of green lending on banking activity[2] it is necessary to consider how the portfolio of bad loans changes depending on the presence of green loans in the structure of the total loan portfolio because the NPL is an indicator of the banking portfolio effectiveness of default risk management policy. The main objective of this study is to determine the impact of the green lending policy on the quality of the ProCredit Group Loan Portfolio. Using a sample of 12 banks, we examine how ProCredit banks' green lending affects credit risk. The study was conducted based on an eleven-year dataset of ProCredit Group from 2010 to 2020. The study contains an empirical assessment of the Green Credit Policy's success. (ProCredit, 2021) We used the non-performing loan ratio as a performance indicator for credit risk. An NPL is a loan when the debtor fails to make scheduled payments for at least 90 days. The research objective is to understand the financial risks of green lending compared to conventional lending. To find whether a higher green loan ratio reduces the share of the group non-performing loan ratio, the researchers used the panel regression techniques that include two-stage least square regression analysis and random-effect panel regression. Consequently, this study analyzes the impact of the green credit ratio on the loan NPL ratio. We checked the hypothesis that a higher ratio of green lending decreases the NPL ratio. The share of the green loan portfolio in the total loan portfolio was an exogenous variable because it affects the share of non-performing loans, and the share of NPLs will be recorded as an endogenous variable as it is influenced by exogenous:

a. share of green loan portfolio – exogenous variable (X).
b. share of non-performing loans – endogenous variable (Y).

[2] (Law, Law on banking activity nr. 202 from October 06, 2017, 2017)

Based on the correlation analysis, we can see an indirect linkage between the share of GLP and NPL ratio of the PCB group because they tend to change in the opposite direction as the tendency to increase one variable determines the decrease of the other. By calculating the correlation coefficient *(r)* among the share of GLP and NPL ratio of the PCB Group, we obtain the following:

$$r_{xy} = \frac{n\sum x_i\ y_i - \sum x_i \sum\ y_i}{\sqrt{[n\sum x_i^2 - (\sum x_i)^2\ ]\ [n\sum y_i^2 - (\sum y_i)^2\ ]}}$$

The results show $r(X, Y)$=-0.94077, which means a strong correlation among variables. So, there is a strong interlinkage among analyzed variables. But, to calculate the influence of exogenous on the endogenous variable, it is necessary to calculate the coefficient of determination r^2, which in this case is $r^2 = 0.8850$. We can conclude that the endogenous variable – non-performing ratio is influenced by the exogenous variable – share of the green loan portfolio, in the proportion of 88,50%.

Testing the significance of the correlation coefficient among the analyzed variable was made based on the Student's T-test in the following way:

1. Formulating the hypothesis:

H_0: ρ = 0, There is no correlation among variables.

H_1: ρ ≠ 0, There is a correlation among variables.

2. The critical value we took from the Student's *t* distribution table in dependence on the level of significance α (α=5% or a value less than 5%) and the number of degrees of freedom, $df=(n-2)$. The statistical value t we determined according to the formula:

$$t = \frac{r-p}{\sqrt{\frac{1-r^2}{n-2}}} = \frac{-0{,}94077}{\sqrt{\frac{1-0{,}8850}{11-2}}} = \frac{-0{,}94077}{\sqrt{\frac{0{,}1150}{9}}} = -8.32$$

The results show that statistical t has a value of - 8.32. The critical value of t according to Student's distribution for α= 5% and degrees of freedom df=9 has a value of $t(0.025;9;)$=2.262. By comparing the t values the decision is made as follows:

if*|*t*|<*t_(α/2;(n-2);) we will not reject the hypothesis H0 which stipulates that between variables there is no correlation.

if*|*t*|>*t_(α/2;(n-2);) we will reject the hypothesis H0 which stipulates that between variables there is no correlation.

Respectively: $|t|$=|-8.32|=8.32 is higher than $t(0.025;9;)$=2.262 as |-8.32|>⟦t⟧(0,025;9;)=2.262. That result shows that we can reject the null hypothesis H_0: $\rho = 0$, which assumes that there is no correlation among variables. With a confidence of 95%, we can conclude that the analyzed variables are in a strong indirect linear correlation.

Studies on green lending suggest that sustainability criteria integration has increased the quality of the credit risk assessment significantly, and it contributed to decreasing the NPL ratio. The results suggest that allocating more green loans to the total loan portfolio does reduce the PCB group NPL ratio. We concluded that developing the green lending industry among financial institutions has a positive effect on reducing the negative environmental impact and improving the financial performance of a banking institution. The study contributes to the stimulation of financial institutions to develop and promote green banking products focusing on reducing the negative environmental impacts and credit risk. By analyzing the correlation analysis results, we concluded that environmentally oriented green projects influence the quality of the loan portfolio. For the clients, responsible banking and green investments have a positive impact. They contribute to the efficient allocation of financial resources intending to reduce the depletion of natural resources. (LMA, 2021)

Based on the researched topic, financial institutions with higher environmental sustainability have less regulatory risks because they have a lower probability of being fined for environmental misconduct and are better prepared to adopt any regulatory changes regarding environmental issues. On the contrary, banks with lower environmental sustainability face higher stakeholder and reputational risks. Perceptions of environmental issues have changed, leading to increased public awareness and media coverage. Thus, no one can longer neglect the ecological aspect. Green lending is oriented towards a long-lasting economic activity through proper funds allocation and increased profitability for both sides – demand and supply.

Thus, we can conclude that nowadays, the environmental aspect should be considered the default risk of a company that could be negatively affected by a lack of ecological sustainability. The banking sector may also significantly influence biodiversity while providing financial support to high-impact sectors such as forestry, mining, oil and gas, fisheries, and infrastructure. In project finance, banks may exercise their powers by assuming roles as environmental policemen to ensure that their borrowers comply with the environmental standards and could enter a partnership with different industries and encourage companies to be more sustainable.

Findings that the effect of green lending on credit risk is positive on the bank development also suggest that mechanisms and platforms for commercial banks to learn from ProCredit banks on risk management in green lending could be beneficial and improve the quality of loan portfolio. In addition, this study contributes to understanding the financial stability of the lending institutions of ProCredit Group as a whole by addressing whether sustainability integration in the form of green lending mitigates environmental risk exposures.

The results suggest that allocating more green loans to the total loan portfolio does reduce the NPL ratio. The study contributes to the literature on the correlation between green lending and credit risks and the impact of institutional pressure on environmental and financial risks. The green credit policy requires banks to offer green credits for ecological protection, emission reduction, energy conservation projects, and restrict loans for high-pollution, high-emission, and overcapacity industries. In addition to reducing environmental harm, the policy also strives to lower the financial risks identified in heavily polluting industries, with the intended added benefit of improving financial sector stability. In the case of banks with a non-significant systemic impact on the banking sector, the plans may contain simplified requirements. When developing such plans, both the commercial bank and the central bank will focus on close cooperation, having as their primary objective the least impact on the country's financial system and the resources of the public budget.

2.2 BARRIERS TO ENVIRONMENTAL LENDING

However, sustainable investment project financing remains at an early stage of development. The promotion of environmentally related banking products has been underway for nearly a decade in some EU markets. Thus, currently, there are only a few banks that offer dedicated loan products or actively promote the benefits of such investments related to green projects. The main reason for such tendency is mainly due to several potential market barriers that create impediments to the development of green lending. Accordingly, the main barriers to environmentally lending can be categorized as follows:

- regulatory barriers – enabling environment underpinning the environmental lending.
- demand-side barriers – are related to awareness and willingness among end borrowers to invest in ecological activities, and
- supply-side barriers – are related to the capacity and willingness of local financial institutions to develop products and the ability of international financial institutions to support them. (OECD, 2014)

In many countries and markets, the lack of clarity as to what constitutes green lending can be an obstacle for investors, companies, and banks seeking to identify opportunities for green investing. Many companies are interested in investing in green projects but the lack of disclosure of environmental information by companies increases the “search costs” for green assets and thereby reduces their attractiveness. In addition, when a company- or project-level ecological information is available, the lack of consistent and reliable “labeling” of green loans also constitutes a barrier to green investment. In some countries, there is the segregation of data management in different agencies. Data collected by environmental regulators are not shared with banking regulators, and investors also face information asymmetry. Some of the barriers from the regulatory side of environmental lending include (OECD, 2014):

- *Low energy prices*: energy prices are perhaps the most significant factor in determining the level of investment that flows into energy efficiency products. Many markets continue to subsidize the energy costs for either social protection or industrial competitiveness. That reduces the economic benefits of investing in energy efficiency, lowers the rates of return, and increases the payback periods.

- *Weak regulatory environment:* the environment policy remains weak in encouraging borrowers to access environmental lending. Environmental benefits of clean technologies, such as reduction in greenhouse gas emissions or pollutants, may not be recognized sufficiently in national legislation. Many countries do not have dedicated teams or institutions to support energy efficiency development.

Some progress appeared in addressing information asymmetry. For example, more and more stock exchanges have issued environmental disclosure guidance for listed companies, and several countries have introduced mandatory disclosure requirements. Another important kind of information asymmetry includes a lack of information or knowledge of the commercial viability of green technologies and policy uncertainties on green investment. This lack of information and policy uncertainty results in excessive risk aversion by investors towards projects in renewable energies, new energy vehicles, and energy-saving technologies. Some of the major barriers from the demand side of environmental lending include (OECD, 2014):

- *Lack of understanding of the benefits among the borrowers:* lack of understanding of the main advantages of investing in green projects in the long run as most companies do not consider the efficient allocation and management of natural resources.
- *Lack of willingness to borrow for energy efficiency:* potentially high initial capital costs for energy efficiency equipment can act as a disincentive. The focus is on the short run rather than on the long run. Also, they ignore the environmental aspect and do not consider the negative impact they could cause. The main goal is to increase profitability with lower costs rather than doing a responsible business. Green Project investments require a more period than a standard loan granted as it requires a more detailed analysis of project validation.

The general understanding of the financial implications of environmental risks by financial institutions is still at an early stage. Many banks and institutional investors must develop the capacity to identify and quantify the credit and market risks that may arise from their environmental exposure and often underestimate the risks of "brown" investments and overestimate the risk profile of green investment opportunities. Partly as a result, there remains an overinvestment in polluting and greenhouse gas-intensive projects and underinvestment in green projects. Some of the major barriers to the supply of environmental financing include:

- *Lack of familiarity:* local financial institutions tend to lack familiarity with environmental lending products as engagement in green lending requires training on a timely basis and additional costs. Limited application of sustainable banking principles due to reasons such as the lack of understanding of their importance, the lack of consistency between risk management and green lending guidelines (at the country- or bank level), and the lack of reporting practices, resulting in difficulties in measuring the provision and performance of green lending.
- *Lack of financial institutions' capacity:* environmental lending products have strict technical performance standards. Such banking products require significant investments in terms of staff time, information systems, credit and risk assessment procedures, eligibility checks, reporting procedures, and product marketing.
- *Profitability and resource considerations:* implementing green banking products requires high resource costs. Thus, the profitability of the financial institution may be negative or lower in the early testing and adoption phase because of the above demands. The process of analysis of a green investment loan often requires a higher period and resource allocation than a standard installment loan.
- *Maturity mismatch for green lending:* Some banks are constrained in their ability or interest in extending long-term loans due to relatively short maturity on the liability side of their balance sheets and the need to avoid excessive maturity transformation. On the other hand, many green projects such as water

and waste treatment, clean energy, clean transportation, and some energy-efficient buildings are long-term in nature and tend to have higher capital expenditures and lower operative expenditures than conventional projects. Where capital markets are less developed or banks are not effectively tapping the bond market to increase their sources of long-term funding, such a maturity mismatch could be a major constraint on the financing of long-term green projects.

– *Lack of international funds allocated to Green Lending* – there are few international funds allocated through local financial banking institutions for financing such kinds of investment projects that are having as the main goal of reducing the negative environmental impact and optimization of intensive usage of natural resources. Also, due to increased funds attractiveness, there is a high demand for them, and some companies may face a lack of availability of funds.

2.3 SWOT ANALYSIS OF GREEN LENDING

This study used the SWOT analytical tool to assess the strengths, weaknesses, opportunities, and threats of green lending activity within banking institutions. The main identified green lending activity strength is providing considerable environmental support by reducing the carbon and greenhouse gas emissions in the atmosphere. It contributes to the cost optimization of companies as by implementing and investing in green projects the entities obtain a more efficient electricity consumption and have lower operative costs. (Stern, 2008)

As an additional strength, green lending allows for resource savings and proper allocation and management of natural resources, which contributes to reducing industrial pollution. The most important aspect of environmental lending is reducing and mitigating the credit risk. Studies show that the higher the share of the green loan portfolio, the smaller the share of non-performing loans, which leads to a better quality of the bank's loan portfolio. Furthermore, the environmental awareness of a bank implies an improvement in its reputation and has a positive impact on its goodwill.

Analyzing the main weaknesses of green lending, we can identify green investments require huge starting costs because they are based on the long-term business development of the company and require higher costs than the usual investment. This type of investment usually needs more time for project checking and more complex financial analyses, which affect the duration of document processing. Another important aspect related to the negative sides of green lending assumes a shortage of funding and difficulties in accessing funds. This is mainly due to the high demand for such banking products because they have more favorable lending conditions than standard ones. Among weaknesses of green lending, there is conceptual and technical uncertainty, which usually requires employee training to increase the product awareness among banking employees and its client. One of the key opportunities of green lending activities of banking institutions is international recognition as it contributes to the improvement of the reputation. In addition, it leads to the development of a circular economy based on the principles of waste and pollution design, maintenance of products and materials in use, and regeneration of natural systems. Other green lending opportunities include alternative economic opportunities, sustainable and long-lasting development with a long-term business vision, and responsible lending banking practices based on increasing positive environmental output. (LMA, 2021)

The most common threat to environmental lending remains to be the ignorance of the environmental impact aspects and the short-term development vision of business owners that is mostly concentrated on profit maximization with the reduced initial costs. Unfortunately, the human individualistic and self-contributory approach remains to have a considerable barrier to environmental lending activities. A significant role in impediments to the green lending approach of banking institutions has the insufficient support offered by governmental authorities worldwide. An additional factor of influence constitutes the lack of enthusiasm from the supply and demand side due to the increased initial costs in implementing green projects and higher payback period in comparison to a standard loan.

By researching green lending using SWOT analysis, environmental aspects bring more identified strengths than weaknesses. Moreover, based on this analysis, the investment opportunities provided by green projects outweigh most of the weaknesses identified. Thus, we can conclude that green lending practices offer convenient effects, the implementation of such investments is more rational, and investment efficiency in terms of costs and long-term sustainable development of the company is favorable.

Climate change mitigation is possible through efficient allocation of financial resources towards green investment projects that are having a considerable positive impact on the reduction of carbon and greenhouse gas emissions. We cannot avoid that risk, but if we properly anticipate it, we will have time enough to realize massive collective actions at the national and international levels. Thus, to build a long-term vision of the business development we should take it more seriously and be responsible for our actions. Financial institutions, especially banks, have a unique market position as they have deep market knowledge and experience across all economic sectors. They arguably have one of the widest networks, outreaches, and client bases and can shift consumer behavior by scaling up and redirecting financing flow towards low carbon and climate-resilient investments.

3 CONCLUSIONS

Green lending is part of a comprehensive environmental approach that ProCredit Bank of Moldova is adopting intending to substantially improve its internal and external environmental impacts and, in this way, contribute to climate change mitigation.

Building up a strong “green loan” portfolio is one of the main objectives of the environmental strategy of the banks. Thus, green loans promoted by the bank are designed to complement the existing loan offer to business and private clients by financing measures in the areas of energy efficiency, renewable energies, and other environmentally related fields.

For ProCredit Bank of Moldova to achieve a bigger impact on the environment through its operations, it is necessary to improve the environmental lending approach in the country. Thus, the review of the international experience of green lending activity in European banking institutions indicates the following recommendations for the ProCredit Bank of Moldova:

- Increase the awareness of green banking products among local customers by intensification marketing activity by using different advertising channels.
- Emphasize to customers the benefits and advantages of green investments and provide proper consultancy regarding the environmental impact of their business activity and offer the best green solutions for their long-term development.
- Engage in becoming a partnership bank of more international financial institutions to allocate a higher volume of available funds for financing eligible green projects with better lending conditions and a simple application process.
- Improve information communication and a sharing mechanism for environmental protection and financial departments as departments of environmental protection and business crediting should properly divide their work, strengthen cooperation, and establish information-sharing mechanisms through such means as an information platform and a corporate credit information system.
- Establish a separate Green Lending department with a focus on green lending activity to SMEs and PIs. In this regard, the bank will be more efficient in terms of a green lending approach to its clients and will reach a higher increase in the green loan portfolio.
- Develop more attractive own green banking products by offering preferential loan conditions, higher grace periods, longer maturity, and fewer collateral requirements. Green banking products should be diverse, not only installment loans but also green cards, green accounts, etc.
- Establish a structured branding of green financial products and services. It plays a significant role in achieving client loyalty and ensuring that such products are tailored to the local specific needs and requirements. The proper and consistent branding of innovative products and services can play a substantial role in overcoming knowledge and perception barriers sometimes faced by “green” offerings.

- Allocate additional time and financial resources to investments in staff training related to the main aspects of green banking products and eligibility criteria for loan categorization.
- Organize training and conferences for local university students to increase their familiarity with concerning green lending banking products, the need for environmental protection, and climate change risk mitigation.
- Assess existing local green programs that could be implemented in the Moldovan banking system and help banks to identify key barriers to green lending.
- Stimulate the local commercial banks to develop green products and engage in more international financing programs.
- Require clients to consider their environmental impacts and the sustainability of the business activity when receiving the loan and reporting on its use.
- Offer preferential loan conditions to those clients that are performing their business activity in compliance with the socio-environmental requirements and monitor their environmental footprint in terms of CO_2 emissions, water, electricity consumption, and energy savings.

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Received for publication:	11.03.2022
Revision received:	15.04.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Ciobu, S., & Sajin, T. (2022, 07 15). Green loans and eco loans in the banking sector under the conditions of climate changes. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 26-37. doi:10.12709/mest.10.10.02.03

Style – **Chicago** *Sixteenth Edition:*

Ciobu, Stela, and Teodora Sajin. "Green loans and eco loans in the banking sector under the conditions of climate changes." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 26-37.

Style – **GOST** *Name Sort:*

Ciobu Stela and Sajin Teodora Green loans and eco loans in the banking sector under the conditions of climate changes [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 26-37.

Style – **Harvard** *Anglia:*

Ciobu, S. & Sajin, T., 2022. Green loans and eco loans in the banking sector under the conditions of climate changes. *MEST Journal,* 15 07, 10(2), pp. 26-37.

Style – **ISO 690** *Numerical Reference:*

Green loans and eco loans in the banking sector under the conditions of climate changes. **Ciobu, Stela and Sajin, Teodora.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 26-37.

MEST Journal
doi: 10.12709/mest.10.10.02.04

FEATURES OF CHANGE MANAGEMENT IN SMEs IN THE ERA OF INFORMATIZATION OF SOCIETY

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JEL Category: **M15, M19**

Abstract

The trends of recent years of business development testify to the cardinal changes that have swallowed up companies. Small and medium enterprises face serious challenges related to informatization and digitalization. Considering the specifics of this business area, one can say that organizational changes in such companies will be significantly different. This article deals with the problems associated with changing environmental conditions, namely, digitalization, and possible options for overcoming the existing difficulties. The SME sector is facing serious challenges in the crisis. In addition to the external factors faced by all national companies, the overall digitalization has a significant impact, which affects an increasing number of companies in the Republic of Moldova and worldwide. This study aims to answer a multifaceted question: What are the features of the enterprises' adaptation in this sector to modern provocations? Many contemporary authors consider the conceptual characteristics of this issue. The topic of the digitalization of society is very relevant, but the authors pay little attention to small and medium enterprises. Given their importance in the Moldovan economy, we analyzed the specifics of the transition of this sector of the Moldovan economy.

Keywords: *management, innovation, SME, uncertainty, motivation-incentives, organizational change, strategic change, leadership, teams, organizational structure.*

1 INTRODUCTION

We live in an era of rapid development of information technology, which invariably encourages changes in all areas of life. Several decades ago, to convey information visually, it was necessary to send it using the post office, then by fax, but now these channels of information transmission have been practically forgotten. Accordingly, management processes have accelerated several times.

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Many researchers pay attention to the problem of the weak adaptation of companies to such changes.

The sector of small and medium-sized enterprises (SME sector) faces many problems that SMEs often cannot solve alone.

This study aims to clarify features of the enterprises functioning in this sector and develop some recommendations for overcoming the difficulties that stand in the way of the necessary changes.

This study aims to clarify features of the enterprises functioning in this sector and develop some recommendations for overcoming the difficulties that stand in the way of the necessary changes.

The author presented several tasks to achieve this goal:

- *first*, to systematize the characteristics of theoretical research in the fields of change management, industrialization 4.0, and informatization of society.
- *second*, to reveal the features of SME activities in the Republic of Moldova.
- *third*, to identify the features of the functioning of these enterprises and identify the main problems of their functioning based on practical research.
- *fourth*, to identify further ways for SME development, given the challenges of the modern external environment.

2 NEW REALITIES OF THE MODERN WORLD: THE VIEW OF SCIENTISTS

The characteristics of the modern external environment that affects enterprises are described in numerous modern studies. Klaus Schwab calls the provocations of modernity the Fourth Industrial Revolution, or Industry 4.0, Thomas Siebel calls the era of "Digital Transformation", Erik Brynjolfson and Andrew McAfee (2017) talk about the "Age of Machines", Tjeue Blommaert and Stephan van den Broek - the Age of Singularity. But regardless of how we call it, we can highlight the main features that all authors found.

First, these are rapid changes that build up with the force of exponential growth, that is, the speed does not increase linearly but with an increasing effect. In addition, the authors listed above believe that this era can be divided into two stages: the first - linear growth, that is, gradual, and the second - exponential, which will gradually lead to a singularity, as defined by Tjeue Blommaert and Stephan van den Broek. That is, to a state where machines will reprogram themselves alone. (Blommaert & Broek, 2017, p. 14)

The authors believe that the first stage lasted until 2015 because, in 2016, the second stage of the Fourth Industrial Revolution began to develop, which, in their opinion, will turn into a singularity in 2030. In addition, the famous futurist Ray Kurzweil predicts that this time will come around 2035. As can be seen from figure 1, the development of the second stage is exponential compared with the relative linearity of the previous stage.

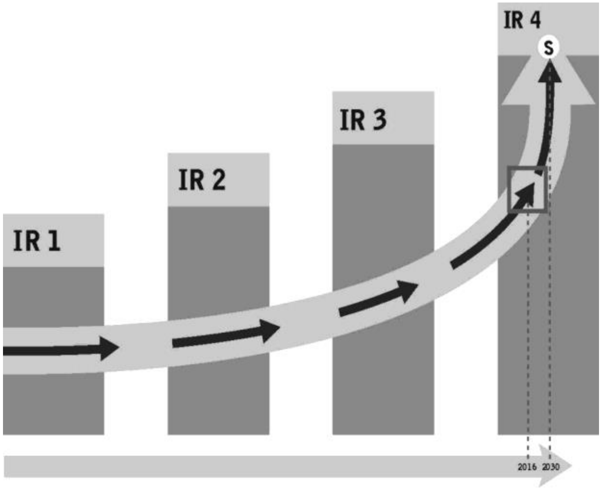

Fig.1 Road to the singularity
(Blommaert & Broek, 2017)

Second, the technologies that are revolutionizing society and business interrelate in many ways: in the way they are digitally empowering, scaling, complementing each other, and challenging legacy systems. (Shwab, 2022, p. 192)

Thirdly, to take advantage of the information age, it is necessary to consider the latest technologies to achieve advantages, embedding human values in them for the common good, for example, environmental protection, and human rights. (Shwab K. , 2018)

Fourthly, all the above authors tend to believe that companies should form ecosystems in which there are close ties between suppliers, consumers, and intermediaries, in addition, they should establish close contacts with universities to mutually beneficial cooperation and develop innovative solutions.

For some CEOs, digital transformation poses a serious threat due to opposition or lack of understanding of the need for their introduction. At the same time, Thomas Siebel believes that “the size of a company does not affect its stability and longevity. Small agile start-ups are crowding out giants that have ceased to develop ” (Siebel, 2019,

p. 38) With this phrase, the author testifies to the advantage of SMEs to update quickly and thereby adapting to the external environment.

So, the modern environment is complex, uncertain, changing quickly, carries many risks, and at the same time, advantageous. In the next section of the article, we will consider which management model will be adequate in this new and unfamiliar environment.

3 ORGANIZATIONAL PERFORMANCE AND CHANGE MANAGEMENT: A REVIEW OF APPROACHES

It is appropriate to start this section with the famous phrase of the world-famous management guru Peter Drucker: "The greatest danger in all times of instability is not instability itself, but actions by the logic of yesterday". With this quote, Frédéric Laloux begins his famous study Reinventing Organizations (Laloux, 2014).

In it, the author presents the original idea of the evolution of organizational functioning through metaphors that reflect a certain color. Today's external environment necessitates a transition from an orange or green metaphor to a turquoise path of development, which corresponds to the highest values: self-governing organizational structures, coordination, and knowledge sharing between teams, trust instead of control, decision-making process based on consultation rather than individual opinion, creating a safe and trusting communication environment. Change in such organizations proceeds more smoothly than usual. Turquoise organizations, acting in the likeness of living organisms, have an internal ability to sense changes in the environment and adapt to them from the inside. According to this concept, changes are given initially and occur naturally, everywhere, and constantly.

A logical question is: what are the conditions for such organizations' creation? Laloux argues that there are two necessary conditions - a worldview CEO corresponding to the turquoise level of consciousness and perception, at best, other leaders of the organization adhere to the same type of thinking.

The second condition is the sharing of views of turquoise functioning by business owners. Summing up the above, we note that the construction, successful functioning, and adaptation of the organization to changes depending on the approach chosen by the top management confirm the paramount importance of leadership in the process of organizational change.

Let us also clarify that the author adds the following statements to the conditions for the existence of such organizations:

1. The principle of turquoise is relevant for all companies, regardless of the field of activity.
2. Size does not matter (so, given that the object of our study are SMEs, this approach is relevant for them also).
3. The geographic and cultural environment also does not matter (therefore, we believe this approach is also relevant for companies operating in the Republic of Moldova).

The author of the concept of self-learning organizations, Peter Senge (1990), talks about the need to build new systems in which employees continuously improve their ability to achieve the desired results. Non-standard thinking is encouraged in such an organization. Employees are trained constantly, as they see it as necessary. At the same time, the company has a collective goal and joint actions to achieve it. In our opinion, such an organization is completely in line with the concept of "turquoise" of the previous author.

Norman Wolfe (2011), also considered a model of the "living organization". He also argues for the need to move away from the "organization-machine" (in which everything calculates in advance), and the principles of bureaucracy operate (one-man command, strict hierarchy, control, and subordination, etc.). The limitations of such a system are inherent in the principles of the system's functioning. That corresponded to the time of its appearance, i.e., the beginning of the 20^{th} century. Living energy, according to Wolfe, directs the energy flows of each employee into a holistic flow, and transforms collective energy and efforts into products and services that are the result of the company's business process.

The author considers it appropriate to use Kurt Lewin's "Force Field" model to understand the forces of resistance and the forces of assistance to understand the factors influencing change. Let us add that, in the author's opinion, Lewin's model "Unfreeze - Change - Refreeze" (Lewin, 1947) is experiencing significant changes if it is not obsolete. The phases of "unfreezing" and "freezing" are no longer relevant because the system is constantly changing, like a living organism, adapting to all changes in the external environment.

Wolfe focuses our attention on a specific set of skills that all employees should possess functional, personal, and interpersonal skills. He adds three more requirements to leaders: management skills, teamwork, and interaction (Wolfe, 2011, p. 216)

Analyzing the conceptual foundations of change management from the examples of several authors, we can say with certainty that researchers are inclined to believe that organizations in the modern world cannot operate in the old way and that the management paradigm must change unequivocally. Top management and other leaders must change the principles of activity. Otherwise, companies will not survive.

Regarding the object of this study, small and medium-sized enterprises, at first glance, things should be different for such companies. SMEs are smaller, which means that interaction is simpler. The organizational structure is not so cumbersome. The transfer of information does not go through many levels at which it can be distorted. There is no strict hierarchy. But at the same time, many modern companies, from the SME sector, are built on the principle of "rational bureaucracy" based on the assumptions that the more control - the better, trust - but check, the manager knows better what the company needs, etc.

4 SMEs IN THE NEW ERA

In the Republic of Moldova, as in other states, the share of SMEs is high. Considering the data of the National Bureau of Statistics, at the beginning of 2021, there were 57.2 thousand, which represents 98.6% of the total share of all enterprises in the republic. 316.8 thousand people worked in SMEs, i.e., 60.1% of the total employees. SMEs accounted for 39.3% of the total sales revenue across the entire Moldovan economy in 2020. At the same time, the average sales revenue per SME in 2020 amounted to 2.62 million lei. Thus, this sector plays a significant role in all the economic processes of the Republic: in 2020, sales revenues decreased by 4.6% compared to 2019, given the lack of statistical data for 2021 (in the Republic of Moldova, the deadline for submitting financial statements for the previous year until May 30).

The state of enterprises naturally deteriorated due to the pandemic associated with the COVID-19 virus, and this year additional difficulties fell on the republic - a complication of the political situation and worsening economic conditions due to a sharp rise in the cost of resources and a surge of refugees from a neighboring country. In addition to the complex current situation, SMEs operate in an external environment related to the factors described in the second section of this study, namely, the informatization of society, which is developing at an accelerated pace. Turning to the opinions of the mentioned experts (Siebel, Schwab, etc.), companies should benefit from the situation associated with digitalization. This benefit should save time, and resources, speed up business processes and improve the quality of goods and services. Thus, they have no choice but to accept the current conditions of the game.

The third section of the article described new trends in change management models that SMEs need to apply. In the next section we will consider some issues related to the perspective of SMEs in the Republic of Moldova regarding the challenges of the digital age.

5 STUDY OF THE PROBLEMS OF SMEs IN THE RM IN THE CONTEXT OF MODERN CHALLENGES

Let us present the data of a study conducted by the author in January-February 2022 on 45 enterprises in various fields of activity. 97.5% of them operated in 2021. 30% of the total companies worked 5-10 years, and 25% of companies have been working for 20-30 years on the market. The financial indicators of 50% of companies showed stable growth. In 40% of companies, growth and decline have been changing. 75% of subordinates and 25% of managers participated in the survey.

According to respondents, the following factors influenced the key indicators of companies (Fig. 1)

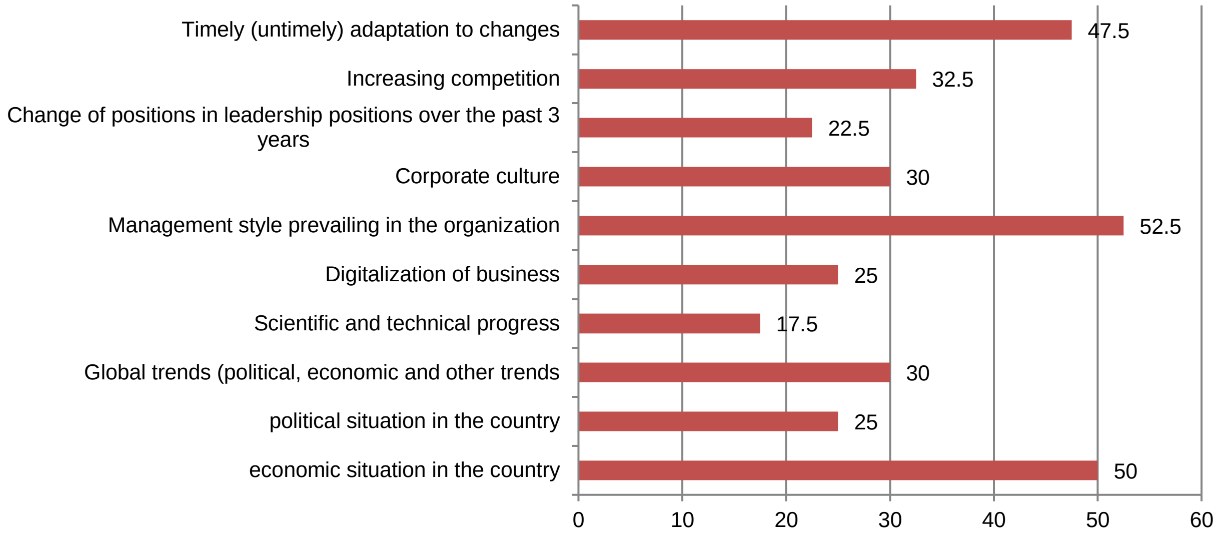

Fig. 2. Factors that have the most significant impact on the financial results of companies in the Republic of Moldova according to the respondents (research results)

As can be seen from the diagram, respondents consider the main factors that affect the financial performance of an enterprise to be the prevailing management style in the organization, the economic situation in the country, and the company's timely or untimely response to changes. It is noteworthy that the leadership style in the company turned out to be the most significant. Hence, we can say with certainty that the management system in the company plays a decisive role.

It should also note that the study took place before the outbreak of hostilities, so, in our opinion, this figure is not as high as one might expect today.

In addition, the indicator associated with scientific and technological progress weights 17.5%, and the digitalization factor also has a less significant impact on the development of SMEs, according to respondents. This may be due, firstly, to the respondents' insufficient awareness of the need for transformational changes, and secondly, to the prevailing stereotype that digitalization is carried out mainly by large enterprises. In addition, the reason for the weak assessment of this factor may be the fear of employees regarding the inability of enterprises to carry out the informatization process for various reasons.

In continuation of the survey, respondents answered the question if the company has carried out organizational changes in the last 3-5 years, to which 70% of respondents answered in the affirmative. On the one hand, this is good because most enterprises are still subject to organizational changes. On the other hand, the percentage of enterprises that have not carried out changes is quite large. Referring to the above concepts, this is unacceptable in the current situation.

The following aspects of the study dealt with issues related to initiating change. Given the conceptual foundations of change management presented at the beginning of the work, regarding the approach that the organization works like a living organism, changes should be initiated from the bottom up, constantly occur in teams, and organically fit into the work of the organization. The survey results focus to the actual and desired state of the change initiation process in operating organizations.

Analyzing the data in Chart 3, we come to the following: the desired and actual states diverge, - most respondents tend to take a mixed approach in the process of initiating organizational changes, but at the same time, in reality, most changes (62.5%) are initiated by the CEO of the company, respondents do not see the need in initiating changes at lower levels (grassroots management and subordinates), as evidenced by rather low rates: in both cases, 2.5%. Based on this chart, one can judge the prevalence of an authoritarian approach to decision-making and initiating change in the companies under study. The fact that respondents do not support grassroots initiation of change suggests that company personnel are not ready to move to the activities of self-managed teams or turquoise organizations.

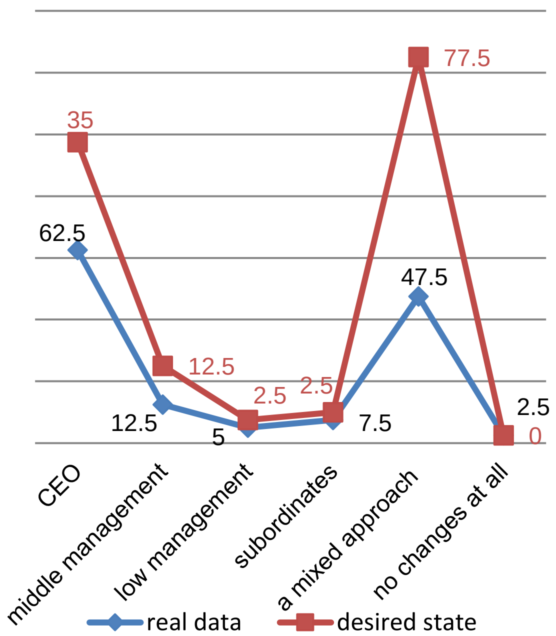

Fig.3. Actual and desired initiators of change (% of the surveyed personnel of enterprises according to the results of the study)

It is favorable that no one doubts the need for change, as evidenced by the zero value, although in some companies (2.5%) there are no changes.

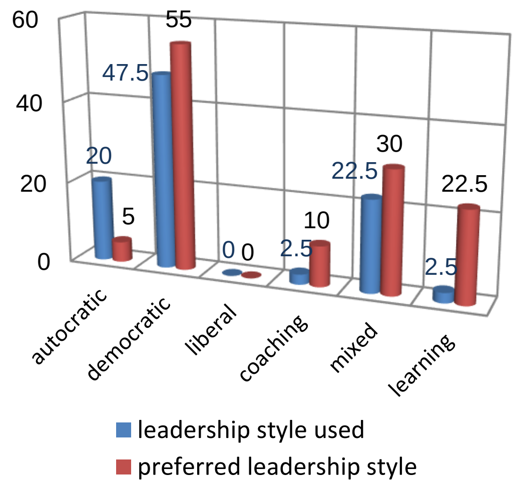

Fig.4 The current and desired leadership style of employees of the studied SMEs
Source: results of the study

The next question is also important in researching the problems of SME change and relates to the prevailing leadership style. The importance of research in this area is undoubted because, in the sections that cover the concepts of change management, we clearly emphasized a certain style of leadership.

From survey answers the preferred leadership style is democratic (55%). At the same time, it is used by 47.5%, which indicates a high rate. That is a favorable factor on the path of transformation. The second most preferred is the mixed option with 30%. It is implemented in 22.5% cases. This indicator leads to the conclusion that the staff prefer situational leadership. Next in importance is the training type, which values have an insignificant gap.

In the context of theoretical studies of turquoise organizations and self-learning teams, we conclude that the style of coaching is ideal for managing in the current conditions, but, unfortunately, the respondents paid little attention to it. At the desired value, it was chosen by 10% of employees, 2.5% use it.

6 CONCLUSIONS

The study of the theoretical and practical features of the activities of modern enterprises allows us to draw several conclusions.

- First, the modern environment causes all enterprises to abandon the models operating in other eras or industrial revolutions. SMEs are no exception and, therefore, they should use all the advantages associated with their small scale to their advantage. It is about relatively fast decision-making, greater flexibility in relation to large companies, and greater substitutability of employees. But, at the same time, the data of the conducted analysis testify to the insufficient readiness of such companies to carry out the transition to a higher stage of development.
- Informatization of society involves a large amount of information that changes rapidly. To streamline organizational processes, it is necessary to consider business processes carefully. At the same time, under the influence of new technologies, production processes will be implemented automatically, so employees have more time for creative work.
- Creative work is significantly more effectively realized in self-organized teams, based on which modern organizations should work.
- Understanding all the uncertainty is often very hard so the company should be leaded by mentoring leadership type, a coaching.
- Difficulties related to the specifics of SME activities, with high costs and low working

capital, can be partially solved by saving funds by switching to digital systems. That reduces costs and time and, in turn, improves communication processes within the organization and with external parties - suppliers, customers, etc.

The presented work we can summarize by the conclusion that one should not even think whether the changes are needed because they are. Therefore, it is crucial to develop a change management model incorporated into the system itself and will meet its needs. Previous change models assumed that the company, having made changes, would work in a new way, fixing them with rules and standards, the current situation shows that it is necessary to develop an "adaptation" model, which means an appropriate leadership style, organizational structure, corporate culture, team, and to all this add information technology. SMEs have their way, which involves cooperation with similar companies, constant learning, and, of course, changing the above factors.

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NOTE

This article is part of a post-doctoral study
"Creating the Organizational Change Management Model for Small and Medium Enterprises Through the Challenges of Industrialization 4.0",
nr. 22.00208.0807.10/PD I.

Received for publication:	11.03.2022
Revision received:	15.04.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Dorogaia, I. (2022, 07 15). Features of change management in SMEs in the era of informatization of society. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 38-45. doi:10.12709/mest.10.10.02.04

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Dorogaia, Irina. "Features of change management in SMEs in the era of informatization of society." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 38-45.

Style – **GOST** *Name Sort:*

Dorogaia Irina Features of change management in SMEs in the era of informatization of society [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 38-45.

Style – **Harvard** *Anglia:*

Dorogaia, I., 2022. Features of change management in SMEs in the era of informatization of society. *MEST Journal,* 15 07, 10(2), pp. 38-45.

Style – **ISO 690** *Numerical Reference:*

Features of change management in SMEs in the era of informatization of society. **Dorogaia, Irina.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 38-45.

MEST Journal
doi: 10.12709/mest.10.10.02.05

SURROGATE MOTHERHOOD IN UKRAINE AND AROUND THE WORLD: LEGAL REGULATION & MANAGEMENT PRACTICE

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JEL Category: **K38, M19**

Abstract

This paper presents the results of theoretical and practical studies of surrogate motherhood in Ukraine and worldwide, its legal regulation, management practice, and prospects of development. It deals with a critical analysis of Ukrainian legislation concerning this subject. The methodology of the research consisted of primary and secondary sources of information. The authors collected primary data from semi-structured interviews with Ukrainians living in Poland, Ukraine, the United States, and several other countries. The interviews aimed to investigate the reasons for the growth of commercial surrogacy in Ukraine. The authors also scrutinized the attitudes of Ukrainians towards the flourishing of this phenomenon in their country. Secondary information the author took from sources such as the International Labour Organization (ILO), the United Nations (UN), and others. The paper also considers surrogacy maternity as a legal fiction and one of the rights of the fourth generation and discusses the links between surrogate pregnancy, exploitation, and human trafficking.

Keywords: *surrogate motherhood, Ukraine, world, legislation*

1 INTRODUCTION

The surrogate pregnancy method allows women to bear a child for another woman or a couple with or without a financial reward. The scientists P. Saxena, A. Mishra, and S. Malik give the following definition: “Surrogacy refers to a contract in which a woman carries a baby through pregnancy ‘for’ another couple” (Saxena, 2012). If the object of the surrogate pregnancy is a financial reward, it is known as commercial surrogacy. If the surrogate pregnancy was undertaken voluntarily, and not for profit, it is considered altruistic surrogacy. The majority of developed countries worldwide prohibit

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commercial surrogacy and allow only altruistic surrogacy. In a minority of countries, commercial surrogacy flourishes successfully by legal or illegal means. Where the law is not enforced illegal schemes of all kinds proliferate, including illegal commercial surrogacy. This paper aims to explore surrogate pregnancy in Ukraine and worldwide, considering its legal regulation, management practice, and prospects for further development.

2 THE METHODOLOGY OF THE RESEARCH

The methodology consisted of analyzing primary and secondary data. Primary data was collected through qualitative semi-structured interviews with Ukrainians to discover their attitude toward commercial surrogacy in their country and to look at related legal issues. Around 50 Ukrainians were chosen for interviews, using the purposive sampling method. They were invited to participate in the semi-structured interviews. The aim was to explore their attitudes to commercial surrogacy in Ukraine. Overall, 45 people took part in the research via the Internet during the Covid-19 pandemic from March to May 2020. This data, including names and surnames, was coded. The first participant was coded as P 1 and so on (from P_1 to P_45). All participants agreed that the research results the authors can use in this paper. As the secondary data sources, the authors used data from international organizations (ILO, UN), different websites (Saxena, 2012; BioTexComClinic, 2020), articles, books, and chapters of books on the subject. The authors used legislation of Ukraine and other countries. Also, the authors considered Data from the Ministry of Social Policy of Ukraine, the Constitution of Ukraine, the Civil, Family, and Criminal Code of Ukraine, and Orders of the Ministry of Health and the Ministry of Justice of Ukraine.

3 PREVIOUS RESEARCH IN THIS AREA

International scientists worldwide have studied various aspects of surrogacy, including the ethical, cultural, biological, medical, religious, legal aspects. The group of researchers V. Jadva, C. Murray, E. Lycett, F. MacCallum, and S. Golombok studied this issue from the point of view of the surrogate mothers (Jadva, 2003). H. A. Tehran, S. Tashi, N. Mehran, N. Eskandari, T. D. Tehrani, and other scientists studied the emotional experiences of mothers who gave birth to children for other women. (Tehran, 2014) The third group explored other aspects of surrogacy; among them, there were N.H. Patel, Y.D. Jadeja, H.K. Bhadarka, M.N. Patel, N.H. Patel, and N.R. Sodagar (Patel, 2018). E. Teman studied the social construction of this kind of motherhood (Teman, 2008), while G. Torres, A. Shapiro, and T.K. Mackey analyzed the legal regulation of surrogate pregnancy in ten countries in South America, comparing them to the international framework (Torres, 2019). J.G. Payne, E. Korolczuk, and S. Mezinska made a critical review of surrogacy relationships (Payne, 2020). The study of surrogacy and its various aspects is still in its infancy because each country has its legislation. The production of a common international standard on the regulation of surrogacy would be extremely useful.

3.1 Historical roots of the appearance of surrogate motherhood in the world

Surrogate pregnancy has a long history dating back to antiquity and only technology has changed the way modern surrogacy happens. Different methods and means, similar to surrogate pregnancy existed in many countries of the ancient world. Plutarch writes that Stratonice, the wife of the king Deiotarus of Galatia, chose the beautiful captive girl, Electra, to bear their heirs. They were educated with just as much love as if they had been born by Stratonice herself (Plutarchus, 2011). A similar story is described in the Bible, Gen. 16:1-4: "Now Sarah, Abram's wife, bore him no children. She had a handmaid, an Egyptian, whose name [was] Hagar. {16:2} And Sarah said unto Abram, behold now, the LORD hath restrained me from bearing: I pray thee, go unto my maid; it may be that I may obtain children by her. Moreover, Abram hearkened to the voice of Sarah. {16:3} And Sarah, Abram's wife, took Hagar her maid the Egyptian after Abram had dwelt ten years in the land of Canaan and gave her to her husband Abram to be his wife. {16:4} and he went unto Hagar and she conceived: and when she saw that she had conceived, her mistress was despised in her eyes" (The Bible, 2005). Thus, it is possible to see that in ancient Judea, infertile women used the assistance of female slaves to bear their children. Also, S. Hostiuc writes that 'in Ancient Rome, womb rental - ventrem locare - was a common practice. In this, there was a man whose wife was fertile and able to give her temporarily to another man, whose wife was sterile or whose pregnancies were ending in stillbirths' (Hostiuc, 2018).

3.2 Examination of surrogacy maternity as a legal fiction

According to the theory of law, it seems that surrogate maternity is very close to such a category as legal fiction. The Black's Law Dictionary, says, that *legal fiction* or *fiction of law* means: "an assumption or supposition of law that something which is or may be false is true, or that a state of facts exists which has never really taken place", or "a rule of law which assumes as true, and will not allow being disproved, something which is false, but not impossible", or "Something is known to be false is assumed to be true, and these assumptions are of an innocent or even beneficial character and are made for the advancement of the ends of justice" (Black, 1968). So, in the case of surrogacy, two different women are assumed to have the features of a mother (the genetic and the surrogate one), but each of them separately does not have these features, and it is done to protect the legal private, social, and state interests.

3.3 Exploration of surrogacy maternity as one of the rights of the fourth generation

Surrogate maternity is a very controversial phenomenon from legal, social, biological, and ethical aspects. People of the conservative worldview, as usual, think that surrogacy is an inadmissible interference of a human into God's prerogatives, an infringement upon the sanctity of marriage and family. At the same time, liberals think that surrogate maternity is one of the rights of the fourth generation, which includes, also, rights to euthanasia, cloning, transplantation, same-sex marriages, and changes of sex (Ivanii, 2019).

4 EXPLORATION OF THE RELATIONSHIP BETWEEN SURROGATE MOTHERHOOD, EXPLOITATION, AND HUMAN TRAFFICKING

It is necessary to answer the question: Surrogacy is not an act of human trafficking and exploitation of women? On the other hand, is it an act of exceptional humanism and mercy, when single people or infertile couples receive the happiness of motherhood and fatherhood, procreation, and heir? In this context and according to our opinion, the truth is somewhere in between. According to item (a) of Article 3 of the Protocol to Prevent, Suppress, and Punish Trafficking in Persons, Especially Women and Children, "trafficking in persons" means the "recruitment, transportation, transfer, harboring or receipt of persons, through the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or a position of vulnerability or the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for exploitation. Exploitation shall include, at a minimum, the exploitation of the prostitution of others or other forms of sexual exploitation, forced labor or services, slavery, or practices like slavery, servitude, or the removal of organs" (The UN, 2004). At the same time, according to the item (b) of this article, "the consent of a victim of trafficking in persons to the intended exploitation outlined in subparagraph (a) of this article shall be irrelevant where any of the means outlined in subparagraph (a) have been used" (The UN, 2004). According to international law, as was written above, "exploitation should be considered exploitation of the prostitution of others or other forms of sexual exploitation, forced labor or services, slavery, or practices like slavery, servitude or the removal of organs" (The UN, 2004), but not surrogate maternity. In our opinion, surrogate maternity is not the exploitation of a woman (surrogate mother), because first, her consent is based on her own free will. Second, she may act with good intentions to help single people or infertile couples. And third, she may receive different forms of compensation, including direct material profit (commercial surrogate maternity). Otherwise, a desire of a husband to have a child, the involvement of a wife in raising a child, even assignment on a woman of any one function of housekeeping should be considered as an exploitation of a woman. At the same time, a desire of a wife to have a child, the involvement of a husband in raising a child, the necessity of a husband to work to receive a salary to maintain a family, and the assignment of a man of any function of housekeeping should be considered as an exploitation of a man, etc. Undoubtedly, these will lead the family to the abyss of a legal and bureaucratically absurdity: one party will make a lawsuit over who should take out the trash today, and another one will make a countersuit over who should buy bread today and for whose money. The existence of a court of appeal, a court of cassation, and other judicial institutions will transform such kinds of litigations into the familial ‘Hundred Years' War’, where nobody will win because the family will die of hunger without the bread or will drown in an ocean of garbage. Also, in our opinion, not every case of surrogacy should be considered as “an act of exceptional humanism, kindness, and mercy, committed to helping childless couples or single people,” because many surrogate mothers act from mercenary motives, and their moral and intellectual level, with all respect, is far from perfect. Besides, the question of whether surrogacy is a form of human trafficking and exploitation should be answered. It should be noted that surrogacy should not be considered human trafficking or exploitation unless it is carried out by the methods set out in the above-cited Protocol (The UN, 2004).

Therefore, surrogate maternity should be considered as a form of human trafficking or exploitation only if it is done ‘using the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or a position of vulnerability or the giving or receiving of payments or benefits to achieve the consent of a person having control over another person (The UN, 2004). In other cases, surrogate maternity should not be considered a form of human trafficking or exploitation. Besides, it is necessary to say that non-commercial surrogate maternity is not a form of human trafficking, because in this case the provided service is not paid. Also, under ordinary conditions, commercial surrogate maternity is not a form of human trafficking, because the genetic parents pay only for the services (reimburse for expenses) of the surrogate mother and the medical personnel, and a child, is created with the help of surrogacy, is their offspring. If some parents turn their child into a slave (as was permitted in Ancient Rome by the Law of the Twelve Tables of 451-450 BC, the type of creation of this child (natural birth or birth with the help of surrogacy) will not play an important role in the criminal prosecution of guilty persons and will not have an important influence on the imposed punishment. (Johnson, 1961) By the way, it is necessary to remember, that the condemnation of slavery is the achievement of the last century and a half, and that slavery was abolished only in 1833 in the British Empire, in 1848 - in France, in 1865 - in the USA, etc.

5 LEGISLATION OF SOME COUNTRIES WORLDWIDE ON SURROGATE MOTHERHOOD

The legal status of surrogate maternity depends on the legislation of a certain country. Surrogacy is banned in many countries in Europe. Countries such as Canada, Australia, New Zealand, and the UK, highly restricted it. (Bromfield, 2014) In Canada, Israel, and the UK, commercial surrogacy is banned, but an altruistic surrogate may be reimbursed for reasonable expenses related to the pregnancy (Henaghan, 2013) In Germany, Italy, France, Japan, and China, surrogacy is banned outright (Henaghan, 2013) and no form of surrogacy is permitted. In the USA, several states have liberal surrogacy laws, but US citizens still enter into global surrogacy arrangements with women from other nations, because of the prohibitive expense of surrogacy services in the USA (Henaghan, 2013). Some of the authors had similar opinions on reasons for Western individuals to search for surrogate maternity abroad: ‘increasingly, Western individuals or couples enter into surrogacy arrangements with women from lower-resource nations such as India or Thailand not only because surrogacy arrangements are less costly than elsewhere but also because the laws may be less restrictive than in their home countries, where commercial surrogacy may be either highly restricted or illegal’ (Bromfield, 2014). It is necessary to say that the current legislation on surrogacy is not perfect, even in those countries where it is permitted.

6 LEGISLATION OF UKRAINE IN THIS AREA AND ITS ANALYSIS

Ukraine is a country where surrogacy is very often. In this case, it is necessary to analyze the Ukrainian legislation as an example. The legal aspects of surrogacy are regulated in Ukraine by such acts of legislation as the Ukrainian Constitution of 1996 is (Constitution of Ukraine, 1996). The Civil Code of Ukraine, Article 281. The Right to Life (Article 281 as amended by the Law of Ukraine of 02.11.2004 N 2135-IV) (The Civil Code of Ukraine, 2004). The Family Code of Ukraine No. 2947-III of January 10th, 2002, Article 123 "Establishing Maternal and Paternal Affiliation in Case of Medically Assisted Procreation and Ovum Implantation" (The Family Code of Ukraine, 2002). The Order of the Ministry of Health of Ukraine 'On approval of the Procedure for the Use of Assisted Reproductive Technologies in Ukraine', No. 787 of September 9th, 2013. (The Order of the Ministry of Health of Ukraine, 2013) The Order of the Ministry of Justice of Ukraine of October 18th, 2000, No. 52/5 'About approval of Rules of civil registration in Ukraine' (The Order of the Ministry of Justice of Ukraine, 2000).

In our opinion, it is necessary to say that some aspects of the above-mentioned acts are rather controversial and even may contradict the natural rights of humans and the human rights of the fourth generation. Part 7 of article 281 of the Civil Code of Ukraine declares the right of an adult woman or man the undertake medical treatment programs of supportive *reproductive technologies* according to the *medical indications* (The Civil Code of Ukraine, 2004). These provisions of the law contradict articles 21 and 24 of the Ukrainian Constitution of 1996, which declare the principle of equality, part 3 of article 51 of the Ukrainian Constitution of 1996 that says that "The family, childhood, motherhood, and fatherhood shall be under the protection of the State" (Constitution of Ukraine, 1996). Also, the cited-above part 7 of article 281 of the Civil Code of Ukraine contradicts parts 1-2 of article 5 of the Family Code of Ukraine of 2002, which say: "The State protects the family, childhood, motherhood, fatherhood, and creates conditions for the strengthening of the family. The state creates conditions for motherhood and fatherhood, ensures protection of mother and father rights, and financially and morally encourages and supports motherhood and fatherhood" (The Family Code of Ukraine, 2002) because it limits the usage of surrogacy only in the cases of *medical indications* and *medical treatment programs*. In such a way it deprives the procreation rights of healthy but lonely and unconnected people. The provisions of part 1 of article 49 of the Family Code of Ukraine are even more imperfect. They say, "The wife has the right to motherhood" (The Family Code of Ukraine, 2002). The provisions of part 1 of article 50 of the Family Code of Ukraine say that "The husband has the right to fatherhood" (The Family Code of Ukraine, 2002), because they put the right to fatherhood and motherhood independently of the family status, deprive the procreation rights of lonely unconnected people, and push them to the extramarital relationship, which was considered immoral until the mid-20th century. The licensure of the medical practice, connected with assisted reproductive technologies (sub-section 1.4), is one of the good provisions of the Order of the Ministry of Health of Ukraine 'On approval of the Procedure for the Use of Assisted Reproductive Technologies in Ukraine' No.787 of September 9th, 2013 (The Order of the Ministry of Health of Ukraine, 2013). At the same time, sub-sections 1.7, and 6.1 of this Order say that *medical indications* are the necessary conditions for the usage of surrogacy (The Order of the Ministry of Health of Ukraine, 2013). Therefore, we see that the current legislation of Ukraine deprives the procreation rights of healthy but lonely unconnected people by the demand for the existence of *medical indications*, and we think that this is an unjust and harmful practice. Paragraph 11 of chapter 1 of the title III of the Rules for State Registration of Civil Status Acts in Ukraine as approved by the Order of the Ministry of Justice of Ukraine No. 52/5 of October 18th, 2000, defines the procedure of the state registration of the child, born by the surrogate mother. It prescribes that the state registration of the child's birth is made by the application of the spouse whose child embryo was moved into the organism of the surrogate mother.

According to the document, which proves the fact that a child was born by this woman, her notarized consent that the spouses will be written as a parent of a child, and the certificate which proves the genetic relation of parents (mother or father) to the fetus should be added (The Order of the

Ministry of Justice of Ukraine, 2000). It is necessary to add that a child, born with the help of the supporting reproductive technologies, should have the same rights as children, born naturally. Of course, such a child should have a family connection with the genetic parents (father, mother), but not with the surrogate mother, because else wise the usage of the supporting reproductive technologies (surrogacy) will lose any sense, and the base for the abuses of the surrogate mother will be created. At the same time, the surrogate mother should have the right to adopt the child in the case of the death or abdication from a child of one or both genetic parents and in other similar cases. In our opinion, such aspects of surrogacy should have additional legal regulation. Taking into consideration the dire demographic situation in Ukraine and the impossibility to control the fate of Ukrainian children abroad, the law should prescribe that only the citizens of Ukraine have a right to use supportive reproductive technologies on the territory of Ukraine. The law should prescribe those supportive reproductive technologies (services of surrogate maternity) that may be used not only by infertile married couples but also by single people, who have no reproductive health disorder. To avoid fraud and falseness in surrogacy, the law should prescribe that the contract of surrogacy should be notarized, that genetic parents should contribute the whole amount of money for the surrogacy into the notarial deposit, and this money should be transferred to the surrogate mother and/or the medical institution only after the state registration of the child's birth by the genetic parents and the confirmation of their genetic relation to the child by the sure remedies of the modern medical science. The law should prescribe that medical, social, and other specialized services should control not only the health status of genetic parents (father, mother) and the surrogate mother, but also their morale, intellectual, and social status, as well as the real aim of the supporting reproductive technologies usage. Article No.168 of the Criminal Code of Ukraine of 2001 (The Criminal Code of Ukraine, 2001). 'Disclosure of the secrecy of adoption' - should be supplemented with the words "*and of the usage of the supportive reproductive technologies (surrogate maternity)*" to secure from different offenses the family, childhood, motherhood, and fatherhood by the means of the Criminal Law. Probably, these recommendations may be relevant not only for Ukraine but also for other countries.

7 THE RESULTS OF THE SEMI-STRUCTURED INTERVIEWS AMONG UKRAINIANS ON THEIR ATTITUDES TO THE DEVELOPMENT OF COMMERCIAL SURROGACY IN UKRAINE

To explore the attitudes of Ukrainians toward the development of commercial surrogate motherhood in Ukraine, semi-structured interviews have been conducted with Ukrainians, who currently live in Poland, the USA, the Czech Republic, and Ukraine. Ukrainians participated in the interviews through the Internet from March-May 2020. The results of most of the questions were analyzed as a percentage of responses of the participants, and 45 participants of the research were equated to 100%. Thus, 45 Ukrainians of different ages, levels of education, place of living, and employment participated in the interviews. The names and surnames of the participants were coded in the paper. They have received the codes from P_1 to P_45. The interviews were based on a questionnaire, which consisted of 10 questions.

Question 1 was about the age of Ukrainians, who participated in the semi-structured interviews. According to the replies of the participants:

- 34% of them were young people between 21 and 25 years.
- 9.4% were between 26 and 30 years old, and
- 9.4% were between 31 and 35 years old.
- 12.5% of participants were between 36 and 40 years old.
- 6.3% between 41 and 45 years old, and
- 28.4% of participants were 46 years old and older.

Question 2 was about the educational level of the participants. As a result, educated and very well-educated persons participated in the research. According to their answers:

- 18.8% of them had a Ph.D. degree;
- 43.8% had a university degree, and
- 37.4% had a college degree.

Question 3 was about the employment of the participants. Concerning the answers of the participants about their employment:

- 58.3% of the participants worked now on conducting the interviews.
- 21.9% were temporarily unemployed.
- 6.2% of them were labor migrants.
- 6.3% of them were retired persons, and
- 7.3% were students.

Question 4 was about the parenting of the participants: '*Do you have children?*' 56.3% of the participants had children. The minority, 18.7% of the participants, did not have children, and 25% of the participants did not have children yet.

Questions 5-10 were about the attitudes of the participants to the development of commercial surrogacy in Ukraine, its legal regulation, management practice, and prospects of development.

Question 5: '*How do you feel about the flourishing of commercial surrogacy in Ukraine in the last few years?*'

- 34.4% of the participants had a positive attitude toward the development of commercial surrogacy in the country.
- 25% of the respondents had a negative attitude.
- 12.5% did not care.
- For 21.9% of the participants, this subject was not interesting in general.
- 3.1% of them answered that their attitude to altruistic surrogacy is positive, but commercial surrogacy aims to sell children, and it is not good.
- 3.1% of the participants were sure that commercial surrogacy is a consequence of the impoverishment of the country.

Question 6: '*Do not you think that Ukrainian women are used as raw materials for carrying and giving birth to children for foreigners, at a time when Ukraine itself is experiencing a deep demographic crisis and even a collapse?*' In this case:

- 43.8% of the participants positively answered this question; they agreed that Ukrainian women were used as raw materials.
- 34.4% of the respondents disagreed with this idea, and
- 21.8% of the participants did not care about the situation in general.

Question 7: '*In your opinion, is this issue enough regulated at the legislative level in the country? As known, Ukraine has one of the most liberal laws on this subject.*' According to 50% of the participants, this issue in Ukraine is unresolved at all. 44% of the participants were unsure if they knew enough about national legislation on commercial surrogacy in Ukraine to make conclusions. 6% of the participants answered that Ukraine suffers from spiritual impoverishment, and it is a reason for the most liberal laws on this matter.

Question 8: '*In connection with the pandemic and quarantine, the issue of commercial surrogacy has become widely covered by the media in Ukraine. In your opinion, is the birth and removal of children from Ukraine one of the forms of human trafficking?*' According to their answers, 37.5% of participants agreed that commercial surrogacy is one of the forms of human trafficking. 40.1% of the participants did not support that opinion. 18.9% of the participants were unsure about their position on this question. 3.5% of the participants answered that such a situation exists because of the bad life in Ukraine.

Question 9: '*What measures would you take regarding commercial surrogacy in Ukraine if you could influence and manage the situation?*' According to the responses of the participants, 22% of them would like to ban commercial surrogacy in Ukraine in general. At the same time, 19% of the respondents would like to ban commercial surrogacy in Ukraine for foreigners. Besides, 47% of the participants would like to improve the national legislation on this issue according to international standards of law, and 12% of the participants proposed perfecting moral, ethical, and spiritual principles in Ukrainian society, which should reduce the popularization of commercial surrogacy in Ukraine among women.

Question 10: '*Commercial surrogacy is banned in most civilized countries. Why is commercial surrogacy allowed and thriving in Ukraine?*' The participants had different opinions on this question. Some of the opinions of the participants are below:

- Participant P_1: “Because the law does not work in Ukraine”.
- Participant P_3: “Because Ukraine is a third world country. Everything is possible here”.
- Participant P_4: “Because of total poverty of population”.
- Participant P_5: “Because people think about money. Awareness of some wrong steps will come later”.
- Participant P_7: “Because of weak positions of the state of Ukraine, and the legal framework inside of the country”.
- Participant P_10: “Because not every woman can give birth to a child for medical reasons.”
- Participant P_11: “Because of the unemployment and low wages inside of the country”.
- Participant P_14: “Because people don't have money to live”.
- Participant P_15: “Because the country is so far from civilization”.
- Participant P_17: “Because the law in Ukraine does not work”.
- Participant P_19: “Because people in the country are poor and because of that they participate in a program of commercial surrogacy for money”.
- Participant P_23: “The reasons are low living standards of Ukrainians and economic insecurity in the country”.
- Participant P_25: “Because Ukrainians are poor people”.
- Participant P_26: “Because of money”.
- Participant P_28: “All the questions must be addressed to the Ukrainian Government”.
- Participant P_26: “Because Ukrainian women are healthy women”.
- Participant P_29: “Because, unfortunately, in recent time, Ukraine can no longer be called a civilized country because in the country everything is bought and sold”.
- Participant P_32: “Because of poverty in the country”.
- Participant P_35: “Because it is profitable for someone”.
- Participant P_36: “Because Ukraine is one of the cheapest countries for commercial surrogacy in the world”.
- Participant P_38: “Because it is the individual choice of each person, it is also an opportunity to make money”.
- Participant P_40: “Because the Ukrainian Government does not care about Ukrainian women and future generations of Ukrainians. I am also convinced that the Government benefits from such an activity”.
- Participant P_43: “Because of poverty in the state of Ukraine. Commercial surrogacy is a kind of activity to earn money”.
- Participant P_45: “It seems to me that most families do not have enough money for living. According to that, women take such steps to make money in this way”.

8 SOCIO-ECONOMIC REASONS FOR DEVELOPING COMMERCIAL SURROGACY MATERNITY IN UKRAINE

To understand the motives and reasons for Ukrainian women to be surrogacy mothers, it is necessary to analyze some national and international data, as well as to consider the fact that most Ukrainian women live in a poor and violent environment. Ukraine is a poor country compared with some countries, where Ukrainians traditionally try to find a better life. Among these countries are Poland, Germany, the Czech Republic, Turkey, Canada, and the USA. In case when a monthly minimum wage in Ukraine on 1 January 2020 consisted of 158 EUR, and on 1 July 2020 consisted of 175 EUR according to the data of the Ministry of Social Policy of Ukraine (Ministry of Social Policy of Ukraine, 2020), the monthly minimum wages of the countries - recipients of Ukrainians were several times higher. According to the data from Trading Economics, the minimum monthly wage in Poland in January 2020 was 523.09 EUR, and it was over three times higher than the Ukrainian minimum monthly wage in January 2020. The minimum monthly wage in Turkey in January 2020 made up TRY 2943 or 384.21 EUR. This minimum monthly wage in Turkey was over two times higher than the Ukrainian wage in January 2020 (Trading Economics, 2020). For the last ten years, Ukrainian women were forced to find employment abroad due to poverty, unemployment, low wages, and lack of social security in their country-of-origin, Ukraine. As a rule, they earned abroad around 600-800 EUR per month.

Therefore, it is not surprising that some Ukrainian women have chosen commercial surrogacy in their country of origin for a financial reward of 16-21 thousand EUR for the birth of a child according to the data of one of the clinics in the capital of Ukraine (BioTexComClinic, 2020). If this sum is divided by 9 months of pregnancy, a woman earns around 1.8-2.3 thousand EUR per month of pregnancy. For a poor country, it is a good financial reward in comparison with a monthly minimum wage in the country - around 158-175 EUR per month. It is the main reason, why commercial surrogacy maternity develops very actively in Ukraine.

Besides, one of the important reasons for developing commercial surrogacy maternity in the country is domestic violence in Ukrainian families. Sometimes Ukrainian women, who suffer from domestic violence at home, cannot leave their violent husbands because they just do not have money for survival, especially with child/children. This stratum of Ukrainian women may very easily become surrogacy mothers, just for survival. Thus, the search for the financial independence of Ukrainian women is one of the most important, but not the last reason why they become surrogacy mothers.

9 MANAGEMENT PRACTICE OF SURROGACY MATERNITY IN UKRAINE AND ITS PROSPECTS FOR DEVELOPMENT

Surrogacy is developing very actively in Ukraine due to cheapness, affordability, liberal legislation, poorly functioning moral and ethical norms in the society, poverty, unemployment, the presence of high levels of violence in Ukrainian families, and so on. All these factors, taken together, provide a favorable basis for the development of surrogacy in Ukraine. This is not a favorable factor but a very worrying one. Thus, Ukraine is not approaching, but moving away from civilized societies. Thus, Ukrainian legislation must be brought into line with international law for the development of surrogacy to become part of the international community, where human rights, women's rights, and the rights of the child are a priority.

10 CONCLUSIONS

Based on theoretical and practical sources, the paper explored the crucial aspects, reasons, managing practices, and the prospect of surrogate maternity in Ukraine and the world. Among the aspects, there were historical roots of surrogacy, the examination of surrogacy maternity as a legal fiction, a right of the fourth generation, exploitation, human trafficking, etc. Besides, the paper dealt with the legislation of Ukraine and some countries worldwide on surrogate motherhood, opinions and attitudes of Ukrainians on developing commercial surrogacy in Ukraine, reasons for the development of commercial surrogacy maternity in Ukraine, as well as a management practice of surrogacy maternity in Ukraine and its prospects of development. In general, we came to the following conclusions: Different forms of surrogate maternity have a long history and are known since the period of Antiquity. From the theory of law, surrogacy should be considered close to legal fiction. Surrogate maternity should not be considered the form of human trafficking, exploitation of women, as well as ‘an act of exceptional humanism and mercy.’ Supportive reproductive technologies (surrogate maternity) are one of the human rights of the fourth generation. The prohibition exists only if it is supported by punishment. Therefore, countries that do not recognize surrogate maternity may adopt laws, which establish the legal liability for such types of activities. However, they must remember that groundless prohibitions provoke the appearance of the black market and violations of the law. Therefore, authorities should be very cautious and judgmatical in the context of permission or prohibition of surrogacy. Surrogate maternity should be permitted, but it should be controlled by the state and used, first, in the interests of its nation, but not the foreigners. The usage of surrogate maternity only by the ‘medical indications’ is an unjust limitation of single people’s rights, and they should receive the right to fatherhood and motherhood with the help of supportive reproductive technologies. The disclose of the usage of supportive reproductive technologies (surrogate maternity) should be punished by the Criminal Law in the same way as the disclosure of the secrecy of adoption.

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Received for publication:	18.02.2022
Revision received:	04.05.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Dzholos, S. V., & Koshulko, O. (2022, 07 15). Surrogate motherhood in Ukraine and around the world: Legal regulation & management practice. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 46-56. doi:10.12709/mest.10.10.02.05

Style – **Chicago** *Sixteenth Edition:*

Dzholos, Sergii V., and Oksana Koshulko. "Surrogate motherhood in Ukraine and around the world: Legal regulation & management practice." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 46-56.

Style – **GOST** *Name Sort:*

Dzholos Sergii V. and Koshulko Oksana Surrogate motherhood in Ukraine and around the world: Legal regulation & management practice [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 46-56.

Style – **Harvard** *Anglia:*

Dzholos, S. V. & Koshulko, O., 2022. Surrogate motherhood in Ukraine and around the world: Legal regulation & management practice. *MEST Journal,* 15 07, 10(2), pp. 46-56.

Style – **ISO 690** *Numerical Reference:*

Surrogate motherhood in Ukraine and around the world: Legal regulation & management practice. **Dzholos, Sergii V. and Koshulko, Oksana.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 46-56.

MEST Journal
doi: 10.12709/mest.10.10.02.06

Review article
MEST Journal
MESTE WORLD

EVALUATING THE FINANCIAL AND ECONOMIC PERFORMANCE OF PROJECTS

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JEL Category: **O16**

Abstract

The importance of assessing financial performance lies in highlighting all financial and economic criteria needed to assess the project's success or failure in achieving its objectives. The scientific goals of this paper are the scientific description and classification of liquidity problems and their impact on the financial performance of economic service entities, especially the discovery of financial and economic factors of service projects and their scientific explanation. This paper aims to evaluate the company that deals with the financing of the producers. It also reviews the financing results and, finally, gives appropriate recommendations for the control of their work. The financial performance of companies is assessed using recognized valuation tools and techniques in the field of investments, especially cash investments. Two main results were obtained in the conducted scientific research: (1) Libya has benefited significantly from the evaluation of the financial performance of projects dealing with liquidity problems and their impact on the financial performance of enterprises. (2) The percentage of total expenditures exceeded the percentage of total revenues in the years in which companies began to implement their projects, which led to losses of Libyan companies because of excessive spending and reduced revenues.

Keywords: *producer financing companies, financial performance, performance assessment, economic service entities, service projects, project evaluation.*

1 INTRODUCTION

There are many sophisticated and intertwined companies in Libyan society. A company's investment activity is significant for the individual investor, commercial institutions, and the state level. Investing in its holistic sense means sacrificing income in the present to expect more income in the future. It is necessary to provide adequate financing for investment because financing decisions are closely related to investment decisions. Financing decisions refer to the amount and type of funds that investment needs or current spending are to be financed. It is not possible to start evaluating an investment project without knowing the cost of the funds needed to invest. Since the financial structure consists of the elements of assets and their use, the assessment of the financial structures' impact means an evaluation and control of the resources and their purposes significant to the project.

"Completing the work on any project to make it perform highly efficient and effective requires both effective organization and proper planning, with real monitoring of activities and continuous evaluation of the whole." (Mohsen, 2018, p. 17) Thus, performance assessment is a subsequent

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decision-making process aimed at examining the financial and economic position of the organization at a given time. The decision-maker uses methods of financial and economic analysis in the evaluation.

The service sector plays a significant role in every country. Combined with several other sectors it can be considered an alternative to oil production to support the national economy. Tourism is one of those sectors. It mainly depends on the service sector and, also, on highways and advanced telecommunications networks, hotels, restaurants, and other ancillary services.

There are several objective criteria used in the financial and economic evaluation of the project. Based on the project's performance assessment, profitability is set as the most significant criterion to see the scope of investment opportunities and return on investment. Performance assessment can be influenced by several factors that management cannot control and influence. So, one can say that the project was unsuccessful because it created losses. But can loss be considered the only measure of failure and profitability the only measure of success, or are there other criteria by which one can determine the success or failure of a project?

The research problem, studied in this paper, arose from the author's observation that most performance evaluation studies rely on financial indicators and different financial analysis methods to determine the effectiveness of performance in economic units. At the same time, such researchers paid no attention to the economic and social aspects. That makes these studies insufficient to evaluate projects initiated to achieve specific societal goals. Such projects can sacrifice short-term profitability criteria to achieve long-term goals.

The research problem in this study focused on the importance of evaluating industrial projects from a comprehensive perspective to know the extent to which they achieve the objectives for which they were established. This study reached the following results:

1. The complex achieved a profitability rate commensurate with the volume of investment in the complex.
2. The complex achieved high productivity rates that positively contributed to the national income.
3. The complex has contributed to the recruitment of national manpower.

This study also aims to identify the status of an investment company in financing producers by focusing on assessments of the financial and economic performance of service projects. The authors conducted an evaluation study for one producers' money investment company. They drew conclusions, made appropriate recommendations, and identified the challenges that could lead the company to a decline in its performance.

Table 2. Chart of the company's organizational structure

General Committee of the company		
Audit office	Chairman of the General Committee ↓	Studies and Services Office
Monitoring service		Legal office
People's Office		

↓

Financial Affairs Administration	Technical Affairs Department	Department of Administrative Affairs and Services	Planning and Investment Department
Revenue and warehouse department	Project Execution Department	Department of Administrative Affairs and Services	Research and Planning Department
Accounts and Budget Department	Design department	Producers Affairs Department	Investment Department
		Archives	

Source: The company's competent authorities (the manufacturer's money investment company)

The company is headquartered in Tripoli and has offices in Benghazi, Sebha, Misurata, and Derna.

The company began to exercise its competencies to achieve its goals after approving the minutes of the Producer Fund Evaluation Committee. With the decision on the establishment, all assets and liabilities of the Producers Services Fund were transferred to the company because all contributions of the fund to public companies, Real Estate Savings Banks, and the National Real Estate Investment Council are considered part capital of the enterprise.

For this paper, the author asked the company's official bodies for a statement on the level of education in 2019. Tables 3 and 4 show the results of the aggregated employees' data.

Table 3. A statement of the educational level of employees in the company to invest the producers for the year 2019.

Number	Educational level	Number of Employees
1	Ph.D.	does not have
2	Master's	does not have
3	Bachelor's degree	29
4	Bachelor's	4
5	Higher Diploma	10
6	High school certificate	43
7	Below average diploma	155
	In total	241

Source: Official data obtained through a statement from the company's competent authorities (The World Bank, 2019)

Table 4. A statement of the educational level of the company's management for the year 2019

No.	Job	Qualification or educational level
1	General Manager of the company	Bachelor's degree Economics and Commerce
2	Director of Administration Department	Bachelor of Social Engineering
3	Head of Producers Affairs Department	Diploma of Management Institute
4	Head of Administration Department	Intermediate Diploma in Atmospheric Sciences
5	Director of Finance Department	Intermediate Commerce Diploma
6	Head of the accounts department	Bachelor of Accounting
7	Head of the revenue department	Higher Diploma in Accounting
8	Head of the warehouse department	Intermediate Commerce Diploma
9	Director of Planning and Investment Dept	General Diploma in Teachers
10	Head of the investment department	Bachelor of Geography
11	Head of the planning department	Bachelor of Engineering
12	Director of Technical Affairs Dept	Bachelor of Engineering
13	Head of the design department	Bachelor of Engineering
14	Head of Project Execution Department	Bachelor of Engineering
15	Head of the audit office	Bachelor of Accounting
16	Head of the follow-up office	Bachelor of History

Source: Author based on data prepared by the company's competent authorities

2 INVESTMENT PROJECTS AND COMPANY INVESTMENTS

All previous contributions to the Producers Services Fund and the Public Entities Fund have been transferred to the company. The company also contributed capital to some other companies. The following table shows the company's contribution to the capital of national companies as mentioned in the 2021 annual report.

Table 5. Statement of the company's contribution to the capital of national companies

No.	Statement	Place	The value in Libyan dinars	Contri-bution date	Notes
1	Libyan Arab Furniture Company	Gharyan	70,000	2016	still working
2	Al-Amal Garments Trading and Manufacturing Company	Sabha	60,000	2017	All these companies were merged into the General Company for Textiles and Clothing / Tripoli
3	The Arab Company for the supply and manufacture of clothing	Tripoli	170,000	2017	All these companies were merged into the General Company for Textiles and Clothing / Tripoli
4	National Garment Trade and Manufacturing Company	Tripoli	170,000	2017	All these companies were merged into the General Company for Textiles and Clothing / Tripoli
5	Modern fashion company	Benghazi	170,000	2017	All these companies were merged into the General Company for Textiles and Clothing / Tripoli
6	National Company for Trade and Manufacturing of Clothes	Tripoli	170,000	2017	All these companies were merged into the General Company for Textiles and Clothing / Tripoli
7	National Textile and Apparel Marketing Company	Tripoli	175,000	2017	All these companies were merged into the General Company for Textiles and Clothing / Tripoli
8	General Company for Textiles and Clothing	Tripoli	175,000	2017	still working
9	Libyan Electrical Equipment Company	Benghazi	150,000	2017	Participate in the General Electron Company
10	Contribution to tile and burnt factories with the investment company in Sebha city	Sabha	600,645	2017	still working
11	The National Company for Soap and Cleaning Supplies	Tripoli	70,000	2018	still working
12	Medical Bandages Company	Tripoli	100,000	2018	still working
13	Contribution with the National Council in the Building Maintenance Company	Tripoli	80,000	2018	The investment company of the product fund returned part of the contribution amount
14	General Electron Company	Tripoli	250,000	2019	still working
15	General Company for the manufacture of spare parts	Tripoli	1,550,000	2019	still working
16	Contribution to the residential farms' project	Tripoli	3,500,000	2020	Then refund the contribution
17	A contribution to the capital of the Furwa Tourism Company	Tripoli	70,000	2021	still working
	Total		7,530,645		

Source: Authors based on data from the archives of the company's competent authorities (2021)

3 DEFINITION OF FINANCIAL ANALYSIS

Matar (2019, p. 3) defined financial analysis as "a process through which a set of quantitative and qualitative indicators about the economic activity of the project is explored or derived, which contributes to determining the importance and progress of the operational and financial activities of the project, through information extracted from the financial statements and other sources, for these indicators to be used in evaluating the project's performance and taking decisions".

Similarly, Gartner (2021) defines financial analysis as "evaluating historical financial information to determine patterns that help identify the root cause of the success or failure of a specific product, business unit or geography."

Thakur (2022) declares that "financial analysis refers to an analysis of finance-related projects/activities or company's financial statements which includes a balance sheet, income statement, and notes to accounts or financial ratios to evaluate company's results, performance and its trend which will be useful for taking significant decisions like investment and planning projects and financing activities."

4 FINANCIAL ANALYSIS PURPOSES

The financial analysis aims to assess the project's performance from multiple angles, and it serves the objective information users who have interests in the project by identifying the strengths and weaknesses and then benefiting from the information provided by the analysis to them in rationalizing their financial decisions related to the project.

The purposes of financial analysis can be limited to the following aspects:

1. Evaluation of the financial position of the project.
2. Evaluate the profitability of the project.
3. Assessment of the project's membership status.
4. Assessing the efficiency of financing policies.
5. Assessment of the efficiency of asset and liability management.
6. Assessing the extent of the project's ability to continue (financial failure).
7. Evaluation of the competitive position of the project.
8. Devise some indicators that provide management with planning, control, and performance evaluation tools.

5 DETERMINANTS OF FINANCIAL ANALYSIS

Financial analysis tools are considered one of the most valuable tools used in evaluating the project performance according to the achieved business results. Using the tools allows management to make decisions and policies that enable better performance in the future.

But there are several criticisms related to these tools and the financial statements that depend on them when calculating and configuring these tools, which limits their effectiveness when doing financial analysis. The determinants of financial analysis can be summarized in the following points (Khashim, 2019):

1. The financial analyst focuses in his study on a part and not on the other financial position of the company because the short-term borrower is looking at how to provide liquidity for him, while the investor focuses on the amount of profit achieved from the investment process.
2. The magnitude and type of available data that can be obtained from the project, as well as the type of analysis in terms of whether it is partial or comprehensive, depends on the nature of the case to be studied.
3. Identifying the extent to which the project follows the recognized principles, methods, and accounting methods, to reach a more objective decision, because any change in principles and methods results in a change in the results, and thus the project's financial statements become not comparable with other projects belonging to one industry.
4. The overlapping of some provisions and rules in the preparation of financial statements, such as those related to the calculation of depreciation, the assessment of inventory, or how the provision for doubtful debts is formed, thus affects the results of the analysis that are reached. It also requires that the rates be subject to change periodically to keep pace with progress and development in the performance of production or service units in

various economic sectors to guide them on the performance of projects or establishments.

5. Limiting the financial statements to totals without clarifying their source reduces the potential in reaching accurate results.
6. The differences between companies' size and modern technology used, as well as the levels of expertise that companies use over the other in the implementation of its projects, inevitably affects, sometimes indirectly, the comparison, which makes a discrepancy in the results even though they belong to the same industry.

6 CONCLUSIONS

This paper shows objectively and systematically that Libya has benefited from assessing the financial success of the projects.

The pieces of evidence presented in the tables presented are realistic indicators of how much the company will benefit from the investment. In addition to Libya's need to earn a strong currency and establish strong relationships with producers to improve its economic system.

Also, from the analysis of the company financial statements prepared by the company, it was found that these statements were not in line with the requirements of accounting principles and that they have been modified to suit the needs of the Libyan society.

These results have been achieved through the application of financial and economic indicators. Most of these indicators have been affected by the current rate of stagnant contributions, as these contributions represent between 40% and 60% of the total assets, and most of these contributions do not return to investment, while the company is also facing difficulties. The company also suffers from significant troubles in collecting its obligations towards the community-owned companies and institutions that previously contributed to its capital, knowing that most companies do not have a legal personality because of the successive merger and liquidation decisions.

The balance of debtors during the analyzed years reached a rate ranging from 4% to 14% of the total assets The repayment of some of these loans was weak and the stagnation of others led to debt inflation and the lack of liquidity necessary for the spending on investment projects.

The percentage of total expenses exceeded the percentage of total revenues in the years the company started implementing its investment projects.

7 RECOMMENDATIONS

The company should study the conditions of the contributions and decide what to do in their regard. Also, the company should use financial reports and field visits to identify the exact reasons for not achieving an appropriate result. The proposed solutions should include the possibility of collecting their receivables legally to obtain the funds needed to finance the investment projects. That is better than resorting to external financing. Due to possible risks, the company must obtain certificates of its shares in the companies where it participates. It must re-evaluate these contributions considering each company's financial conditions and provide provisions to cover deficits from low contributions of at least 25% of the value of the present contributions with raising the percentage in the coming years reaching the reserve at 100% if there is no positive development.

The inefficient collection policy has inflated the debtors' balances. Therefore, the company's management must take measures to collect debts to preserve the financial resources and ensure the financial liquidity necessary to facilitate its activities without resorting to external financing.

There is a need to monitor investment projects in a good way. To do this, a specialized in-house performance assessment office can monitor projects, assess their effectiveness, liquidate unprofitable projects, and focus efforts on projects that achieve adequate returns. That is better than keeping the company on a few projects that do not yield but negatively impact other projects. Successful management needs to increase revenues and tighten control over expenditures to generate higher revenues with money invested in these projects.

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Received for publication:	15.12.2021
Revision received:	17.03.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Elbashir, D. (2022, 07 15). Evaluating the financial and economic performance of projects. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 57-63. doi:10.12709/mest.10.10.02.06

Style – **Chicago** *Sixteenth Edition:*

Elbashir, Dania. "Evaluating the financial and economic performance of projects." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 57-63.

Style – **GOST** *Name Sort:*

Elbashir Dania Evaluating the financial and economic performance of projects [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 57-63.

Style – **Harvard** *Anglia:*

Elbashir, D., 2022. Evaluating the financial and economic performance of projects. *MEST Journal,* 15 07, 10(2), pp. 57-63.

Style – **ISO 690** *Numerical Reference:*

Evaluating the financial and economic performance of projects. **Elbashir, Dania.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 57-63.

MEST Journal
doi: 10.12709/mest.10.10.02.07

LIBYA'S FOREIGN TRADE WITH EUROPEAN UNION COUNTRIES

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JEL Category: **F14, F31, O24**

Abstract

The subject of this empirical and theoretical work is the exchange of foreign trade of Libya with the countries of the European Union. The scientific objective of the research is to make a scientific classification of the volume of foreign trade between Libya and the European Union countries and to discover the factors that hinder foreign trade and explain them scientifically. European countries also support this cooperation and contribute significantly to the formulation of future cooperation policy with Libya in various social, political, and economic fields. However, this cooperation takes place in light of objective difficulties arising from the conflicting interests of Western countries in North Africa and Libya. Since these relations are burdened with many problems of different nature, we started in this paper from two assumptions: The first premise is that in the trade relations between Libya and the European Union, there are common interests for foreign trade that are more feasible. The second premise is that more encouragement and protection for investments by the countries of the European Union helps in new qualitative development and economic growth in Libya, which will significantly improve trade relations between Libya and the countries of the European Union.

Keywords: *trade, foreign trade, international trade, economic growth, investment.*

1 INTRODUCTION

Foreign trade plays a prominent role in economic growth by raising the production capacity of countries' economies and opening foreign markets to market their products. That contributes to increasing income and raising welfare levels for Libya, which, as a developing country, depends on the production and export of one commodity, oil. Oil is the only source of income. That is confirmed by the social role played by exports and foreign trade in the Libyan economy, and undoubtedly has clear effects on various sectors and economic activities.

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From the epistemological point of view, this paper analyzes growth rates and GDP growth rates in Libya, and the results of this analysis indicate the increasing role of foreign trade in economic growth and its significant impact on the various sectors of the Libyan national economy. Indicators of the degree of geographical concentration of foreign trade also indicate that the countries of the Union are Libya's largest trading partner.

An analysis of the content of the Libyan development budget allocations for some important economic sectors during the observed period, such as the allocations for the education, scientific research, and employment sectors, especially the allocations for the manufacturing and agricultural sectors, reveals the following results:

1. The allocations from the development budget for these sectors are gradually increasing but the evolution of the contribution of these sectors to the formation of the Libyan GDP is inconsistent with investments due to the presence of many structural problems.
2. The allocations from the development budget to the manufacturing sector during the observed period are much higher than the evolution of this sector's contribution to the composition of Libya's GDP. The reason for this is the transformation of the country's general economic policies into a policy of self-sufficiency in the agricultural, livestock, and marine sectors, whose contributions to GDP growth do not match the Libyan development budget allocations.
3. The state relies heavily on raw materials exporting as a means of maintaining people's standard of living and meeting the needs of the various local markets. It has become imperative for Libya to raise the bar for challenges through this resource on how to achieve sustainable economic development by properly investing oil revenues and providing funds for future development and prosperity.

2 THE CONCEPT OF INTERNATIONAL TRADE

“International trade means the process of trade in goods and services between several countries for the sake of mutual benefits for the sake of the exchange of parties.” (Abdelazim, 2012, p. 13) Therefore, it differs from internal trade conducted in one country in that it crosses the borders of one country into several countries, regardless of whether those countries are contiguous or far apart.

It is indisputable that international trade and exchanges between countries are profitable. People need to provide services to each other. Therefore, the exchange of goods is a human need related to the social nature of man since the beginning of creation through negotiations between tribes.

International trade differs from domestic trade because it crosses the geographical and political borders and conducts in different currencies, opposed to domestic trade that understands only one. Also, there appear different transportation means, market conditions, weather and natural factors, political factors, difficulties in transporting production elements, and ways and methods of financing. It should be noted that, in the case of international trade, there is an opportunity for trading blocs and monopolies.

"International trade is the most important and broadest field of international relations and the most influential in the growth of international relations due to the huge flow of goods and services at the international level." (Abdel, 1984, p. 28)

Relations between countries are not limited to the exchange of goods and services and go beyond some factors of production. The most important is capital transferred in the direct investment by individuals or institutions or in the form of loans granted from one country to another, whether it is a new real investment or payment facilitation because of trading. That implies the domestic currencies flow opposite to imports and the foreign currencies flow in the opposite direction of exports. This results in the so-called foreign exchange market. Each country keeps its payments balance in which all economic transactions with the outside world are recorded during some period, usually one year.

One of the factors that led to the development of international trade was the migration of millions of Europeans to new countries (America and Australia). These immigrants used the resources of the region to which they migrated, their production increased and there was a great trade exchange between them and other countries of the world.

Foreign trade is also an important economic activity that allows a country to acquire goods that cannot be produced domestically, or the cost of production is too high compared to the imports from abroad. It also allows a country to export goods and products beyond its needs, use revenue and pay for value and needed. In this regard, one of the economists pointed out that the importance of foreign trade is equivalent to the emergence of the Industrial Revolution in Europe, which radically changed the structure of its economy.

The value of the surplus in the trade balance during 2019 according to the groups of countries that Libya deals with commercially, we find that most of the trade surplus was with the group of European Union countries and with the Arab League countries and other European countries as shown in Table 1.

Table 1. The value of the trade surplus during the year 2019 by a group of countries

The countries	Exports	Imports	Surplus (+) Deficit (-)
Arab League countries	173,834	160,633	13,201
African countries	4,445	1,969	2,476
European Union group	2,853,965	1,037,517	1,816,448
Other European countries	308,638	193,864	114,774
North, Central, and South America	9,384	132,002	-122,618
Asian countries	228,484	379,964	-154,480
Australia and New Zealand	-	8,893	-8,893
Total	3,578,750	1,914,842	1,663,908

Source: (UN, 2020)

Table 2. Central Bank of Libya statement on revenues and expenditures for the year 2021

1. The revenue		**(Figures are in Libyan dinars)**	
Statement		Actual spending	The ratio of total revenue [%]
Oil revenue		103.4 billion	97.8
Tax revenue		799 million	0.8
Customs revenue		311 million	0.3
Telecom revenue		198 million	0.2
Revenues from selling fuel in the local market		450 million	0.4
Services and other revenue		494 million	0.5
Total oil and sovereign revenues		105.7 billion	100
2. Tunnels			
Statement	Allotted 12/1	Actual expenses	Actual Total Spending Ratio [%]
Chapter One: Salaries	33.1 billion	33.1 billion	39
Chapter Two: Facilitation	8.0 billion	8.0 billion	9
Chapter Three: Development	17.5 billion	17.4 billion	20
Chapter Four: Support	21.0 billion	20.8 billion	24
Chapter Five: Emergencies	6.5 billion	6.5 billion	8
Total	86.1 billion	85.8 billion	100

Source: (WBG, 2021)

The Central Bank of Libya publishes these data and confirms the following:

1. It was agreed during the year 2021 based on 12/1 of the unified agreement for all sectors in Libya. Considering the impact of the exchange rate adjustment on expenditure items. According to Cabinet Resolution No. (429) for the year 2021.

2. The triangle of oil revenues is about 98% of the total revenues supplied.
3. There are revenues from oil, owned by oil companies, estimated at billions of dollars, which have not been reported to the financial accounts of the Ministry with the Central Bank of Libya.
4. The Central Bank of Libya confirms that the returns, imposed on foreign exchange sales, will not be used for any imposition during the year 2021.
5. The first chapter includes the unified salaries, and the implementation of the salary increases in some sectors by the laws issued.
6. Chapter Three, "Development", included spending an amount of 12 billion dinars on projects in the sectors of 2.5 billion dinars for electricity. A billion for the National Oil Corporation. And 812 million dinars were granted to students studying abroad.
7. The total development spending amounted to 27% of the total expenditure, of which 20% of the third chapter "Development" represents 7% of the fifth chapter "Emergency". While the volume of development spending did not exceed 4% during the past years.
8. The expenditure of Chapter Four "Support" included an amount of 10 billion dinars for fuel. 4.4 billion dinars for children's allowance. 3 billion dinars for medicines. 2 billion for the Marriage Support Fund. 840 million dinars for electricity. 425 million dinars for public hygiene. 230 million dinars for water and sanitation.
9. The total foreign exchange of the Central Bank of Libya amounted to 22.9 billion dollars, while the use of foreign currency amounted to 24.5 billion dollars. The Central Bank of Libya covered the deficit in the use of foreign currency of 1.6 billion dollars from its reserves to maintain the stability of the exchange rate in case of non-performance of part of the due income and instruments, which would cover that deficit if it arose.

Table 3 The percentage of Libyan exports to the most important countries of the European Union

Country	2014	2015	2016	2017	2018	2019	2020
Italia	10.54	35.30	38.20	41.80	40.90	58.60	51.77
Germany	40.66	-	34.57	28.76	11.21	7.90	16.63
United Kingdom	22.15	20.64	6.96	0.36	1.90	2.18	2.00
France	9.94	18.32	6.45	6.21	14.35	7.53	7.54
Holland	8.43	12.87	3.61	3.81	11.86	3.42	0.86
Spain	3.48	6.20	8.96	11.10	11.84	11.26	16.15
Rest of the countries	4.80	6.67	1.25	7.96	7.94	9.11	5.05

Source: Economic development in Europe and the Arab world
Source: (UN, 2020))

The reasons that make the Arab countries and European countries have a close relationship are that the latter implement investment projects in the Arab countries, taking advantage of the availability of raw materials and licenses for manpower.

The Arab-European economic relations are gaining distinct historical importance for several decades. The common factor between these arrangements is the corresponding reductions in customs duties on their trade exchanges, and sometimes their complete exemption. Thus, we can say that the Arab economy was, and still is in dire need of European markets in the fields of export and import.

Table 3 shows the percentage of Libyan exports to these six countries. Also, it shows that in 2014, Germany acquired the largest percentage, as it obtained 44% of the total Libyan exports to the European Union, then the United Kingdom comes in second place with 22%, followed by Italy with a percentage of approximately 11%.

In 2015, we found that Italy received 35% of Libya's exports to the European Union, followed by the United Kingdom with approximately 21% and France with 18%.

In 2016, we found that Italy came first with 38%, before Germany with about 35%, and Spain with 9%. During 2017-2020, Italy retained first place in terms of its share in Libyan exports with an average of 50%, followed by Germany and Spain. The United Kingdom has reduced its share of exports to only 2% in 2020.

Based on the figures in Table 4, we found that Libyan exports in 2014 were mainly in machinery and transport equipment. Their value amounted to 9,434 thousand Libyan dinars, i.e., approximately 56% of the total exported from Libya. The manufacturers classified based on the raw material use, followed them with about 19%.

Table 4. Libya's exports by commodity distribution during the period 2014-2020.

Year / Goods	2014	2015	2016	2017	2018	2019	2020
Food and live animals	3.71	7.75	4.55	3.13	1,77	1.48	1.25
Drinks and Tobacco	1.83	1.79	.47	2.14	1.18	.03	.02
Inedible raw materials	.46	1.21	.44	0.32	.054	.36	.081
Mineral fuel, fuel, and related materials	1.40	3.50	.80	.013	.087	.012	.0866
Animal oils and greases	.16	.13	.16	.02	.07	.30	.20
Chemicals	8.94	14.37	14.50	16.01	9.90	10.37	19.71
Raw materials	18.51	22.48	18.62	19.01	24.74	18.43	19.68
Machinery and equipment	55.58	38.31	48.86	46.20	47.00	58.44	47.89
Various crafts	9.39	10.47	11.60	13.03	13.92	10.74	10.06
Deals and goods classified by type	2	.01	0	0	0	0	0

Source: Author's search based on the (UN, 2020).

In 2015, exports of machinery and transport equipment decreased to 38%. At the same time, exported raw materials increased to 23%, which is followed in terms of importance by chemical materials by 14%.

In the years 2016, 2017, and 2018, the percentage of exports of machinery and transport equipment was on average 48% of the total exported from Libya during those years. The following in terms of importance is the raw material export with approximately 21% on average. And the third, with about 13.5% on average, are the manufacturers of chemical substances.

In 2019, about 58.5% of the machinery and transport equipment were exported, which decreased in 2020 to a bit less than 48%. In terms of importance, as the second, by an average of 16% appeared the export of raw materials during 2019 and 2020. As for chemicals, from 10% in 2019 of the totals exported from Libya, the export increased to almost 20% in 2020.

3 CONCLUSIONS

The most important results, obtained in this theoretical-experimental work, can be summed to the following compositional closing points:

- International trade plays a significant role in economic development for two main reasons. The first is that international trade is one of the main determinants of growth in developing countries. The second is that international specialization is necessary to increase production efficiency after establishing the industrial base for developing countries.
- Many countries have turned to economic integration for several reasons. The reasons are raising the welfare of citizens and the level of production resulting from specialization, the formation of an economy that reduces external dependence on the region, improves economic stability in the region, production levels, employment, prices, etc.

- The experience of Europe in establishing the European Union had a positive impact on these countries, removing several obstacles that were a barrier between relations between these countries, including the abolition of all customs duties.
- The relations of the European Union countries with the Arab countries were in the interest of the European Union countries more than for the Arab countries because the European countries benefited from the cohesion of the Arab world and its small population and the wealth of raw materials. They lacked countries characterized by cheap labor and proximity to raw materials for strategic energy.
- Libya's relationship with the European Union countries is close. That relationship goes back to the historical relations with Italy, where most of the trade took place, as the Italians and other European countries controlled foreign trade with Libya. Libya was the EU's 47th biggest trade partner in 2020. (EC, 2021)

4 RECOMMENDATIONS

Focus on the export industries in which Libya has a competitive advantage in its production and exports, and since Libya is one of the oil countries. The petrochemical industries and other industries related to the oil sector can be a basis for developing a new policy for export development in Libya. That policy can be based on respecting Libya's national interests in foreign trade.

The lack of a commodity and geographical focus on Libyan exports allows for equal trade, increased quality, and price stability through bilateral or multilateral agreements.

Increased interest in the agricultural sector and work on rebuilding land to increase agricultural production, especially after establishing the Man-Made River project, will allow Libya to produce and export market surpluses abroad. Together with paying attention to the navy, and health sector, they will ease the dependencies of oil exports and bring export advantages.

These industries must be based on economic feasibility studies and focused on small industrial capacities, especially in the early stages of industrialization. Later they will become the basis for a new export industry policy.

We recommend improving services and conditions related to export activities, such as providing packaging, shipping, marketing, providing means of communication and modern means of transport, especially rail and sea transport, appropriate and encouraging price setting, strengthening economic integration between Libya and neighboring countries, and activating the role of the Arab Common Market.

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Received for publication: 15.12.2021
Revision received: 27.02.2022
Accepted for publication: 26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Elbashir, R. (2022, 07 15). Libya's foreign trade with European Union countries. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 64-70. doi:10.12709/mest.10.10.02.07

Style – **Chicago** *Sixteenth Edition:*

Elbashir, Rania. "Libya's foreign trade with European Union countries." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 64-70.

Style – **GOST** *Name Sort:*

Elbashir Rania Libya's foreign trade with European Union countries [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 64-70.

Style – **Harvard** *Anglia:*

Elbashir, R., 2022. Libya's foreign trade with European Union countries. *MEST Journal,* 15 07, 10(2), pp. 64-70.

Style – **ISO 690** *Numerical Reference:*

Libya's foreign trade with European Union countries. **Elbashir, Rania.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 64-70.

MEST Journal
doi: 10.12709/mest.10.10.02.08

INNOVATIVE STARTUPS AND LOCAL DEVELOPMENT - THE CASE OF THE NORTH-WEST REGION OF ROMANIA

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JEL Category: **L26, R11**

Abstract

This article analyses the role and importance of new startups, especially innovative ones, in the regional context. What is more, we aim to assess the impact of measures of local government level, meant to improve the business environment. In practical terms, we have addressed the situation of the startup sector in a developing region of Romania, namely the North-West Region, and, in two important cities located in this area - Cluj-Napoca and Oradea. The theoretical part has the task of discussing the main theories and contributions regarding aspects of the business environment and future opportunities that shape the creation of startups and how they will develop. At the same time, the theoretical part deals with finding and analyzing the factors that influence startup creation. Based on the theoretical foundations, a comparison between two selected areas has been made numerically (using quantitative comparison), and from the perspective of the future impact that innovative, fast-growth-oriented startups can have on the economic and social dynamization of the cities and region in which they operate. Finally, we have analyzed the extent to which the development of this sector can influence and support the creation of a dynamic entrepreneurial ecosystem, a solid infrastructure, that supports medium and long-term economic growth in these areas.

Keywords: *SMEs, startup, regional strategy, entrepreneurial ecosystem*

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1 INTRODUCTION

Someone may think that success will be guaranteed by applying a simple formula when launching a business. As per an article in Harvard Business Review, to launch a business (both classical enterprises and startups), one must "write a business plan, pitch it to investors, assemble a team, introduce a product, and start selling as hard as you can" (Blank, 2013). Given these modern times that we live in, such an approach might not be considered suitable for forward-thinking and fast-moving startups. Even so, innovation, in terms of business models, does not, and should not, refer only to novel business models (created from scratch). Actively seeking ways in which already existing models can be improved and developed in terms of innovation should constantly be on the agenda of every company, be it classical brick-and-mortar business ventures or startups (IBM Global Business Services, 2008). We are not referring here to online businesses only. One should not consider a startup as existing only online. Depending on the sector in which they would like to be active, some startups should have both a physical manifestation of their activity and an online presence.

Startups are affected by both internal and external factors. Following the same logic, we can conclude that business models have both intrinsic (internal) and extrinsic (external) facets/values. While the internal structure sets norms, actions, and rules, the external aspect deals with how the new company will harmonize with external factors and forces (Casadesus-Masanell & Heilbron, 2015). Though norming the main activity is vital, it should not occur at the expense of creativity and innovation. This business model cannot and should not be used to diminish or decrease innovation-related returns. The business model can be based on innovation and should be used as a driver for creativity development and enhancement.

There is no clear academic consensus concerning the business model in terms of its functions, scope, and limits. Some authors consider that a "business model is a framework for making money. It is a set of activities that a company performs, the way how it performs them, and when it performs them to offer benefits to its customers. They also want to make a profit (Affuah, 2003). Other authors consider it a formula of profit (where learning and business systems meet) (Baden-Fuller & Morgan, 2010).

The previous definitions consider the meanings and aspects of a business model from an economic standpoint. However, it should be noted that a mere economic perspective does not justify this concept. The business model should also be viewed from a value creation perspective to cover an essential part of modern business – the client, final customer. Let us not forget that value creation is significant not only for the end-user/customer but also for companies and startups.

2 CREATIVITY, INNOVATION, AND BUSINESS DEVELOPMENT

Even though it is more than common to consider that creativity or the ability to think creatively is a prerogative applicable only to a lucky group of individuals, virtually any person or group of persons can acquire the necessary knowledge to arrive at an epiphany moment. Being different is what keeps an organization alive and going. Equally important, startups are the center of making a difference regardless of the field that they operate in. Even though creativity is highly desirable, on the path to becoming creative enterprises and startups must first answer several questions. Is creativity a process? Or should it be considered as being a result (outcome)? Could it be that both answers are correct?

Instead of simply defining creativity, authors such as Mumford decompose and deconstruct the notion of creativity in terms of its comprising elements and implications. In this respect, creativity acts as a measure of performance. It refers to what an individual or a group does. Secondly, creativity is the result of human cognition. Third, as opposed to automatic cognitive activities (such as recollection or recognition of information), creative problem solving is of the high-end level of human cognition (Mumford, 2012). Another definition of creativity given by authors such as Torrance (1965) somewhat places the space of creativity inside the everyday life of organizations. It goes as follows: "a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing knowledge, missing elements, and disharmonies"

(Torrance, 1965). This solution places importance on accumulated knowledge, but also on the environment. Csikszentmihalyi talks about creativity in terms of the place(s) where creativity results/stems from. Per him, “creativity results from the interaction of a system composed of three elements: a culture that contains symbolic rules, a person who brings novelty in the symbolic domain, and a field of experts who recognize and validate the innovation” (Csikszentmihalyi, 1998). Outcomes of creative thinking improve and enrich the organizational culture of the company. They get better the quality of the work environment and the quality of products, services, and customer satisfaction. The system model developed by Csikszentmihalyi, which accompanies his notion of *flow*, argues that creativity is composed of 3 elements: the domain (culture), the field (it monitors the domain), and the person.

As other authors have suggested, being original does not necessarily mean that someone is creative. Besides originality, the ambiance, or the situation in which a person is at a particular moment, in time can impact creative thinking and influence the creative outcomes, both positively and negatively. Even though, at first glance, it seems that all it takes for creative thought to occur in a split second, the situation is quite different. Hard work, tears, and sweat are often required. In the end, this exercise is compensated by the outcomes, by the rewards that this creative thinking process has to offer, not only for the individual but also for the company.

As regards their development strategy, firms and decision-makers need to carefully think about what kind of strategic choice they make regarding innovation and research and development: they can either choose an offensive business model and strategy (pushing innovation) or defensive strategy (market takers to a certain extent), and thus, startups can adopt one of the following strategies: imitative strategy, dependent strategy, or opportunistic strategy (Miles & Snow, 1978). The speed at which startups adapt both to internal and external factors has to at least be maintained (ideally, this speed of adaption should increase), but at the same time, firms need to make sure that they retain the essence of their core business model, and that the evaluation of risk as regards a new strategy could allow for measures to be taken to minimize said risk (Cohen & Levinthal, 1990).

The Oxford Handbook of Innovation offers the following systematization of innovation: regional, sector-based, and ultimately, national (Fagerberg, et al., 2005). During an economic downturn, constant financial attention headed towards innovation and R&D is of key importance (Archibugi, et al., 2013).

3 NEW BUSINESS CREATION IN THE NORTH-WEST REGION OF ROMANIA

Romania consists of eight development regions: Western region, Bucharest-Ilfov Region, Central Region, Southern-Muntenia Region, North-West Region, South-Eastern Region, South-Western Oltenia Region, and North-Eastern Region, considered as NUTS2 level (a geocode standard for referencing the subdivisions of countries for statistical purposes). In our analysis, we will look at the Northwest Development Region, and we will analyze two counties (out of 6 constituent counties), Bihor County and Cluj County. Given the essential economic and social role of the main urban centers in these regions, our analysis will go in-depth, with Oradea and Cluj-Napoca cities (see map in Figure 1 below).

Fig. 1. The development regions of Romania (https://annamap.com/romania/,2011)

Oradea, the 10th largest city in Romania (221,413 inhabitants as of January 2020), is the capital city of Bihor County (Romanian National Institute of Statistics, 2020). By size, Oradea is the second biggest city of the North-West region (after Cluj-Napoca, which ranks first).

For 2014 levels, the business/enterprise density in Oradea was 46.75 enterprises per 1000 inhabitants, whereas the average for the North-West region during the same year was that of

26.18 enterprises per 1000 inhabitants: moreover, 76.76% of revenues from the trade the sector and 78.7% of revenues from the services sector at the county level are attributable to companies/enterprises operating/registered in Oradea (City Council of Oradea, 2019). Thus, from an economic standpoint, Oradea has manifested a growth trend over the years. Increased involvement from local authorities (and a fairly stable regional political climate) and fruitful collaborations with the business environment have generated an accelerated and long-term economic upturn for the city of Oradea.

Out of a total county population of 737,992 as of July 1st, 2020, Cluj-Napoca, the largest town, and the county capital, has a population of 307,000 individuals (Romanian National Institute of Statistics, 2019). Cluj-Napoca is by far one of the largest and most respected academic, cultural, industrial, and business centers in Romania. Cluj-Napoca is not just one of the main IT clusters in Romania (currently, 1 in 11 people in Cluj-Napoca works in IT or related fields). It is also one of the cities (at the European level) with the highest quality of life. Over the years, he has constantly improved and excelled in this chapter (European Commission, 2016). The city has managed to integrate numerous individuals from different countries and cultures. The presence of foreign immigrants has increased several times in of Cluj-Napoca city over the years.

Table 1 (Appendix) reveals data on the number of newly registered companies in the case of Bihor and Cluj compared to the national level. We can see that no district shows spectacular numbers. In the case of Bihor County, the average share of total / national newly registered companies from 2009 to 2019 is 3.69%, while in the case of Cluj the average is 5.07%. Even with such data, the fact is that these numbers have been relatively consistent over the years. That is an indicator of the overall stability of the regions and their potential. In Bihor County, we have 3 cases when registrations of new companies in a given year (2014, 2016, and 2019) have been lower than in previous years, whereas, in Cluj County, we have five such occurrences: 2013, 2014, 2016, 2018, and 2019. It is important to mention here the fact that the performances of the two counties have been quite positive over the years: in the case of Bihor, in 11 years, it has had negative evolutions only during a 3-year, whereas, in the case of Cluj, during the same period, it has managed only 5 negative evolutions, at the national level, the evolution being a negative one during 6 out of the 11 years. The highest number of newly formed companies as regards Bihor County, 1549, has been registered in 2017, and in the case of Cluj, 2858, has also been registered in 2017. There is a positive but weak correlation between the evolution of registered companies and the evolution of the GDP. Only 0.07% of the GDP change is due to the evolution of the number of registered companies" (Badulescu, et al., 2019); as such, it is not the number of newly registered companies that matters in the case of the suitability of a region/city to house and promote the growth and development of startups.

4 OVERVIEW OF THE EFFORTS UNDERTAKEN BY THE CITIES OF ORADEA AND CLUJ-NAPOCA TOWARDS STARTUP DEVELOPMENT

In the Romanian economic landscape, innovation tends to be somewhat neglected. Building on the research of authors such as Bruederl and Schuessler (1990) and Freeman et al. (1983), we find that innovation has the potential to emerge at a much faster and accelerated pace in SMEs than in full-fledged companies. That occurs for several reasons: less rigid administrative and legislative frameworks and working conditions for SMEs, faster adaptation to external and internal factors, and openness to market disturbances. No SME, regardless of the level of development, place of business, or size, is exempt from this.

From 2014 to 2019, new company registrations at the national level have increased by 26.25%. The biggest increase occurred in 2017, when, at national levels, we have had 22,999 new registrations/creation of new companies. The North-West region has been faced with diminishing numbers. 2019 showed a lower level of creation of new companies than in 2014 (North-West Regional Development Agency, 2020). According to the same report, among the challenges faced by new entrepreneurs/when registering new companies, we have the following: lack of resources (72.2% of cases), limited access to credit (28.2%), lack of customers or customers who pay late (38.1%), limited access to well-trained employees (46.3%), lack of technology (23.2%) and lack of raw materials (14.6%).

To promote new business creation, especially for new businesses wanting to be active in creative/innovative sectors, resources, policies, and efforts have been channeled towards the creation of clusters and hubs across this North-West region of the country. For 2018 levels, the following clusters are active in the North-West region. They are mostly concentrated in the city of Cluj-Napoca, but we also notice other such units active/present throughout Bihor and Cluj counties (North-West Regional Development Agency, 2020).

Although they are not as numerous as in other regions of Europe, the activity of such clusters is crucial for the development of the two counties and regional development. Moreover, activities of these units have promoted close cooperation not only between the public and private sectors (also encouraging research and technological development and dissemination) but also between regions and areas. The previous clusters are usually located within industrial parks. At the North-West region level, there are 23 operating industrial parks housing 178 companies/ enterprises and spanning on a surface of 764 hectares of land. The number of such industrial parks, and their sizes, are growing and developing (North-West Regional Development Agency, 2020).

All information regarding the general innovation efforts and scores of the various Romanian regions point to a somewhat grim reality: regardless of the year we are referencing, the innovation footprint of the county tends to be given secondary importance, so much that during 2020, Romania has yet again scored last in terms of innovation at EU 27 level (European Commission, 2020). To avoid this situation repeating some policies are necessary to shift this paradigm. What is more, a certain synergy between national and regional policies should exist to maximize innovation success chances of the regions and the country as a whole.

4.1 Startups in Oradea

A study conducted by online startup UrbanizeHub ranks Oradea in the first place as concerns the most efficient cities of the country. Given the efforts of the public authorities, Oradea has managed to invest over 240 million euros in capital investments and various projects during the last eight years, (an investment of 1225 euros per inhabitant). In the case of Cluj-Napoca, which ranks 8th in the same chart, as regards capital investment, it has managed to spend 253 million euros (translated into 781 euros per inhabitant) (UrbanizeHub, 2017).

In terms of business infrastructure, the city of Oradea has 4 industrial parks. From the beginning of industrial/business parks in Oradea, 387 million euros have been generated/attracted for the municipality. In terms of employment, various companies in the business parks of Oradea employ a total of 8500 individuals (The City Hall of Oradea, 2020). Even though fully operational companies are active in all industrial parks, the management team of the four industrial parks in Oradea is actively involved in attracting and finding startups to promote improvements for the city of Oradea. Through their BrightNights incubator, on the March 12th, 2021, the Oradea Local Development Agency and 'Make-IT in Oradea'[1] have promoted a startup competition aimed at finding (and developing) startups to bring improvements (social, economic, cultural, technological, etc.) for the city of Oradea. No upper limit of projects/startups has been set. (Oradea Local Development Agency, 2021). As a guide and support for their growth, startups will use the knowledge of industrial park managers and the knowledge of representatives of companies operating in them.

Such partnerships between the public and the private sector are increasing in number and quality. A recent project started by the University of has resulted in it winning a grant of 6.5 million

[1] NGO formed through the participation of the City Hall of Oradea and the city-specific/wide technology community

euros which will be used at creating a technology-transfer center. This project will have four laboratories aiming to create and develop innovative technologies. In addition to the laboratories, this technology center will also have co-working spaces, conference halls, course halls, and it will be of the "smart-campus" type. An important area of interest expressed by the local authorities in Oradea is related to the increase of innovations, more precisely, to the development of "locally produced" innovations. Representatives of local government have expressed interest in increasing the production of innovative products and services by 45%, at the local level. Another such project aimed at intensifying the presence of creative industries in Oradea city is the creation of a business incubator specifically for creative and innovative industries. The Oradea Local Development Agency will be at the forefront of this project, as they will be administering this incubator. The value of this project is 3.8 million euros, and the project was financed by European funds (The City Hall of Oradea, 2018). It will be interesting to see how projects of this incubator will unfold and what types of startups it will nurture. Here again, we must mention that even though such projects are at their infancy in Oradea, they represent a vital starting point, and through collective performance (public and private), such endeavors can become more common and faster-paced.

4.2 Startups in Cluj-Napoca

As in the case of Oradea, the representatives of the local government in Cluj-Napoca (the city hall) have had an increasing influence, impact, and involvement over the years, being one of the key decision factors which have shaped the city into what it is today. From an innovative, creative, and cultural perspective, Cluj-Napoca is one of the most generous cities in the country. It is at the forefront of cultural development and enrichment in recent times. The city positioned itself as “27th in the group of 40 ranked European cities with 250000 to 500000 inhabitants, mainly due to its 22nd position on Cultural Participation and Attractiveness; 3rd spot on Openness, Tolerance and Trust, 4th position on New Jobs in Creative Sectors and is 9th as regards Creative Economy” (European Commission, 2019).

The economy of Cluj-Napoca has doubled in the 2008–2018 timespan, this leading the city to undergo various changes. This doubling of its economy has thus marked the inclusion of Cluj-Napoca, for 2018, in a top of 50 most developed EU cities (The City Hall of Cluj-Napoca, 2020). As for the development of Cluj-Napoca in terms of industrial development, numerically speaking, the situation is identical as in Oradea. Each city has four industrial parks (even though the volumes and number of active companies in each of the industrial parks are higher/more developed in the case of Cluj-Napoca) (Cluj-Napoca City Council, 2020).

From a value perspective alone, Cluj-Napoca far exceeds Oradea. In 2019, the total sum invested in startups at the Cluj-Napoca level was 3 million euros (startupsnthecity.com, 2020). We do notice that the number of organizations supporting and nurturing both the creation and development of startups has started growing; there are several accelerators tasked with improving the likelihood of success of startups (Techcelerator, Spherik Accelerator, and Tech’n Trade being the most vocal such examples), and also several other organizations which deal mainly with developing the startup ecosystem and landscape in Cluj-Napoca: Cluj-Startups (tasked with organizing events, workshops and networking opportunities between founder and resource owner), ClujHub (organizing of events dedicated for startups), Silicon Forest (co-working spaces for startups and freelancers), Transylvania Angel Network (a collaboration between angel investors and mentoring of founders and startups) (startupsnthecity.com, 2020).

From a perspective of numbers, Cluj-Napoca has the upper hand, and it has outclassed and outperformed Oradea, but then again, this is not a competition, nor should it be considered as it is. In 2018, the Cluj-Napoca city has had 1235 IT companies functioning within city limits. They employed 14036 individuals. They accounted for 8.7% of the total workforce of the city. (www.humandirect.eu, 2018). To put matters even more into perspective, during the 2011–2016-time interval, the number of IT-focused startups has nearly doubled in size, “growing from 1.806 in 2011 to 3.795 in 2016. In Cluj-Napoca, the share of IT startups has grown from 18.4% to 26.5% in the six years” (www.humandirect.eu, 2018). Part of the reasons for doubling these numbers relates to the general stability of the city of Cluj-Napoca, from a dual perspective: the private and public sectors. Although the previous numbers point to the general strength of the Cluj-Napoca city, it is noteworthy to mention that regarding official statistics, given that there is (to the extent of our knowledge) no official registry (neither at national nor at regional/city levels) with the real numbers of startups. Various sources will end up offering different and sometimes contradictory information. As long as no official registries exist with companies that identify as being startups, major differences as regards knowledge of the totality of these organizations will become even more so burdensome.

A more detailed report from the Cluj-Napoca municipality reveals that in eight years, 2011-2019, only 3% of all newly registered companies managed to transit to startups. That transition can happen only if a company achieves an annual revenue growth rate of at least 20% per year in the first three years of work. This percentage translates into 102 new startups per year (on average) in the Cluj-Napoca city and 129 startups in the metropolitan area/area of Cluj per year (on average) in the considered period. (Interdisciplinary Center for Data Sciences, 2020). The distribution of startups in the Metropolitan Area of Cluj-Napoca is as follows: 107 startups in IT&C, 73 in creative industries, 62 in hospitality services, 32 in health and social assistance, 86 in business support services, 34 in engineering and research, 14 in financial services, 97 in transport, 18 in real estate, 12 in education, 35 in the automotive industry, 15 in the pharmaceutical industry (Interdisciplinary Center for Data Sciences, 2020).

Here, we must point out that different sources on the same topic offer different figures. A report by the municipality of Cluj-Napoca reveals the following concentration of clusters (8 clusters) and companies/startups (but without differentiating between startups and fully-grown companies) (393) in the city during 2019. The TREC cluster (17 startups/companies), Agro Transylvania cluster (53 startups/companies), Cluj IT cluster (36 startups/companies), Mobilier Transilvan cluster (44 startups/companies), iTEch Transylvania cluster (66 startups/companies), Transylvania Creative Industries cluster (40 companies/startups), Transylvania Taste cluster (24 companies), Transylvania Lifestyle cluster (113 companies) (The City Hall of Cluj-Napoca, 2019).

5 CONCLUSIONS

The present-day evolution of the entrepreneurial system shows that valuable resources such as talent, know-how, information, and sources for funding are mostly located around large and well-developed metropolitan zones. The exponential growth of such metropolitan areas will attract FDIs, which in turn will lead to knowledge spillover to adjacent regions and contribute to the future development of startups. The North-West of Romania has the potential of becoming one of the most important and vocal innovation hubs in Eastern Europe. We must tread lightly though, given that regardless of efforts, synergies, and recommendations, the transformation of the country and the North-West region cannot occur overnight. An increase of collaboration between the public and private sectors, and the various stakeholder present in the North-West region is vital for the better development of the startup infrastructure and ecosystem. The link between the number and increase in the number of startups and GDP, and between the number and an increase in the number of startups and unemployment, leads us to believe that more startups will appear in cities with lower unemployment. A higher GDP favors an increase in the number of startups.

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ACKNOWLEDGEMENTS

The research has been funded by the University of Oradea, within the Grants Competition "Scientific Research of Excellence Related to Priority Areas with Capitalization through Technology Transfer: INO - TRANSFER - UO", Project No. 318/2021.

APPENDIX

Table 1. Evolution of the number of newly registered companies from 2009 to 2019 for Bihor and Cluj counties (in %) as compared to national levels

Year	% County evolution	National evolution	% National evolution	% of national	% County evolution	National evolution	% National evolution	% of national
	Bihor County				**Cluj County**			
2010	13.55%	7,216	6.45%	3.57%	9.70%	7216	6.45%	4.16%
2011	5.84%	13,021	10.94%	3.41%	23.02%	13021	10.94%	4.61%
2012	0.62%	-6,466	-4.90%	3.60%	5.14%	-6466	-4.90%	5.10%
2013	9.61%	-787	-0.63%	3.97%	-3.87%	-787	-0.63%	4.93%
2014	-24.07%	-23,189	-18.58%	3.71%	-5.21%	-23189	-18.58%	5.74%
2015	9.16%	11,540	11.36%	3.63%	1.80%	11540	11.36%	5.25%
2016	-7.98%	-7,185	-6.35%	3.57%	-4.51%	-7185	-6.35%	5.35%
2017	40.94%	30,717	28.98%	3.90%	50.37%	30717	28.98%	6.24%
2018	7.73%	-1,167	-0.85%	4.24%	-12.97%	-1167	-0.85%	5.48%
2019	-15.86%	-1,312	-0.97%	3.60%	-11.96%	-1312	-0.97%	4.87%

Source: Own calculations based on National Trade Register Office (2021)

Received for publication: 10.02.2022
Revision received: 10.04.2022
Accepted for publication: 26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Gavrilut, D., Badulescu, A., & Badulescu, D. (2022, 07 15). Innovative startups and local development - the case of the north-west region of Romania. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 71-80. doi:10.12709/mest.10.10.02.08

Style – **Chicago** *Sixteenth Edition:*

Gavrilut, Darie, Alina Badulescu, and Daniel Badulescu. "Innovative startups and local development - the case of the north-west region of Romania." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 71-80.

Style – **GOST** *Name Sort:*

Gavrilut Darie, Badulescu Alina and Badulescu Daniel Innovative startups and local development - the case of the north-west region of Romania [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 71-80.

Style – **Harvard** *Anglia:*

Gavrilut, D., Badulescu, A. & Badulescu, D., 2022. Innovative startups and local development - the case of the north-west region of Romania. *MEST Journal,* 15 07, 10(2), pp. 71-80.

Style – **ISO 690** *Numerical Reference:*

Innovative startups and local development - the case of the north-west region of Romania. **Gavrilut, Darie, Badulescu, Alina and Badulescu, Daniel.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 71-80.

MEST Journal
doi: 10.12709/mest.10.10.02.09

IS DOOMSDAY APPROACHING? A CRITIQUE OF MALTHUS

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JEL Category: **Q56**

Abstract

This paper discusses the pervasive arguments that overpopulation and dwindling resources have already doomed humanity or will soon do so. These Malthusian arguments take on many forms but are primarily concerned with increasing populations and limited resources. We evaluate these Malthusian theories both in their original conception and modern applications to examine their logic and appeal, as well as their flaws. We also examine historical evidence such as technology, the effect of the Black Death, and the existence of art to assess the strength of this argument. The thesis of this paper is that Malthusian economics is based on fundamentally flawed logic supported not by evidence but by existential anxiety. What are the specifics? They are that in the view of this famous economist, agricultural products can only increase in arithmetic progression, while the population is not so limited; it can expand geometrically. How will the gap between these two series be reconciled, given that there will be a food shortage? In Malthus' view, the reconciliation will include war, famine, and disease, unless people can be led to have fewer children, a strategy he had little faith in. The present paper attempts to demonstrate the flaws in his analysis.

Keywords: *Malthus, overpopulation, slavery, subsistence, technology, art and monuments.*

1 INTRODUCTION

Resource scarcity is a fundamental underpinning of economic reality. The approach one takes to scarcity and its underlying assumptions, lead to radically different conclusions. The Malthusian analysis paints a grim picture. With the production of food and other resources increasing at a linear rate and the human population increasing exponentially, it is not long until we overshoot our resources and experience massive die-offs, or so the Malthusian argument goes (Malthus, 1798, pp. 4-5). This economist first made the case for overpopulation in 1798. He wrote that mankind tended to exist at a given subsistence level and could not rise far above this for any sustainable time before being brought back down by war,

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disease, and famine.[1] Malthus and his modern-day proponents argue that while technology could increase resources for mankind, it would also encourage more population growth than could be supported by these additional resources. However, Malthusian economics and its variations have fundamentally misunderstood mankind's capability for resource creation and technology's role in it; nor does his subsistence level equilibrium theory have any validity.

2 THE CYCLE OF SUBSISTENCE LIVING

Malthus argues that mankind's natural propensity to increase the population at an ever-growing rate is in inherent contrast with the scarcity and limited production of resources needed for this population to survive. Due to this natural conflict Malthus warns of cycles of abundance and shortages that overall bring mankind back to the "subsistence level"; that is human fate.

Under this model, workers can only earn the bare minimum wage needed to sustain their lives in the long term. He allowed that wages could rise in the short run, but he characterized it as being part of a larger and destructive cycle around a base subsistence level. In the short run, increased real wages could rise above subsistence, bringing about better conditions and living standards for the average worker. However, these "above subsistence" wages would support and encourage population growth as families grew under these superior conditions; but then increased real wages inevitably lead to an increase in population as the stressors of subsistence wages are removed and the human instinct to reproduce fills this void (Malthus, 1798, pp. 8-9). Thus, higher wages create a larger population which in turn means more workers in the market, creating an overabundance of labor. At this point, diminishing returns set in, reducing wages back down to subsistence level.

At some point, the workers may work hard enough to produce above subsistence wages, until some other check comes along to bring population and quality of life plummeting once again. This cycle continues until inevitably some event or "check" occurs to reduce the population and bring it back to supportable levels. Malthus imagined two main forces that would prevent apocalyptic growth:

1. preventive checks, where human beings consciously act to prevent overpopulation[2], and
2. positive checks, where outside events resulting from overpopulation such as war or famine served to reduce the human population.

Unlike other economists such as Adam Smith ([1776] 1979), Malthus did not believe in the ability of markets to create better conditions for everyone. The Malthusian way to raise living standards was not to produce more resources but to reduce the number of people these resources were spread between. By keeping the population low using preventative checks such as abstinence, catastrophic positive checks could be avoided, smoothing the oscillation between abundance and scarcity (Malthus, 1798, p. 20). As an extension of this belief, this staunchly opposed charitable laws and programs aimed to help the poor, perceiving them as encouraging increased population among lower classes without solving any root causes of poverty. Poverty, in this view, is a chronic condition of mankind that will never be solved in its entirety and such charitable efforts would worsen the condition the lower class lived in by spreading existing resources even further.

The implications of this theory, should it be proven accurate, would be monumental; indeed, its impact on policy and philosophy is quite large even without definitive proof[3]. Thus, it is important to evaluate the validity of this theory through an examination of historical trends. If Malthusian theories prove accurate, then there should be a plethora of evidence suggesting cyclical abundance and disaster.

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[1] Market forces based upon supply and demand keep prices within a certain range. In like manner, for Malthus, natural or biological forces do not allow the population to escape from certain limits, in either an upward or a downward direction.

[2] Primarily through abstinence, though modern interpretations focus on alternative methods such as birth control

[3] As is evidenced by the number of laws, policies, and other efforts concerning population and/or resource management, most notably the one-child policy in China

3 HISTORICAL EVIDENCE

So, do we see evidence of this trend historically? Malthus himself admits there is not much evidence of cyclical abundance and catastrophe but blames the lack of historical data and focus on elite society. Still, there are a few historical events that seem to support this theory, particularly the Black Death and its impact on affected economies. The Black Death, a plague that wiped out a third of Europe's population, seems to be a perfect example of a Malthusian "positive check". Following the population reduction, the value of labor, wages, and availability of land rose dramatically, increasing the living standards for workers drastically. Though this seems to support Malthusian theory, several hidden elements complicate the lesson of the Black Death and its implications for society today.

The Black Death came to Europe at a time of low-level technology where production primarily involved manual agrarian labor. This method of production had large diminishing returns as an additional worker did not add much productivity and may even get in the way of other workers (Biddick & Hallam, 1990, p. 625). Thus, a decrease in the supply of laborers raised wages and living standards. However, it is significant to note the lack of sophisticated technology in medieval Europe and that this differs from today's situation. Technological progress creates a vast difference in how individuals and economies interact; as such, any comparison between generations must be made with a critical eye to these differences, especially considering the divergences between the Middle Ages and the modern period. To draw direct parallels between the would prove incredibly difficult, a struggle to hold all variables constant across centuries with piecemeal information[4]. In short, any statement that because a particular outcome resulted in medieval Europe it would remain true in modern ages would be very difficult to defend, largely due to vast differences in technology.

Additionally, even in its own time, the Black Death was not universally beneficial to economies affected by it; citing this scourge as an economic boom may be considered historical cherry-picking that does not extend consideration past Europe. It is true that the plague in most of Europe increased the value of labor and thus the quality of life for survivors, but this was not the case in many regions. For instance, Spain and Egypt saw large negative effects on their economy overall. In Egypt, the plague also swept through and devastated populations, however, its aftermath was not one of economic benefit for survivors. Egyptian economic systems were largely labor-intensive and so a widespread die-off of workers made it very difficult to produce at the same level pre-plague (Borsch, 2014, p. 623). Facing a shortage of workers, the Egyptian economy suffered for some time after the Black Death. Similarly, in the Spanish economy, its factors of production hung in a fragile equilibrium that the plague disrupted. This resulted in massive economic devastation for Spain to a far larger extent than in Europe, even though the plague's spread was far milder there (Álvarez-Nogal, Escosura, & Santiago-Caballero, 2020, pp. 35-48).

Thus, it is not entirely accurate to state that the Black Death promoted economic welfare for survivors in all cases. While disasters can benefit survivors as Malthus opined, it is not an iron rule but a matter of circumstances. As historical evidence suggests, a drop in population may just as well negatively impact society as positively, contrary to Malthusian belief

While there are moments of history that may lend credence to the Malthusian theory of subsistence cycles, there are general trends that refute it altogether. Specifically, the existence of art, monuments, and other ventures of cultural significance suggest the presence of life far above the subsistence level. Any non-essential work, particularly long and arduous processes that serve a purpose other than increased food or productivity, points to an abundance of resources. Individuals living at a subsistence level are only able to produce enough to support their own lives with nothing extra leftover. Therefore, the existence of art, monuments, and magnificent

[4] The accounts of this plague in some regions are limited, as many were not either literate enough to document the plague or had little inclination to do.

churches are incompatible with subsistence-level existence. It points to civilization with an abundance of resources to be able to expend them on work that does not produce more food or other minimal resources needed for survival. Major works of art and architecture require a sustained period of construction that could continue for decades or centuries.

Under the assumption of a Malthusian economic system where periods of abundance exist but always trend back to subsistence level after any sustained period, the presence of pyramids or medieval cathedrals would be puzzling. Since Malthusian checks that reduced population ultimately brings civilization back to subsistence level, this should also halt or stop the construction of such projects. Indeed, if civilizations typically exist at the subsistence level, one should expect to see very few feats of art and architecture. Yet the existence of such monuments throughout history suggests a consistent and widespread abundance of resources far above subsistence level.

Perhaps most significantly, recent historical trends suggest that human innovation and market economies together can create more resources and ways to preserve them. This is most obviously evidenced by rising real wages per capita combined with a rise in population as has occurred in the past several decades along with a lower infant mortality rate and longer life expectancy of populations (Block, Dauterive, & Levendis, Globalization and the Concept of Subsistence Wages, 2007, pp. 74-88). This all indirectly demonstrates the ability of innovation and markets to create more resources and better living standards, a phenomenon showcased in the Simon-Ehrlich wager. This bet between free-market economist Julian Simon and over-populationist Paul Ehrlich was made to decide whether resources were rising or falling on a per capita basis. If the relative prices of a market basket of raw materials[5], rose, this would serve as a signal of coming immiseration. Ultimately, these prices did not rise in the time specified by the wager rather, they fell (Desrochers, 2015). This suggested they were less scarce than they had been in previous years, despite being resources that did not naturally replenish themselves.[6] As Simon and other economists argued, the power of human innovation and market efficiency come together to efficiently use current resources and even produce more resources than were previously available.[7]

4 ROLE OF TECHNOLOGY

Technological progress is perhaps the most important driver of increased wealth, providing increasingly efficient solutions to problems. Malthus acknowledged technological innovation as a force for progress, however, he maintained that it was a rare event that had only short-term beneficial effects; in his view, it was not sufficient to stave off the inevitable return to subsistence living. This view is no doubt a by-product of its time; Malthus wrote his essay in 1798 before the full effects of the Industrial Revolution could be seen or appreciated. This phenomenon changed the way and the rate at which resources are

[5] Non-governmental controlled raw materials, specifically copper, chromium, nickel, tin, and tungsten

[6] In 1980, economist Julian L Simon challenged Paul R Ehrlich, the biologist, and author of the best-selling Population Bomb, to put his money where his catastrophist mouth. Simon asked Ehrlich to stake $10,000 on his belief that 'the cost of non-government-controlled raw materials… will not rise in the long run. The minimum period over which the bet could take place being one year. If, as Ehrlich believed, the store of valuable resources was finite and subject to ever-increasing demand, the resources' price would rise. Simon, however, argued that in a market economy characterized by freely determined prices and secured property rights, a rise in the price of a valuable resource could only be temporary. This is because it would provide incentives for people to look for more of it, to produce and use it more efficiently, and to develop substitutes. In the long run, even non-renewable resources would become ever-less scarce as they are ultimately created by the always renewable and ever-expanding human intellect. Ehrlich, along with his regular collaborators John P. Holdren and John Harte, accepted. They characterized this as 'Simon's astonishing offer before other greedy people' jumped in and offered 'to pay him on September 29, 1990, the 1990 equivalent of 10,000 1980 dollars (corrected by the consumer price index) for the quantity that $2,000 would buy of each of the following five metals on September 29, 1980: chromium, copper, nickel, tin, and tungsten'.

[7] When Ehrlich lost this bet, he proposed yet another, to Simon: that we would soon run out of fish, and their prices would rise. Simon agreed but insisted that farmed fish be included in the bet; Ehrlich wisely declined to pursue this second wager.

produced, drastically raised the living standards, and raised millions out of poverty in a remarkably short amount of time.[8] Though life during the Industrial Revolution certainly wasn't perfect, there was significant economic and technological growth that created new social classes, increased wealth per capita, and generally increased the quality of life (Komlos, 2003, p. 16). Furthermore, this explosion of innovation raised living standards long-term, overcoming diminishing returns to labor for not just a few years but for decades and centuries to come. The technological progress and wealth amassed during the Industrial Revolution set a foundation for further progress that has only been built upon in the following centuries.

When considering the drastic and unpredictable transformation of the economy by the Industrial Revolution, it is understandable why Malthus would come to the conclusions he did. Ironically, this same unpredictability of technology exposes a key flaw in his arguments. Malthus operated under the assumption that the production of resources would remain linear. He was not able to conceive of how technological progress would render the issues of his time largely irrelevant. The nature of technological progress and human innovation is such that we will never be able to predict how we will solve the problems of our time until we have done so, but the historic trend suggests that we will. Far before the industrial revolution, inventions such as water mills and the printing press were already shifting life and living standards for the better (Komlos, 2003, p. 5). Throughout history, human beings have innovated and found previously unheard-of solutions for the most pressing issues of their day; these solutions were never perfect, but they were very often better than what went before.

As evidenced by historical precedent and the intense innovation of our own time, technological progress is not a rare event but a gradual process, occurring every day. Each period of technological innovation has raised living standards higher than previous levels and has been potent enough to sustain increased living standards. Economic welfare in recent history has continuously risen ~~rose~~ among all members of civilization despite a growing population.[9] This demonstrates that technology's effect is long-term, refuting Malthus' conclusion that resources cannot grow in concord with population.

Malthus never considered that the resources available to support populations might exceed expectations. Consider the work of the 20th-century American agronomist Norman Borlaug,[10] whose "green revolution" dramatically increased crop yields and garnered him the Nobel Peace Prize. Some have even suggested that Borlaug saved more lives than any single human being who has ever lived. Malthus also failed, though understandably, to anticipate the introduction of contraceptives. More significantly, he failed to foresee the possibility that, enabled to control their fertility, people might choose to limit their fecundity to increase their standard of living. In general, richer nations such as the US, Germany, and Japan have relatively low fertility rates. To increase living standards, such nations need not fewer but more births.

5 MODERN MALTHUSIANISM

In modern economics and pop culture, Malthus' influence is pervasive (Prestigiacomo, 2022). There is a general sentiment that our planet is becoming overpopulated[11] and that something

[8] Thanks to novelists such as Dickens (1854) this is a controversial claim. For the case that the epoch actually benefitted mankind, and vastly so, see (Ashton & Hudson., 1998); (Berg, 1992); (Crafts, 1985); (Deane, 1979); (Floud & Johnson, 2003); (Floud & McCloskey, 1994); (Hartwell, The Causes of the Industrial Revolution, 1967) (1970) (1972); (Hayek, 1954); (Levin, 1998); (McElroy, 2018); (McKendrick, Brewer, & Plumb, 1982); (Mises, [1949] 1998); (Nardinelli, 1990); (Rosenberg & Birdzell, 1987); (Shaffer, 2004); (Taylor, 1975)

[9] Possibly because of a growing population, which enhances specialization and the division of labor.

[10] Borlaug, (1970), (1983), (2000); (Borlaug & Dowswell, 1994); (Hanson, Borlaug, & Anderson, 1982).

[11] According to Sowell (1983): "Every human being on the face of the Earth could be housed in the state of Texas in one-story, single-family homes, each with a front and a back yard. A family of four would thus have 6,800 square feet- about the size of the typical middle-class American home with front and backyards." For more on the overpopulation myth, see (Bauer, 1981); (Block W. E., 1984A) (1984B) (1989); (Block, Dauterive, & Levendis, 2007); (Boudreaux, 2008); (Coffey & Block, 1999); (Cooper & Block, 2019); (Desrochers, 2015); (English & Block, 1997); (Friedman, 1972) (1977);

must be done to slow population growth.[12] While modern theories are more concerned with environmentalism than poverty, Malthus' catastrophe of dwindling resources has firmly implanted itself into the cultural consciousness. Neo-Malthusianism, for example, is characterized by a similar concern with overpopulation. Its leaders champion a strategy of reducing population, primarily through birth control.[13] Neo-Malthusians are far from the only group influenced by Malthus' thinking, however, and we see this influence spread beyond economics to ethics and general cultural consciousness.

In the modern era many individuals, concerned with overpopulation and environmental impact, have suggested that growing populations and the resulting industrialization of underdeveloped countries may have a negative impact globally. Pointing to the destruction and huge increases in pollution found in the first wave of the Industrial Revolution, they claim that further development may similarly have catastrophic effects on the environment. As such, developed countries should not provide aid to these countries; a variation of lifeboat ethics many have turned economics into a zero-sum game (Hardin, 1974). Of course, this falsely assumes that every successive wave of industrialization will be the same. It is well known that technological innovation becomes much easier to reproduce after the initial innovator has created it; that is, it is far easier and more efficient to copy technological progress than it is to create it. The first wave of any technological innovation is bound to be wasteful, but as others reproduce it, the process becomes more efficient and streamlined.

Consider the iPhone, for instance; when Apple first came out with it, many other companies followed suit in creating their iterations of the smartphone. Did they have to go through the same arduous process of research and development as Apple initially did? No, they merely copied the process, rendering it much more efficient and cost-effective than funding their research and development would have been. This suggests that more recent waves of industrialization will tend to be far less destructive and create less waste than the first Industrial Revolution in Europe and the United States. We see evidence of this in Africa, as the continent has increasingly industrialized over the past century; many regions of this continent do not have the outdated remnants of telephone poles, used for landlines that most no longer use, and which now may be considered wasteful. Instead, these regions were able to bypass the stage of landlines and go straight into using cell phones (Pew Research Center, 2020). This suggests that currently, underdeveloped countries will be able to industrialize and innovate far more efficiently than modern Malthusians estimate.

This debate is just one example of how modern Malthusianism falls into the same trap as its parent theory in failing to consider the role technology and innovation play in progressing society and creating more for everyone. Economics is not a zero-sum game and never will be. Rather, it demonstrates increased opportunities allowing for more innovation and progress, benefiting everyone.

6 SLAVERY

It cannot be denied that the peculiar, and peculiarly evil institution of slavery, has been in existence since the beginning of recorded history, and perhaps even long before that time. How would the existence of this phenomenon impact the Malthusian subsistence level? The two are patently incompatible with one another. For if the average person could only produce enough to keep himself alive, and reproduce his numbers, there would be no profit in slavery. No one would want to hunt down innocent people, kidnap them, or enslave them if they could produce no more than was necessary to keep themselves alive and

(Gaylor & Weil, 2000); (Gunderman, 2021); (Robbins, 1966, pp. 22-33); (Rothbard, 2011); (Say, 1821); (Simon, The Ultimate Resource, 1981) (1990) (1996); (Sowell, 1983); (Williams, 1999); (Wittman, 2000)

[12] See on this Brown's (1963), (1972), (1981), (2009), (2011), (2012); (Commoner, 1990); (Ehrlich, 1968); (Ehrlich & Ehrlich, 1981); (Gore, 1992); (Suzuki, McConnell, & Mason, 2007); (Suzuki & McKibben, 2004); (Suzuki & Hanington, 2012).

[13] Radical extremists even hope for the "right virus" to come along to achieve this goal; Block (2020)

reproduce themselves. No one would purchase such as slave since there would be no profit available for the slave-owner. And, yet throughout history, and, shamefully, even to the present day in some be-knighted corners of the world, this institution exists. This logically implies that the slaves could produce more, far more, than the amount necessary to keep themselves alive.

But more. There are costs of slaveholding, entirely unrelated to feeding. There are also the costs of punishing them, ensuring they do not escape, and guarding against slave rebellions. These costs must be deducted from the financial benefits of owning slaves. Thus, their productivity must be even more greatly over mere substantive levels of productivity.

The existence of slavery is incompatible with a widespread pattern of subsistence levels of productivity. But slavery has always existed. Therefore, the Malthusian claim that human accomplishment is dependent upon subsistence incomes, must be false, QED.

7 POPULATION DENSITY

If it is true that overpopulation leads to impoverishment, then highly dense areas on our globe ought to be poor, and empty areas should be rich. And this is true, to some extent. Paris, London, Manhattan, and Tokyo, feature high population density and are very wealthy. In contrast, there are low-density places in Africa and South America that are relatively poor. But the very opposite is also the case. The high population cities of India and Bangladesh are poor, and there are rich areas in Texas and Saudi Arabia that have relatively low density. The statistical correlation between population density and wealth is highly controversial amongst researchers. This indicates there is no clear cause and effect relationship (Pettinger, 2017) This, too, tends to undermine the Malthusian hypothesis, according to which there would be a strong negative relationship between the two observations.

Rapid population growth has not been an obstacle to sustained economic advance either in the Third World or in the West. Between the 1890s and 1930s the sparsely populated area of Malaysia, with hamlets and fishing villages, was transformed into a country with large cities, extensive agricultural and mining operations, and extensive commerce. The population rose from about one and a half to about six million. The number of Malays increased from about one to about two and a half million. The much larger population had much higher material standards and lived longer than the small population of the 1890s. Since the 1950s, rapid population increase in densely-populated Hong Kong and Singapore has been accompanied by large increases in real income and wages. The Western world population has more than quadrupled since the middle of the eighteenth century. Real income per head is estimated to have increased by a factor of five or more. Most of the increase in incomes took place when the population increased as fast as, or faster than, in the contemporary less developed world.

There is no danger of worldwide malnutrition or starvation through a shortage of land resulting from population growth. Contemporary famines and food shortages occur mostly in sparsely populated subsistence economies with abundant land. There is no shortage of land in areas such as Ethiopia, the Sahel, Tanzania, Uganda, and Zaire. The recurrent famines in these countries and elsewhere in the less developed world usually reflect conditions typical of subsistence or near-subsistence economies.

8 CONCLUSION

Why is it so important to refute Malthusian theory? It matters because theory, especially as influential as the Malthusian, never exists in a vacuum and its application creates real negative consequences. The real importance of debating theory is to ensure the best possible recommendations are being made and implemented. Economic law and policy are often made at the theory recommendations, and it is vitally important that theoretical debate be as thorough as possible. Although it is not the purpose of this paper to inspire policies directly, we do seek to further the intellectual conversation surrounding the topic so that any decision, whether personal or political, be made with the best information possible.

Acknowledgment

The authors thank Cora Abrams for helpful comments on an earlier version of this paper.

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Received for publication:	19.04.2022
Revision received:	24.04.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Heavey, K., & Block, W. E. (2022, 07 15). Is doomsday approaching? A critique of Malthus. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 81-91. doi:10.12709/mest.10.10.02.09

Style – **Chicago** *Sixteenth Edition:*

Heavey, Katharine, and Walter E. Block. "Is doomsday approaching? A critique of Malthus." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 81-91.

Style – **GOST** *Name Sort:*

Heavey Katharine and Block Walter E. Is doomsday approaching? A critique of Malthus [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 81-91.

Style – **Harvard** *Anglia:*

Heavey, K. & Block, W. E., 2022. Is doomsday approaching? A critique of Malthus. *MEST Journal,* 15 07, 10(2), pp. 81-91.

Style – **ISO 690** *Numerical Reference:*

Is doomsday approaching? A critique of Malthus. **Heavey, Katharine and Block, Walter E.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 81-91.

MEST Journal
DOI 10.12709/mest.10.10.02.10

MUNICIPAL WASTE MANAGEMENT FINANCING OPPORTUNITIES

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JEL Category: **Q53, Q54**

Abstract

Developing countries face various obstacles in proper and sustainable waste management. Their authorities cannot manage waste properly because this process requires significant financial resources. Our analysis highlighted the problems of poverty and unstable finances, more precisely, the main reason waste management does not appropriate is the lack of budgets at the local or state level. The administrations need to allocate more funds for integrated sustainable waste management to achieve better results. This article describes different options for municipal waste management projects' financing based on the experience of several selected countries. Particularly it focuses on problems and challenges of the Republic of Moldova in municipal waste sector financing. In conclusion, we gave several recommendations for improving the waste sector financing policy. Also, we underlined that it is necessary to develop a methodology for calculating tariffs. At present, the local public administration has developed those tariffs based on old regulations, which are already outdated in time and do not reflect actual costs for adequate waste management.

Keywords: *external assistance, ecology fund, environmental protection, municipal waste management, public financing, private financing, public-private partnership.*

1 INTRODUCTION

For many years, cities have been the engines of economic growth. At the same time, this growth has brought the immense challenge of the increasing generation of a high volume of solid waste all over the world. As the world's population grows and rapidly urbanizes, the amount of waste generated is projected to increase by 70% over the next 30 years, which means we could create as much as 3.4 billion tons of waste annually by 2050 (see Figure 1).

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Generally, there is a positive correlation between waste generation and income level. Daily waste generation, per capita, in high-income countries is projected to increase by 19 percent by 2050, compared to low- and middle-income countries, where we can expect an increase of nearly 40% or more. The World Bank predicts that the total amount of waste generated in low-income countries will be increased more than three times by 2050. More than half of waste is currently openly dumped in those regions. The trajectories of waste growth will have vast implications for the environment, health, and prosperity, thus requiring urgent action (World Bank, 2016).

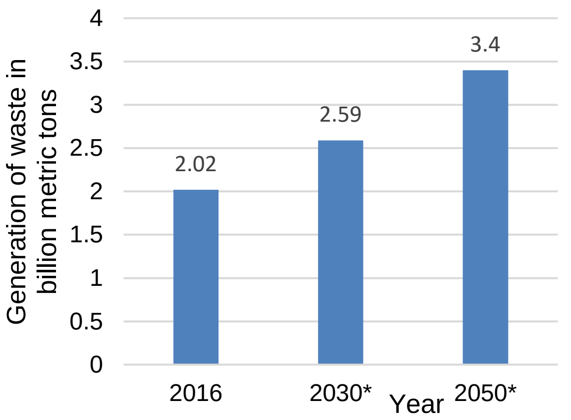

*Fig. 1. A generation of municipal solid waste worldwide from 2016 to 2050 (in billion metric tons, * predicted)*
Source: (Eurostat, 2020)

Waste management operations are typically a local responsibility in most countries. Almost 70 percent of countries have established institutions responsible for policy development and regulatory oversight in the waste sector. About two-thirds of countries created legislation and regulations for waste management. Direct involvement of the central government in the waste management services provision, other than regulatory oversight or fiscal transfers, is not common. Local public entities directly monitored approximately 70 percent of waste services. At least half of the services, from primary waste collection through treatment and disposal, are operated by public entities, and about one-third involve a public-private partnership (World Bank, 2016).

Developing countries face various obstacles in proper and sustainable waste management as the authorities cannot manage waste properly because the waste management process requires good financial resources. Thus, some of the significant problems are poverty and unstable finances.

2 THEORETICAL APPROACHES OF THE INVESTIGATED TOPIC IN SCIENTIFIC LITERATURE

One of the reasons why solid waste management is not adequate is the lack of budget at the municipal level. A proper waste management system requires qualified technical experts, good resources, adequate planning, and coordination with all stakeholders like those involved on the issues of roads, drainage, transportation. Detailed understandings of the stakeholders and their responsibilities are necessary to establish an efficient and effective system. Communication transfer between the different stakeholders to get a well-functioning waste management system in the cities in developing countries is highly important (Guerrero, A.A., Maas, G., & Hogland, W., 2013).

Also, waste management includes administrative, financial, planning, engineering, and legal functions, involving complex inter-disciplinary relations among sectors such as public health, political science, city and regional planning, communication and conservation, demography, engineering, etc. These things are possible only when good financial resources are available for municipalities. Less economically developed countries generally suffer from improper waste management. Also, in most cases, the private sector is not interested in engagement in solid waste management due to a low rate of return and lack of incentives.

One of the significant problems in developing countries is a lack of quality financial management and planning. Also, the annual budget allocation for the sector is weak. Another major problem is corruption. Also, the local tax system is usually undeveloped. Thus, the tremendous expenditure needed to provide the service (Sharholy, Ahmad, Vaishya, & Gupta 2007), the absence of financial support, limited resources, the unwillingness of the users to pay for the service (Sujauddin, Huda, & Rafiqul Hoque, 2008), and lack of proper use of economic instruments have hampered the realization of adequate waste management services.

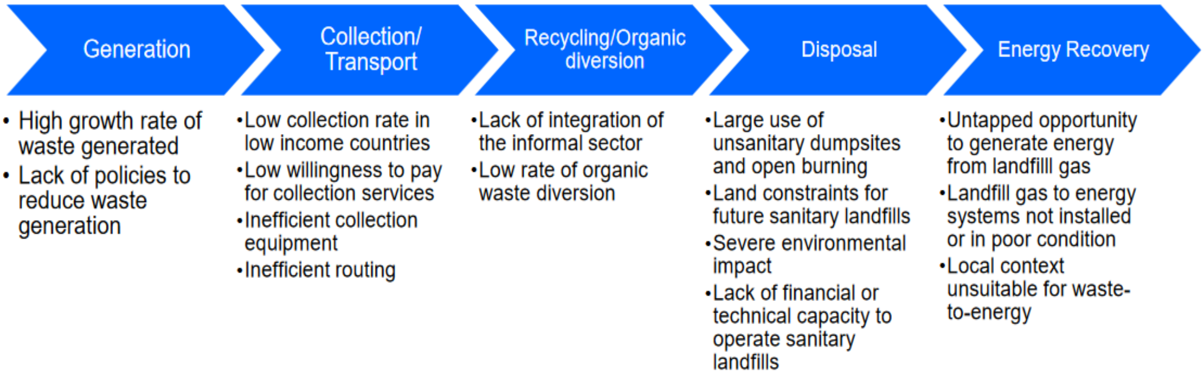

Fig. 2 Common challenges within the municipal waste value chain
Source: (World Bank Group, 2014)

Scholars have cited scarcity of funds as a major constraint to waste management in developing countries (Cointreau, 1982, 2001; Ogawa, 2002; Pacione, 2005). So, Ogawa (2002) mentioned that the finance problem in developing countries is due to inadequacy in the development of the taxation system of the municipal government level that makes the financial base of public services weak. He attributed financial problems to the low capacity of local governments for cost recovery and heavy reliance on state subsidies for these operations.

Sharholy, Ahmad, Mahmood, and Trivedi (2008) indicated that the private sector involvement could improve the efficiency of the waste management system. In general, it is to regard waste management be the sole responsibility of local authorities, and the public should not contribute (Vidanaarachchi, Yuen, & Pilapitiya, 2006). The operational efficiency of waste management depends upon the active participation of both the municipal agency and the citizens. Socio-cultural aspects mentioned by some scholars include people participating in decision-making (Sharholy, Ahmad, Mahmood, & Trivedi, 2008), community awareness, and societal apathy for contributing to solutions.

Financial difficulties of municipal authorities to finance municipal services can be attributed to overreliance on central government intervention. At the same time, some authors believe that any organization that relies on the central government interventions in operation leads to failure because they are often limited. Most of the funds for running municipal waste management operations usually come from limited municipal budgets, making it difficult to improve overall municipal financial systems. Therefore, it is proposed that local governments generate revenues from internal and external sources of funds to finance their operations.

Scope of the research. Considering the ideas of some scholars on the problems of municipal waste management financing, we can conclude *that it is necessary to create strategies to raise funds for sustainable waste management in developing countries.* Thus, the scope of this paper is to identify best practices that would help in the process of waste sector financial strategy creation. The governments should generate more financial aid for integrated sustainable waste management.

The synthesis and methodology of scientific research. We chose the methodology of scientific research based on the context of the complexity of the topic, the diversity of areas and scientific fields of the research, by designing and applying a system of classical methods of analysis and synthesis, induction and deduction, history, and logic, comparative and systemic analysis, as well as observation, statistical methods, analysis and interpretation of data taken. As sources of information, we used the statistical data of the Ministry of Environment of the Republic of Moldova, the National Bureau of Statistics, and the international statistical database.

3 RESULTS AND DISCUSSIONS

There are four different options for waste management projects' financing. Various factors will influence the option chosen. The key factor depends on answering the question about providing waste management service to the citizen goal. The municipality should determine it. Therefore, one can conclude that the finance option is directly related to the waste management goal of a city or state.

1. ***Public Financing.*** That primarily involves funding waste management services entirely by the government through budgetary allocation. The government determines how it will generate the cash for service. Funds can result from taxation or redistribution of funds generated from other sources like sales of city natural resources or a combination of various sources of funds. But the problem of developing countries is that this type of funding is inefficient due to the corruption within the municipality and lack of proper waste management capabilities. The municipality should decide to charge a service fee or not.
2. ***Private Financing.*** That involves including the private sector in waste management services. However, the company involved will charge a service fee determined by calculating the amount of invested funds, operating cost, and desired profit. This financing option can deliver optimal results in carrying out waste management services. The private sector needs to be controlled not to set unacceptable high fees for services to citizens. Private sector funds are usually made available through concession contracts or other forms of public-private partnership. The availability of private funds was demonstrated, in principle, by signing several concession contracts in the waste sector, as well as the construction of waste treatment objects. Private sector investment should relate to national sectoral policies and fair and appropriate coordination. In addition, it is essential whether private sector funds are to be used. They must be requested in response to projects that are defined by the public sector in a strategically planned and justified manner. Financing in this sector can provide a good investment opportunity. However, these funds usually involve higher costs for the beneficiary, as the cost of capital is higher for the private sector than for the public sector.
3. ***Public-Private Partnership (PPP).*** This is a special type of collaboration between the government and private sector in providing funds and management capabilities for carrying out the waste management service. *That type of arrangement is the best, as the government will be able to regulate and have a say in how the service should be delivered, especially in terms of fees' setting.*
4. ***External funds from donors and grants***. That is an efficient way to develop the city waste management infrastructure. But that funding mechanism is dependent on the interest of the donor organization. Hence, it will be difficult for a municipality to dictate how the funds should be distributed within various waste management projects. However, this type of financing can be combined with a PPP agreement to control a specific waste management aspect that is in tandem with the donor's interest and can be part of the municipality's contribution to the PPP.

International practice shows that government support through grants, loans, tax exemptions, and other mechanisms represent a key part of the overall policy mix for municipal waste management. Private and public waste operators, as well as private companies alone, also can be key components of waste management financing. In framing a proper waste management process, investments by businesses are considered a key factor. The relative shares of these sectors vary significantly across countries. For example, the public sector has the largest share in Korea and Spain, while in Estonia and France, specialized producers had the largest share. In Finland and Slovenia, it is the case with the business sector (see Figure 3).

The Korean government, for example, widely used all three of these mechanisms for financing the recycling and incineration activities. In 2014, the national government offered 105.3 billion KRW of financial aid to construct waste-to-energy plants. Government subsidies, tax credits, and long-term, low-interest loans have financed recycling investments, including food waste.

In Colombia, national and regional bodies subsidized investments at about one-quarter of municipalities' investments in landfills and transfer stations (under Colombia National Development Plan 2010-2014). The government has provided tax exemptions for investments in recycling and energy generated by agricultural waste.

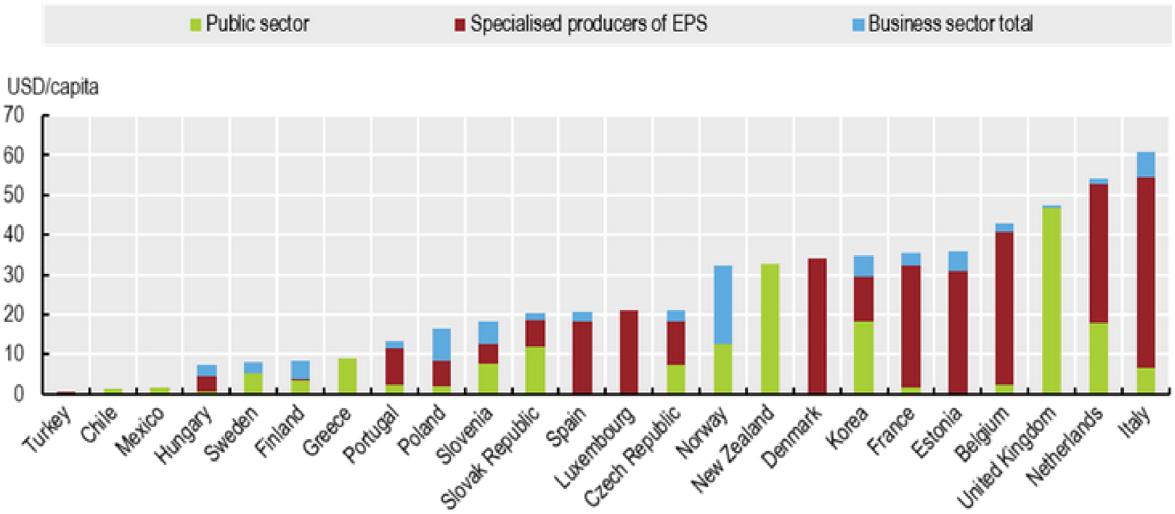

Fig. 3 The sources and levels of investments per capita in waste management across OECD countries (as for 2012)

Source: (OECD, 2017)

Generally, countries' experiences demonstrate that public environmental expenditure is effective, economically efficient, and follows sound principles of public expenditure management.

Several countries use funds resulting from revenues coming from environmental charges and taxes. These are the examples of *Estonia's* Environmental Investment Centre, the *Czech Republic's* State Environmental Fund, and *Poland's* national and regional environmental funds, whose revenues include waste charges and taxes.

Poland's National Fund for Environmental Protection and Water Management, and 16 regional funds have become the main environmental investment funding instrument. These funds receive the proceeds of environmental charges and use the revenue to make low-interest loans. Large projects, such as integrated waste management facilities in Pomerania, a region in the North of Poland, are financed through a combination of EU grants and national and regional fund loans.

In *Israel*, a landfill levy collects into a fund that is used to finance municipal and private sector waste management activities and build needed waste infrastructure*. Estonia, the Czech Republic, Hungary, Poland, and other countries that recently joined the EU,* have used these funds for significant improvements in their environmental infrastructure, including waste management.

Other countries have experienced investments made directly by the business sector and specialized producers. In *Estonia*, for example, the government-owned energy company provided the main financing for the country's waste incineration plant (with co-financing for European Investment Bank), while private waste companies built mechanical biological treatment (MBT) facilities. Thus, specialized producers provide most of the waste financing in several European countries, including Belgium, Denmark, France, and other OECD countries. They turned to the private sector for waste management investments. In Japan, the involvement of the private sector in waste collection and treatment increased by the financing of new projects primarily relating to incineration facilities.

Across all areas of infrastructure, public-private partnerships represent about USD 0.8 trillion of investment in OECD countries, with further projects in the pipelines (OECD, 2019). However, the Environmental Performance Reviews, do not state a lot of references to public-private partnerships for waste management projects. One example was in Poland. For the construction and operation of the incinerator in Poznan, funds from national sources, EU funds, and the private sector have been pooled. That was the first public-private partnership project in the waste sector in Poland.

The analysis of this project pointed to the need for greater capacity of state bodies to manage and implement the financing of public-private partnerships for large investment projects. The OECD set out three broad principles to manage and implement public-private partnership funding for large investment projects of this type of agreement for public authorities (OECD, 2012):

- Establish a transparent, predictable, and legitimate institutional framework supported by competent and well-resourced authorities.
- Ground the selection of Public-Private Partnerships in Value for Money.
- Use the budgetary process transparently to minimize fiscal risks and ensure the integrity of the procurement process.

Several countries have used external public financing for waste investments. In Europe, the EU funds provide grants to support environmental investments in low-income regions. Such is the example of Estonia, where the EU funds financed the separate collection of municipal waste. In Poland, the Czech Republic, Hungary, and Slovenia, grants from EU funds supported a wide range of waste treatment investments, including integrated waste facilities that combined sorting, recycling, and composting for municipal waste.

Many EU countries have received loans from the European Investment Bank, an EU institution, to finance waste treatment investments. External resources supported waste investments in Colombia: funding sources have included the World Bank and bilateral aid programs.

There is a distinction between two critical and related processes in attracting investment to waste management infrastructure by answering two questions: 'How will it be financed?' and 'How will it be funded?'

Financing is related to the sources of capital costs for building the necessary waste infrastructure, while funding refers to the source of the cash flows necessary to continue waste operating service over time.

In developing countries, where national and local government budgets are often severely constrained, the financing concept relies heavily on private sector participation through a variety of financial instruments, while the funding one is part of public policy, i.e., political and regulatory decisions about how to tax the relevant service.

In the Republic of Moldova, the Waste Management Strategy presents the financing principles of the waste sector, which stipulates the use of internal and external sources for financing the waste strategy objectives implementation.

The Annual Budget, the National Ecological Fund, the National Fund for Regional Development, individual contributions, economic agents, and other sources not prohibited by law generate the internal financing resources.

According to Law on State Budget for 2000, for the financing of the waste sector, 63187.7 thousand MDL was planned, representing 24% out of all state budget spending for environmental protection and 0,1% out of the total volume of state budget spending. For years, the distribution of state budget funds for the waste sector financing varied, and the financial resources available for the sector management are insufficient to cover all the expenses related to waste management (see Figure 4).

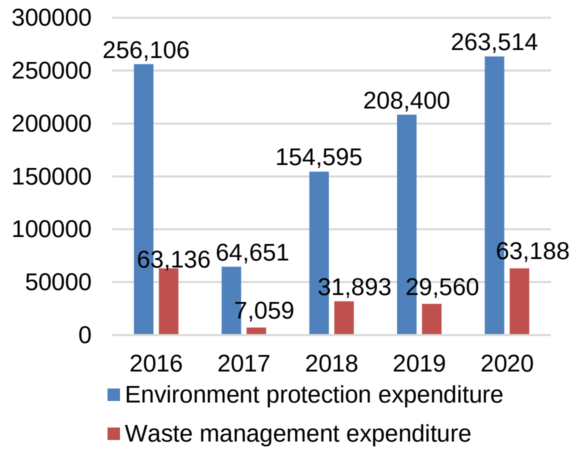

Fig. 4. The State budget expenditure for environmental protection and waste management in the Republic of Moldova, in thousands of MDL.

The National Ecological Fund (the FEN) is under the Ministry of Agriculture, Regional Development and Environment and was created 23 years ago to accumulate additional means to finance environmental activities. The FEN financial means are approved annually by the State Budget Law. They are formed from the means of payments for emissions of harmful substances by mobile sources using petrol and diesel, means intended to compensate for the damage caused to fishery resources, as well as the voluntary contributions of individuals and legal entities. The money is intended for solving environmental and ecological problems, and the funding in the form of grants can benefit local public administration bodies, institutions, enterprises, and civil society organizations in the Republic of Moldova. Their financial contribution must be at least 15% of the project value.

According to presented annual reports on the activity of the National Ecological Fund, over the years it can be attested a low degree of money capitalization for projects directed towards the financing of the waste management sector (see Figure 5).

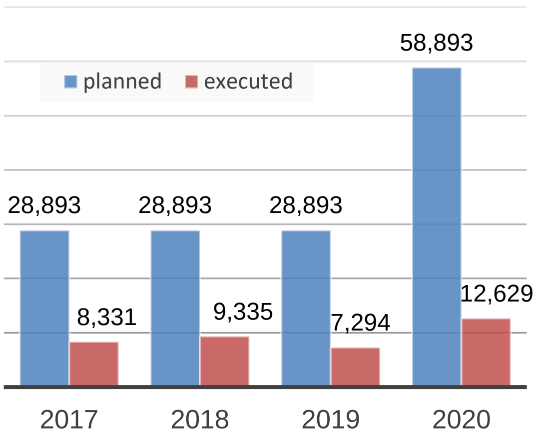

Fig. 5. A capitalization of financial resources from the National Ecological Fund for the waste management sector in the Republic of Moldova (in thousands of MDL)

Among the general causes of non-full usage of financial means allocated from FEN for the implementation of approved projects are:

- Carrying out, repeated in some cases, public procurement procedures due to disputes or non-conformities detected.
- Approvals in stages of the projects, the financial sources being insufficient for each stage completion.
- A need to review construction projects, cost estimates, and approvals for them, given the time that has elapsed from the time of study projects to de facto implementation and to change prices and needs over time.
- A lack or insufficiency of the obligatory individual financial contribution of the beneficiary.
- A failure in executing operations within the pre-established deadlines by some contractors or an inability to execute some contracted volumes within the pre-established deadlines.

After 20 years of activity, the FEN regulation does not have a methodological framework on the criteria for prioritizing the submitted investment projects, which led to their approval in the absence of competition and competitiveness procedures. According to the regulations on the ecological funds by which the FEN operates, the ecological funds exclusively finance the projects in the field of environment, which have passed the established stages of selection and evaluation based on competition. In addition to the lack of competition between investment projects submitted for approval, there is also a lack of a methodology on project prioritization criteria, which affects the approval of all submitted projects that meet the eligibility criteria, without considering the availability of financial resources for covering approved applications. One can notice that the FEN does not have systematized information regarding the results of the investments made, for example, there is no information about the length of the built and reconstructed aqueducts, the population, and the households planned to be connected and connected to the aqueduct.

Another shortcoming of the regulatory framework is that it does not ensure clarity and accuracy in terms of the regulatory limits of each act. The law does not stipulate the extent to which a subject can be developed or expanded by regulations, which can lead to the hidden transfer of competencies from one level of regulation to another. A consequence of this problem is the ambiguous regulation of the categories of FEN beneficiaries. The Law on Environmental Protection stipulates the categories of potential beneficiaries of FEN means, without mentioning that this list of categories is complete, but also without a clear stipulation on the right of certain authorities to complete this list by Regulations. If the regulation provides for a long list of beneficiaries than stipulated in the law, this leads to confusion. For the same reasons, several regulations concerning the FEN training sources, and the use of funds are imprecise and, in some cases even, contradictory.

In the context in which the activity of the Board of Directors of the National Ecological Fund conducts within a permissive and insufficiently substantiated legal framework and the lack of transparency in money management from the National Ecological Fund, we risk that the number of completed projects still will remain low. They will be carried out in the competition procedure's absence due to the lack of a methodological framework on the prioritization criteria and finance projects that do not meet all criteria.

This situation will last until the line ministry takes steps to establish transparent and written procedures, including a deadline for submitting new projects and changing the funding mechanism for projects that have already begun. This way, when forming the budget for the next year, the FEN will be able to consider already funded projects and deadlines for projects agreed between users and contractors. It will also be able to develop criteria for defining project priorities in areas or directions of use of funds managed by the FEN.

Moreover, the financial means of FEN are directed, for the most part, towards projects intended for the supply of drinking water to the population and not for solving environmental and ecological problems, which is, in fact, the purpose of the National Ecological Fund. However, the fundamental problem is the lack of clear priorities for FEN spending. It is necessary to restructure the way of accounting for expenses. First, they need to be integrated into a flexible database that allows the balancing of balances by type of criteria. These criteria may be amounts allocated by types of beneficiaries, funding area, and geographical regions. The database must offer regular monitoring, evaluation of strategies, and reshaping priorities based on the results obtained.

Poland can be an example for the Republic of Moldova in terms of the national ecological system. Poles are governed by the "polluter pays" principle, thus creating the National Fund for Environmental Protection and Water Management (NFEPWM), 16 provincial funds, and numerous local funds. Unlike the National Ecological Fund, which offers grants only to beneficiaries, the financial support of NFEPWM can be granted also through: subsidies, which represent financial aid granted to institutions for the financing of ecological educational projects, pilot projects, or the development of ecological technologies of an experimental nature; loans, with a lower interest rate than that of commercial banks; compensation of bank loans, which is a form of assistance that compensates the difference between the interest rate offered by a commercial bank and the preferential interest rate that would have been charged to the beneficiary if he had addressed directly to NFEPWM.

It should be noted that NFEPWM does not cover more than 50% of the project value, which ensures that the beneficiary will remain interested in the success of the project and will complete it. Moreover, not only public institutions and public associations can apply for projects, as in the case of the Republic of Moldova, but also economic agents. This liberalization of beneficiaries would contribute to the fact that those who will use their means to implement green projects will be much more interested in the success of green projects.

It is also important for the National Ecological Fund to cooperate with the international donor community to attract more resources. External grants and loans are important sources of funding for environmental projects. There are environmental projects that benefit from external financing with money allocated directly.

Technical assistance is needed to support key aspects of the implementation of the strategy, including harmonization of legislation, institutional strengthening, program development, project preparation and implementation, data management, and communication. Technical assistance is a key tool for attracting and delivering programs and investments to recipient countries and is estimated at approx. 8% of the total cost of capital investments attracted.

This external assistance must be managed by the FEN, in the context in which it would have appropriate expertise on projects of national and local importance. This could only be possible if the FEN will be transformed into an institution with the status of a separate legal entity.

External sources of funding include international financial institutions (IFIs), donor agencies that can significantly contribute to the development of the sector, the European Investment Bank, the European Bank for Reconstruction and

Development, the World Bank, and the USAID, which implement projects in Moldova. The IFIs have shown their willingness to finance projects in the waste management sector, depending on what they consider viable. The state guarantee is one of the preconditions for the IFIs' participation. Several donor countries and the EU have expressed a desire to support the further development of the waste management sector. In some cases, it focuses on technical assistance and the elaboration of investment projects. Such aid is often in the form of grants, but it must be imperative that investment projects are under rigorous donor control and follow international project sustainability practices. Also, it needs a thorough analysis of all feasibility issues - technical, economic, social, and environmental.

4 CONCLUSIONS

State involvement is needed to solve the waste problem in Moldova. At the same time, residents should be responsible for separating the collected waste, signing contracts with waste management operators, and paying the sanitation fee. It is necessary to develop a methodology for calculating tariffs because now these tariffs are created by the local public administration, based on old, outdated regulations, and do not reflect actual costs for adequate waste management. Even when there is some legislation in this area, there is currently no regulation that would require that every household in the Republic of Moldova connects to a sanitation service and local public administrations have no right to demand that everyone pay for these services.

There should be set ambitious and attainable waste management targets at the municipal or the national level in consultation with all stakeholders. They need to be aligned with the Sustainable Development Goals. In this sense, local authorities should be encouraged to develop detailed action plans to reach agreed targets. These targets can make use of synergies with other economy-wide and municipal goals, for example, sustainable consumption and production, access to energy, health, clean water and sanitation, climate change, etc.

Governments should establish waste-related statistics that are reported at local, regional, and economy-wide aggregated levels and stored in a transparent database accessible by all stakeholders. Frontrunner cities could be identified through a competitive certification process and then rewarded and held as role models for other cities.

Collaborative projects, able to provide both financial and technical support, should be searched and should let the government promote public-private partnerships in the domain of waste management. Every strategy, elaborated for waste management, should be based on considering the available budget, public health, integrated approach to infrastructure development, and other factors. It is better to prefer waste minimization than waste management. Educational programs should be used to increase awareness of the harmful effects of waste. This will contribute to the reduction of waste generation from each household. Also, we must prioritize recyclable products use.

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ACKNOWLEDGEMENT

This paper was supported by the State Program 20.80009.0807.22 - Development of the mechanism for the circular economy formation in the Republic of Moldova.

Received for publication:	11.01.2022
Revision received:	31.01.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Iordachi, V., & Timus, A. (2022, 07 15). Municipal waste management financing opportunities. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 92-101. doi:10.12709/mest.10.10.02.10

Style – **Chicago** *Sixteenth Edition:*

Iordachi, Victoria, and Angela Timus. "Municipal waste management financing opportunities." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 92-101.

Style – **GOST** *Name Sort:*

Iordachi Victoria and Timus Angela Municipal waste management financing opportunities [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 92-101.

Style – **Harvard** *Anglia:*

Iordachi, V. & Timus, A., 2022. Municipal waste management financing opportunities. *MEST Journal,* 15 07, 10(2), pp. 92-101.

Style – **ISO 690** *Numerical Reference:*

Municipal waste management financing opportunities. **Iordachi, Victoria and Timus, Angela.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 92-101.

MEST Journal
doi: 10.12709/mest.10.10.02.11

MIRCE SCIENCE: MANAGEMENT OF FUNCTIONABILITY EVENTS FOR THE PROVISION OF THE EXPECTED WORK

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JEL Category: **C63, M11, M54**

Abstract

The main objective of this paper is to introduce the management community to the body of knowledge contained in MIRCE Science for the innovative approach to the management of functionability events for the provision of expected work. Thus, management manages the consequences of the complex interactions between potential occurrences of negative functionability events and positive functionability actions taken on the expected work to be done by a given functionable system. This work can be quantified by making the use of MIRCE Functionability Equation. Hence, in the future managers will be able to perform quantitative trade-off between feasible management options to determine one that would yield the greatest benefit measured through the expected work done in respect to the resources consumed. To illustrate the advantages of applying MIRCE Science to the management of negative functionability events a numerical example is provided, where several feasible management options are considered, and their consequences of expected work done quantified.

Keywords: *MIRCE Science, negative functionability events, positive functionability actions, MIRCE functionability equation, quantitative management of expected work.*

1 INTRODUCTION

The philosophy of MIRCE Science is based on the premise that the purpose of the existence of any functionable system[1] is to do a work. The work is done when the expected measurable function is performed through time. The best way to achieve that is to increase the revenue generating work done, while reducing the resources consumed for it. One way towards that target is to reduce the probability of occurrence of negative functionability event by using appropriate management/engineering methods. Another way is to reduce the amount of time a system spends in a negative functionability state by applying appropriate condition monitoring and data management technologies proposed by Industry 4.0. Although there are an infinite number of combinations between these two approaches it is necessary to recognize that the work done by a

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[1] Functionable system is operationally defined functional system. (Dubi, 2000)

functionable system is driven by their complex interactions. Their impact on the amount of work done by a functionable system could be quantified through the following two approaches:

- Measuring the work done during the operation process
- Predicting the work during the planning process.

Measuring the work done is a rather straight forward process where the operational hours are counted together with resources consumed[2]. However, collecting the data regarding the past performance of functionable systems does not have any impact on the past revenue, reputation, loyalty, and other measures of a functionable system's effectiveness.

Predicting the future performances, at the planning stage, gives an opportunity for any changes necessary to create functionable systems with desirable performance to be made, within the given budget. In return it will generate the expected return on their investment (e.g., profit, reputation, loyalty, public benefit and similar). However, to achieve that, it is necessary to have a mathematical model[3] that would facilitate that, as mathematics is the only body of knowledge that enables quantitative predictions to be made in all natural sciences, from quantum mechanics (the motions of subatomic particles) to astrophysics (the motion of spacecraft).

The main objective of this paper is to expose management community to MIRCE Science, a body of knowledge that enables quantitative prediction of the complex interactions between possible operational and maintenance strategies on the work done and resources required (Knezevic, 2017). Hence, by making use of the MIRCE Functionability Equation it is possible to perform quantitative trade-off between feasible management/engineering options to select the compromising solution that would yield the greatest effectiveness, measured through the work done or profit generated.

2 BRIEF OVERVIEW OF MIRCE SCIENCE

According to MIRCE Science, at any instant of calendar time, a given functionable system could be in one of the following two macro states Knezevic (2017):

- Positive Functionability State (PFS), a generic name for a state in which a functionable system can deliver the expected measurable function(s),
- Negative Functionability State (NFS), a generic name for a state in which a functionable system is unable to deliver the expected measurable function(s), resulting from any reason whatsoever.

In MIRCE Science work done by a functionable system is uniquely defined by the trajectory generated by its motion through MIRCE Space[4]. That motion is driven by functionability actions, which are classified as:

- Negative Functionability Action (NFA), is a generic name for any natural process or human activity that compels a system to move to the NFS. Typical examples are thermal ageing, actinic degradation, acid reaction, bird strike, warping, abrasive wear, suncups formation on the blue ice runway, fatigue, pitting, thermal buckling, photo-oxidation, production errors, strong wind, maintenance error, hail damage, lightning strike, COVID-19, quality problems, tsunami, hard landing, sandstorm and so forth.
- Positive Functionability Action (PFA), is a generic name for any natural process or human activity that compels a system to move to the PFS. Typical examples are servicing, lubrication, visual inspection, repair, replacement, final repair, examination, partial

[2] Boeing 747, registration number N747PA, which belonged to Pan Am airways, have delivered the work of 80,000 flying hours and received 806,000 maintenance man-hours, during the 22 years of in-service life. (Knezevic, Systems Maintainability, Analysis, Engineering and Management, 1997)

[3] Newton, Maxwell, Lagrange, Boltzmann and other well know and applied equations used as the mathematical models for the predictions of the physical behaviour of natural world.

[4] MIRCE Space is a conceptual 3-dimensional space containing infinite set of possible discrete functionability states that a functionable system could be found in, at any instant of the calendar time, and corresponding probabilities. (Knezevic, The Origin of MIRCE Science, 2017)

restoration, inspection, storage, modification, transportation, sparing, cannibalization, refurbishment, health monitoring, restoration, packaging, diagnostics and similar

The time evolution of a functionable system through MIRCE Space is physically manifested through the occurrences of functionability events, which are classified as:

- Positive Functionability Event (PFE), a generic name for any physically observable occurrence in the calendar time that signifies the transition of a functionable system from a NFS to the PFS.
- Negative Functionability Event (NFE), a generic name for any physically observable occurrence in the calendar time that signifies the transition of a functionable system from a PFS to the NFS.

Consequently, the concept of the time evolution in MIRCE Science is conceptualized as the motion of a functionable system through functionality states, resulting from any functionability actions whatsoever and the actions required to generate any functionability motion.

3 MATHEMATICAL PRINCIPLES OF MIRCE SCIENCE

The ability to "normalize" all competing options of a functionable system enables comparisons to be made between them and finally select the best one, in accordance with a given criterion. Hence, MIRCE Science is a body of knowledge that enables quantitative assessment of the impact of the multidimensional interactions between:

- constituent components (mechanical, electrical, electronics and so forth)
- system architecture (active and passive redundancies)
- economic considerations (income, cost, revenue, investment, inflation, etc.)
- natural environment (temperature, wind, humidity, fog, and many others
- human rules regarding:
  - operation process (levels of stress, frequencies of use and similar)
  - maintenance policies: preventive, condition based, opportunistic etc.
  - support strategies: in house support, outsource, combined.

According to the MIRCE Science philosophia[5] positive work is done when a functionable system is delivering a functionality performance, which means that it must be in a PFS. According to Knezevic (2017) the expected positive work to be done by a functionable system during a given interval of calendar time *T*, $PFW_S(T)$, measured in calendar hours, Hr, can be calculated by making use of the following equation:

$$PFW_S(T) = \int_0^T y_S(t)dt \qquad [Hr] \qquad (1)$$

where: $y_S(t)$ is MIRCE Functionability Equation (Knezevic, 2014) that quantifies the probability of the event *{system is being in a PFS at instant of calendar time t},* thus:

$$y_S(t) = \sum_{i=1}^{\infty}\left[O_s^{i-1}(t) - F_s^i(t)\right] \qquad (2)$$

where:

$O_s^{i-1}(t) = P(TPE_s^{i-1} \le t)$ and

$F_s^i(t) = P(TNE_s^i \le t)$.

It is necessary to point out that $O_{s,0}(0) = 1$, in accordance with the 1st axiom of MIRCE Science (Knezevic, 2017).

The infinite sum of positive and negative functions represents a mathematical scheme that in MIRCE Science defines the sequential occurrences of the functionability events in the direction of the calendar time, for each feasible variation of the functionable system considered. In the language of mathematics these are systems of the convolution integrals. Thus, the sequential positive functionability functions, $O_s^i(t)$, which defines the probability that the PFE_S^i in the life of a functionable system, will take place before or at

[5] In Greek, *philosophia* "love of knowledge, pursuit of wisdom; systematic investigation, from *philo-* 'loving' + *sophia* 'knowledge, wisdom' "

the instant of calendar time *t*, is defined by the following convolution integrals (Knezevic, 2017):

$$O_s^i(t) = \int_0^t F_s^i(x) dO_{s,i}(t-x) \tag{3}$$

For the i^{th} sequential positive functionability event, PFE^i, to take place before, or at the instant of calendar time t, it is necessary that the previous functionability event, which in this case is NFE^i, take place sometime before time *t*, denoted by *x* in the above expression. Then, the sequential PFE_i must take place during the remaining interval of calendar time, which in this case is denoted with t-x.

The process of defining the negative sequential distribution Function, $F_s^i(t)$, which defines the probability that the i^{th} sequential NFE_S of a functionable system will take place before or at an instant of calendar time t, follows the same mathematical principle. Thus, the sequential negative functionability functions are fully defined in the following way:

$$F_s^i(t) = \int_0^t O_s^{i-1}(x) dF_{s,i}(t-x) \tag{4}$$

This multidimensional set of convolution integrals defines the motion of a functionable system through MIRCE Space, depicting and passing through each sequential functionability state in the direction of calendar time, generating a trajectory unique to each functionable system. Thus, the same set of generic equations, when applied to different operational and maintenance policies generate different trajectories of the motion through MIRCE Space, which means different functionability performance, namely different work done, and different resources consumed. Hence, Knezevic (2017) has created a generic platform on which each feasible plan for the operation and maintenance policies and strategies would generate its own future “trajectory” for a system under consideration.

4 MANAGEMENT OPTIONS: AN ILLUSTRATIVE EXAMPLE

To illustrate the applicability of MIRCE Science to the quantitative assessment of the combined impact of management policies and strategies on the work done by a functionable system considered, a hypothetical example will be used.

The simplest possible functionable system consists of one component that exists in two functionable states, namely PFS and NFS. Even further, a single positive or negative action causes the occurrences of positive and negative events at which the functionable system changes its functionable states.

It is necessary to stress that this example is chosen, not because the real functionable systems consist of a single component, but because it is extremely useful for the understanding of the mathematical scheme that defines the motion of a functionable system through MIRCE Space. This knowledge, in turn, quantifies its expected functionability performance, namely the expected work done, and corresponding resources consumed.

To demonstrate the applicability of MIRCE Science mathematical scheme to the quantitative assessment of the combined impact of management/engineering decisions on the performance of a functionable system the following three options of the future system are addressed:

Option 1: Basic design; The functionable system under consideration is expected to experience occurrences of a NFE during a continuous operation with the expected value of $E[TNE_{S,}]=1080\ Hr$. What is the amount of a positive work expected to be delivered during a calendar year of continuous operation, without performing any positive action?

Option 2: Adding positive actions; What would be the additional work done if the system is designed in the way that maintenance actions could be performed after occurrences of negative functionability events? Assume that the design-in maintenance action that returns a functionable system to *PFS* has the expected value of *E[TPES,]=168 Hr* .

If options 1 and 2 are not satisfying business requirements, an additional amount of money has been allocated to the project. Contributing departments have been asked to make the proposal for the increase of the expected work done, for a given extra budget. The following two proposals were made:

Option 3: The production department submitted a proposal in which they were stating that by investing the additional funds allocated into a new technology based on Industry 4.0 it would be possible to extend the basic design expected life of a system by 50%.

Option 4: The Maintenance Engineering department submitted a proposal in which they were stating that by investing the additional funds allocated into new testing and diagnostic equipment it is possible to reduce the time spend in NFS of a system 50%, in respect to the Option 2.

Which option should be adopted and why?

Best to the author's knowledge today there is no management body of knowledge that can provide quantitative justifiable answer to the above questions. In the remaining part of the paper, it will be shown how to apply MIRCE Science equations to provide the quantitative answer to the question posed, to maximize the return on investment like profit, reputation, loyalty, public benefit and so forth.

5 MIRCE SCIENCE BASED SOLUTION FOR ANALYSIS OF MANAGEMENT OPTIONS

Option 1:

Based on the information available the only possible conclusion regarding the probability distribution of the TNE of a system is that it is fully defined by the exponential distribution, which is uniquely defined by the expected value, which in this case is A_N= E[$TNE_{S,}$]=1080 Hr. The expected positive functionability work from this management option could be determined by obtaining the numerical solution to the Eq. 1.

A generic expression for an exponentially distributed cumulative distribution function of a random variable TNE_i is

$$F_{S,i}(t) = P(NFE_{S,i} \le t) = 1 - \mathrm{e}[\text{-}(t / A_N)], \quad i = 1, \infty$$

Based on the data available, the probability of the first negative functionability event of a system, NFE_S^1, taking place before of at a given instant of time t is:

$$F_S^1(t) = 1 - \mathrm{e}[\text{-}(t / 1080)], \quad 0 \le t \le \infty\,.$$

In this specific case, where it is decided that not to take any action after the occurrence of the first negative functionability event, MIRCE Functionability Equation is defined as:

$$y(t) = \mathrm{e}\left[-\left(t/1080\right)\right].$$

Finally, by making use of the Eq. 1 it is possible to derive the expression for the expected work done, as follows (Knezevic, 2021):

$$PFW(T) = \int_o^T \left[\mathrm{e}^{-\left(\frac{t}{A_N}\right)}\right] dt = A_N \left[1 - \mathrm{e}^{-\left(\frac{T}{A_N}\right)}\right]$$

For the planned continuous operation of the functionable system during a calendar year, *T=24x365= 8760 Hr*. Hence, the amount of expected positive functionability work to be done by the design option considered is:

$$PFW(8760) = 1080 \times \left[\left(1 - \mathrm{e}^{\left(-\frac{8760}{1080}\right)}\right)\right] = 1079.68 \text{ Hr}$$

In summary, a functionable system defined with the available data is expected to deliver 1079.68 hours of work during the available 8760 calendar hours.

Option 2:

Following the logic used in the analysis of Option 1, in this example, the exponential theoretical distribution with the expected value of E[$TPE_{S,}$]= A_P= *168* Hr, is used to describe the motion of a system though NFS. Thus, according to the data available, the cumulative distribution function for the time of occurrence of i_{th} positive functionability event is defined as:

$$O_{S,i}(t) = 1 - \exp(-t / A_P), \quad i = 1, \infty.$$

Thus, the MIRCE Functionability Equation (Eq. 2) becomes fully defined by the set of convolution integrals which are of the form of the Gamma probability distribution, as the convoluting functions are defined by the identical exponentially distributed random variables, $TNE_{S,i}$ and $TPE_{S,i}$ in the following way:

$$O_s^i(t) = \int_0^t \left[\frac{(1/A_P)(t/A_P)^{i-1} e^{(-t/A_P)}}{(i-1)!} \right] dt$$

$$F_s^i(t) = \int_0^t \left[\frac{(1/A_N)(t/A_N)^{i-1} e^{(-t/A_N)}}{(i-1)!} \right] dt$$

Dubi (2000) has proven that a generic expression for the MIRCE Functionability Equation (Eq. 2) for equally exponentially distributed time to negative and positive functionability events, as defined above, is equal to:

$$y_S(t) = \left[\frac{A_N}{A_P + A_N} + \frac{A_P}{A_P + A_N} e^{-\left(\frac{A_P + A_N}{A_P A_N}\right)t} \right] \qquad (5)$$

The amount of the expected positive work to be done by the system defined by option 2 could be calculated by substituting the function *y(t)* into Eq. 1, thus (Knezevic, 2021):

$$PFW(T) = \int_o^T y(t)dt = \int_o^T \left[\frac{A_N}{A_P + A_N} + \frac{A_P}{A_P + A_N} e^{-\left(\frac{A_P + A_N}{A_P A_N}\right)t} \right] dt \qquad (6)$$
$$= -\frac{A_N A_P}{A_P + A_N} \left[-\frac{T}{A_P} - \frac{A_P}{A_P + A_N} \left(1 - e^{-\left(\frac{A_P + A_N}{A_P A_N}\right)T} \right) \right]$$

After substituting the values for the parameters in the above expression the expected positive functionability work will be 7600.34 Hr.

Thus, by managing the operation of a system in the way that it is possible to return it in PFS after the occurrence of NFE by performing specific maintenance activities, the expected work done by a system will increase by 6520.66 Hr, in respect to the expected work done by option 1.

Option 3:

By implementing proposed manufacturing technology proposed the expected time to the occurrence of NFE, will increase from 1080 Hr to 1620 Hr, while maintaining the same characteristics of $TPE_{S,i}$, thus (Knezevic, 2021):

$$PFW(8760) = -\frac{A_N A_P}{A_P + A_N} \left[-\frac{T}{A_P} - \frac{A_P}{A_P + A_N} \left(1 - e^{-\left(\frac{A_N + A_P}{A_P \times A_N}\right)T} \right) \right]$$
$$= -\frac{1620 \times 168}{1620 + 168} \left[-\frac{8760}{168} - \frac{168}{1620 + 168} \left(1 - e^{-\left(\frac{1620+168}{1620 \times 168}\right)8760} \right) \right] = 7951.21\, Hr$$

Option 4:

As a result of improved testing and diagnostics equipment, proposed by the maintenance engineering department the expected time in NFS will be reduced to $A_P = 84\ Hr$, while maintaining the same probability distribution for $TNE_{S,i}$, hence (Knezevic, 2021):

$$PFW(8760) = -\frac{A_N A_P}{A_P + A_N} \left[-\frac{T}{A_P} - \frac{A_P}{A_P + A_N} \left(1 - e^{-\left(\frac{A_N + A_P}{A_P \times A_N}\right)T} \right) \right]$$
$$= -\frac{1080 \times 84}{1080 + 84} \left[-\frac{8760}{84} - \frac{84}{1080 + 84} \left(1 - e^{-\left(\frac{1080+84}{1080 \times 84}\right)8760} \right) \right] = 8133.46\, Hr$$

Based on the predicted expected work done by the system under consideration, by applying the MIRCE Science equations the final solution to be recommended for the adoption for the future system is option 4. This feasible management solution provides additional work of 351 Hr in respect to option 3 and 533 Hr in respect to option 2, as illustrated by Figure 1.

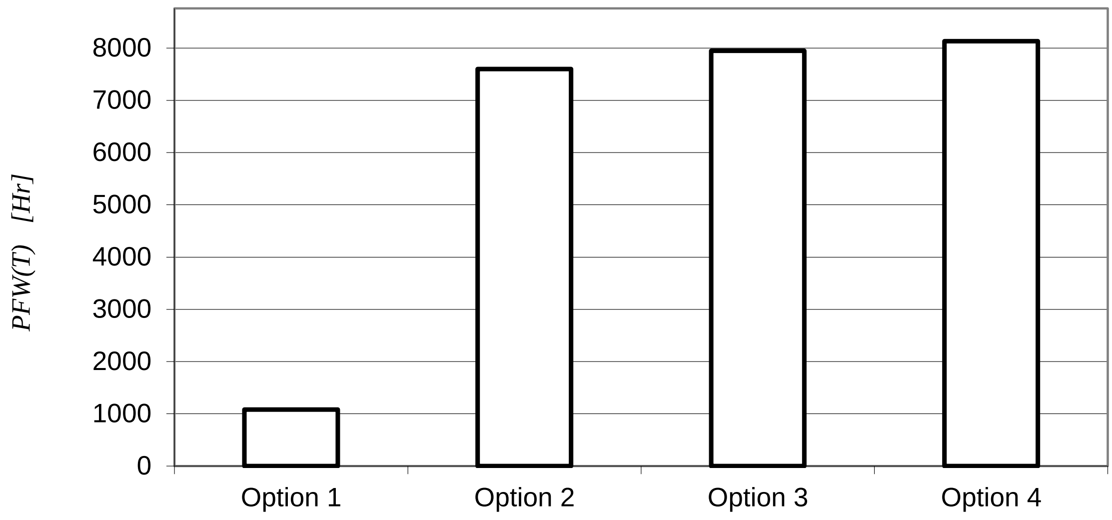

Figure 1: Expected work done by all four feasible maintenance management options

The impact of all feasible solutions presented above on revenue, cost and profit could be easily computed by making use of the MIRCE Profitability Equation presented in (Knezevic, 2016).

6 MIRCE SCIENCE BASED PHYSICAL ANALYSIS OF MANAGEMENT OPTIONS

The mathematical analysis of the four feasible management options, considered above, has shown that is expected that option 4 will provide the highest amount of work done during the year of operation, with the same monetary value of resources investment in the other three. This conclusion was made by quantitatively evaluating the MIRCE Functionability Equation for each management option using the available input data.

From a mathematical point of view the obtained results are correct as none of the mathematical equations violate any mathematical laws. However, as these are production and maintenance management options, it is their duty to select the input data into mathematical predictions. This is primarily related to the selection of mathematical models that define physical mechanisms that generate the motion of functionable systems through functionability states, as the MIRCE Functionability Equation is presented in a generic form, suitable for any application. However, the specific probability functions must be selected by the managers of specific systems.

In the above example, exponential probability distributions are selected for random variables, TNE_i and $TPEi$, purely for the ease of the calculation of corresponding convolution integrals (Eq. 3 and 4).

From a scientific point of view the mathematical assumption made had the following physical consequences, thus a system cannot:

- experience any manufacturing, transportation and installation actions that would generate the NFE.
- experience any time or usage related degradation mechanisms, like corrosion, fatigue, thermal deformation, creep, wear and similar.
- experience any maintenance or storage induced action that would generate the NFE.
- be exposed to seasonal, operational or geographical variability.

From a maintenance point of view the mathematical assumption made had the following physical consequences; no maintenance action applied to the system can have fix duration of time required for its successful completion, like:

- 24 hours for a paint to dry
- 12 hours for a physical/chemical analysis used as a part of the troubleshooting process,
- 7 days contractual provisioning of spare parts

The above statements of a physical reality known and experienced by managers, engineers, technicians, and others involved with the operation process of functionable systems. Based on the above analysis of the observable physical reality excluded by mathematical assumptions of exponentially distributed times of the evolution of functionability of a system through MIRCE Space, presented in the numerical example used in this paper, the following two points must be made:

1. Equations 1 and 2 are generic expressions applicable to any functionable system, operating in any natural environment, exposed to any human imposed rules. To be utilized during the design process it is necessary that relevant professionals are involved to identify mathematical laws that adequately described the physical reality of their systems and then seek a method for evaluation of convolution integrals defined by Eq. 3 and 4.
2. Equations 5 and 6 provide accurate predictions of the expected work to be done during the in-service lives of functionable systems given that operational and maintenance limitations, some of which are listed above, and many others, are not applicable to their systems, otherwise the predictions would be incorrect.

7 A FEW WORDS MORE ABOUT THE USE OF MIRCE FUNCTIONABILITY EQUATION

The numerical example used in this paper is related to a system that consists of a single component, where both positive and negative functionability actions are mathematically represented by corresponding exponential probability distributions, for a very simple reason. This combination is the only case for which an explicit closed mathematical solution exists.

Because realistic systems involve more than a single component with more than one functionability event generating mechanisms the possibility of finding an analytical solution for multidimensional convolution integrals defined by Eq. 3 and 4 are seldom possible due to the inability of mathematics to deal with the large number of convolution functions and their interactions. These types of problems are not specifically related to MIRCE Science, they are common to all scientific disciplines of this nature, as it is a known mathematical fact that the integral equations do not have analytical solutions. (Knezevic, 2017)

The most suitable way forward for any real functionable systems, of any complexity of operational reality, is to apply the Monte Carlo method as the only viable approach with which solutions for the MIRCE Functionability Equation and thereby for the system performance may be obtained. It is applicable to systems with multiple interacting components, with ageing mechanisms and any operation, maintenance, and support rules. Thus, the Monte Carlo method provides the performance function of a system for any given scenario and with any form of resources, but it is beyond the scope of this paper.

8 CONCLUSIONS

The main objective of this paper is to introduce the management community to the body of knowledge contained in MIRCE Science for the innovative approach to a management of functionability events for the provision of the expected work. Thus, managers manage the consequences of the complex interactions between occurrences of negative functionability events and execution of positive functionability actions taken that drive the behavior of functionable systems, which is quantifiable the MIRCE Functionability Equation. Hence, in the future managers will be able to perform quantitative trade-off between feasible positive and negative functionability options to determine one that would yield the greatest benefit measured through the expected profit. To illustrate the advantages of applying MIRCE Science to the management process a numerical example is provided, where several feasible functionability options are considered and quantified.

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Received for publication:	07.01.2022
Revision received:	20.04.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Knezevic, J. (2022, 07 15). MIRCE science: Management of functionability events for the provision of the expected work. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 102-110. doi:10.12709/mest.10.10.02.11

Style – **Chicago** *Sixteenth Edition:*

Knezevic, Jezdimir. "MIRCE science: Management of functionability events for the provision of the expected work." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 102-110.

Style – **GOST** *Name Sort:*

Knezevic Jezdimir MIRCE science: Management of functionability events for the provision of the expected work [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 102-110.

Style – **Harvard** *Anglia:*

Knezevic, J., 2022. MIRCE science: Management of functionability events for the provision of the expected work. *MEST Journal,* 15 07, 10(2), pp. 102-110.

Style – **ISO 690** *Numerical Reference:*

MIRCE science: Management of functionability events for the provision of the expected work. **Knezevic, Jezdimir.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 102-110.

MEST Journal
doi: 10.12709/mest.10.10.02.12

ELEUTHERIC-CONJECTURAL LIBERTARIANISM: A CONCISE PHILOSOPHICAL EXPLANATION

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JEL Category: **D23, K11, P14**

Abstract

The two purposes of this essay. The general philosophical problem with most versions of social libertarianism and how this essay will proceed. The specific problem with liberty explained by a thought-experiment. The positive and abstract theory of interpersonal liberty-in-itself as 'the absence of interpersonal initiated constraints on want-satisfaction', for short 'no initiated imposed costs'. The individualistic liberty-maximisation theory solves the problems of clashes, defences, and rectifications without entailing libertarian consequentialism. The practical implications of instantiating liberty: three rules of liberty-in-practice, 1) initial ultimate control of one's body, 2) initial ultimate control of one's used resources, 3) consensual interpersonal interactions and resource transfers. These rules are economically efficient and maximise general want-satisfaction. Private property and legal remedies are additional practical institutional aspects, but to which 'initiated imposed costs' then apply prima facie. Libertarian law is often mistaken for complete libertarianism. Moral explanations are a separate issue. The three main moral theories imply libertarianism, but it can be morally posited independently of them. Critical rationalism and its application. No empirical or argumentative support for theories. An important ambiguity with 'justification'. How the epistemology applies to the theory of liberty and its application but remains separable in principle. Conclusion: there are further published explanations but this should be enough to generate useful criticism. Appendix replying to some typical comments.

Keywords: *libertarianism, liberty, theory of liberty, critical rationalism, property, law, legal remedies, morality*

1 INTRODUCTION

This essay has two main purposes. First, to explain a particular philosophical theory of social liberty in a far more precise and concise manner than has been achieved hitherto: it contains all of the main elements made much clearer compared to the three earlier books[1] and various additional articles, plus some important new elements. This appears to be needed because less focused and longer explanations of it have evoked some

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[1] (Lester, Escape from Leviathan: Libertarianism Without Justificationism, [2000] 2012); (Lester, Explaining Libertarianism: Some Philosophical Arguments, 2014); (Lester, Arguments for Liberty: A Libertarian Miscellany, [2011] 2016).

confusion about what the theory is really asserting and how the various parts fit together. In any case, the theory has partly become clearer in response to the criticisms that it has so far received.[2] Second, this explanation is intended to encourage further and more relevant criticisms.

2 THE GENERAL PHILOSOPHICAL PROBLEM AND ITS GENERAL SOLUTION

The central social-libertarian insight is that private property both protects people and their projects and promotes productivity for all. However, orthodox private-property libertarianism is severely philosophically confused. It conflates theories of rights, property, consequences, and so-called 'supporting justifications'. And this is all done without an explicit theory of liberty: an eleutherology (from 'eleutheria', an Ancient Greek term for, and personification of, liberty). This is as absurd as if utilitarianism were to have no explicit theory of utility.[3]

Therefore, this essay first gives a very brief explanation of a positive[4] theory of abstract liberty (liberty-in-itself) and what it generally and normally entails if applied (liberty-in-practice). This is philosophically deeper than theories of libertarianism that start with propertarian[5] or normative[6] assumptions, or which merely list things libertarianism is supposed to be about[7] (however accurate, as far as they go, these approaches may sometimes be). There is then a brief explanation of critical-rationalist epistemology and how it applies. These two, logically independent, parts comprise eleutheric-conjectural libertarianism: the full solution to the general philosophical problem.

3 ABSTRACT LIBERTY, ITS STAGES OF PRACTICAL APPLICATION, AND MORALITY

3.1 The specific philosophical problem with liberty

Libertarianism—and classical liberalism generally—entails (or presupposes) a specific, but implicit, conception of liberty.[8] Imagine two lists of property-rights: one list is all those that currently appear to be[9] libertarian (self-ownership, property acquired by use of natural resources, property acquired by consensual exchange, etc.); the other list is all those that currently appear not to be libertarian (aggressively imposed slavery, property acquired by theft or fraud, property acquired by coerced transfers due to welfare claims, etc.). What determines into which list a property-right is to be assigned? If libertarianism is really about liberty, then the determining factor must be whether the property-right somehow fits what liberty is in a more abstract sense than property. It greatly clarifies matters to have an explicit theory of this entailed conception of abstract liberty and how it relates to its practical application and to morality.

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[2] Strictly speaking, even the slightest elaborations of a theory or attempts to make it more precise could be said to produce what logically must be a different, if very similar, theory. But, loosely speaking, it is convenient to refer to it as fundamentally the same theory unless and until one of its crucial aspects is jettisoned, or radically reinterpreted, or overwhelmed by some important new addition. And none of these things appears to have occurred.

[3] In fact, it has several: pleasure, happiness, and preference-satisfaction are the three main contenders.

[4] As opposed to the philosophical sense of 'normative': referring to morals and values.

[5] See, for instance, the many publications by Walter Block.

[6] As is famously the case in Nozick, R. *Anarchy, State, and Utopia* (1974): "Individuals have rights, and there are things no person or group may do to them (without violating their rights)" (p. ix).

[7] E.g., Zwolinski (Libertarianism, undated): "libertarians are generally united by a rough agreement on a cluster of normative principles, empirical generalizations, and policy recommendations" (a list of eight examples then follows).

[8] There will be no discussion of non-libertarian theories of liberty and how they might relate to property, or to its absence. That would be a digression, and probably a lengthy one.

[9] It is as they "currently appear to be" (rather than, dogmatically, 'what they certainly are') because it may be necessary to revise or qualify our lists to some extent once we arrive at an explicit theory of liberty.

3.2 The abstract theory of interpersonal liberty

'Liberty' in its general sense means 'absence of constraint' (a relevant contrast is 'presence of assistance'). The issue here is interpersonal liberty: the absence of constraints on people by each other (not any natural constraint, whether *intra*personal or external). But what is it, most generally, that we want other people not to constrain? That general thing appears to be the satisfaction (i.e., fulfilment or achievement, *not* a psychological sensation) of our wants, or preferences, themselves. However, simply failing to assist someone's want-satisfaction (not providing a benefit or gain) is not equivalent to initiating a constraint on that want-satisfaction (initiating a cost or loss). Therefore, this abstract liberty can be theorized as 'the absence of interpersonal initiated constraints on want-satisfaction'. But for brevity we may use 'no initiated imposed costs'[10] to mean the same thing.[11] This also solves the problem of what, in abstract principle, constitutes '(inflicted) harm' from a libertarian viewpoint. This eleutherology is the theory of abstract perfect, or complete, interpersonal liberty-in-itself that libertarianism implicitly presupposes. This is a descriptive *theory* of libertarian liberty that is falsifiable by counterexample or sound criticism (e.g., showing that it is somehow incoherent, or that it cannot explain some aspects of libertarianism, or that another theory of liberty fits libertarianism better). It is not a definition (as the non-philosophical, in particular, may mistakenly view it), whether stipulative, persuasive, or about usage. However, any theory can also be used as a definition.

3.3 The individualistic liberty-maximization theory

There are three general theoretical problems with applying this account of perfect liberty: clashes, defenses, and rectifications.

1) What if our want-satisfactions clash? I want to do something which, unintentionally, would initiate imposed costs on you (e.g., my starting a fire would cause you obnoxious and hard-to-avoid smoke), but to stop me would also initiate imposed costs on me (I want a fire for warmth and cooking). The most libertarian option is to minimize overall initiated imposed costs, with situation-specific compromise or compensation. Thus, we see the error in assuming that libertarianism is absolutist: that individual liberty can always be perfect and without any infractions.

2) How far can one go to defend oneself from initiated imposed costs? Not so far as to initiate them oneself by overall exceeding any that are threatened (e.g., putting landmines in one's garden to stop children using it as a shortcut).

3) If an initiated imposed cost occurs, then what would rectify it? Restitution matching the degree of cost,[12] including retributive-restitution and any risk-multiplier proportional to the chance of evading rectification.[13] Therefore, we see that some broad interpersonal comparisons of normal initiated imposed costs are sometimes necessary to solve these problems. But these three solutions are only about the liberty of the people directly affected, although that could be indefinitely many people. They do not amount to collective libertarian consequentialism (with the local-knowledge problem and perverse incentives probably causing self-defeating unintended consequences). This is an individualistic liberty-maximization theory.

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[10] Thus "initiated imposed costs", whether used in an abstract or in a propertarian context, is the philosophical clarification of the very confused mainstream libertarian idea of "aggression".

[11] For a long time 'proactively imposed cost' has been used instead of the original 'initiated imposed cost' (and with 'initiated' usually being implicit). However, to some readers 'proactive' appears to connote intention, knowledge, or foreseeability of the consequences. As none of these things is meant to be implied, this essay uses 'initiated' as being slightly clearer. See the original article: (Lester, Liberty as the Absence of Imposed Cost: The Libertarian Conception of Interpersonal Liberty, 1997).

[12] Within reasonable limits to deal with exaggerated claims, the pathologically passionate, and to stop the (self-defeating) evolution of "utility monsters"; on which, see Lester [2000] 2012, pp. 65, 69, 77, 159, 160.

[13] See (Lester, Libertarian Rectification: Restitution, Retribution, and the Risk-Multiplier, 2000).

3.4 The immediate practical implications of instantiating liberty

If such liberty were to be observed in a state of nature, then what general things would this entail? Primarily, people want to have initial ultimate control of the bodies that they more or less are. They do not initiate imposed costs on other people by having this, unless trivially and reciprocally by merely existing and being composed of resources now unavailable to other people. Therefore, liberty-maximization entails that they have this initial ultimate control of their bodies. Next, people want to have initial ultimate control of any unused resources they start using, and thereby closely involve in their want-satisfactions (the resources they use for clothing, tools, habitation, etc.). They do not initiate imposed costs on other people by having this, unless trivially and reciprocally by their chosen use and those resources now being unavailable to other people. Therefore, liberty-maximization entails that they have this initial ultimate control of their used resources. Otherwise, and consequently, all interpersonal interactions and resource-transfers need to be consensual, or they are likely to significantly initiate imposed costs. These three principals, positive, *prima facie*, libertarian rules of liberty-in-practice fit abstract liberty-in-itself almost perfectly. They maximally internalize externalities with respect to want-satisfaction and are thereby economically efficient (in the sense of maximizing general want-satisfaction). To break any of these three positive rules infringes interpersonal liberty *prima facie*. However, problematic cases may require the abstract or maximization theory.

3.5 Private property and legal remedies are additional aspects

In a hypothetical world of perfect libertarians, those three practical rules and three solutions to application problems might be enough for libertarianism to function. But in order to better protect and promote liberty-in-practice in the real world, these positive rules and solutions can be instituted as enforceable private property[14] and legal remedies. As a result—strictly speaking—self-ownership, such private property, and such legal remedies are not *inherently* liberty-in-itself or even liberty-in-practice (as propertarian theories of libertarianism sometimes appear to assume[15]). Otherwise, we risk conflating liberty and property into an unfalsifiable theory (or even a mere stipulative definition). Nevertheless, once libertarian legal principles have been thus derived, then 'initiated imposed costs' can normally be interpreted in terms of breaching them: there is no need to return to the abstract theory and pre-legal implications except for philosophically problematic cases. This is why private-property libertarianism alone has so much intuitive verisimilitude and cogency; and it is, therefore, sometimes mistaken for the necessary and sufficient totality of libertarianism.

3.6 Moral explanations are a separate issue

It is a further completely separate and normative matter whether this overall positive system of liberty-in-practice is moral, just, rights-observing, valuable, etc. Only after deriving the positive account is it possible to ask normative questions about it. As a result–strictly speaking–self-ownership, such private property, and such legal remedies are not *inherently* moral, just, rights-observing, valuable, etc. (as moralized theories of libertarianism sometimes appear to assume[16]). Otherwise, we risk conflating libertarian law and morality into an unfalsifiable theory (or even a mere stipulative definition). Nevertheless, correctly interpreted–philosophically and empirically–deontologism, consequentialism, and contractarianism (the three main moral theories) all point towards libertarian liberty-in-practice as the outcome: the real top of Derek Parfit's moral mountain.[17] However, libertarianism can simply be morally posited and defended in itself without requiring that it follow from any allegedly more-fundamental moral theory.

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[14] One added sophistication is similarly derivable intellectual property. See Lester (Against Against Intellectual Property: a Short Refutation of Meme Communism, [2011] 2016) and (Intellectual Property, the Non-Aggression Principle, and Pre-Propertarian Liberty: New-Paradigm Libertarian Replies to some Rothbardian Criticisms, [2011] 2016).

[15] Many publications by Walter Block say they are about libertarianism and liberty, but property-rights appear to be placed first and last with libertarianism being held to be a theory of law.

[16] As we see in *Anarchy, State, and Utopia* (op. cit.).

[17] (Parfit, 2011, p. 419): "These people are climbing the same mountain on different sides".

4 CRITICAL-RATIONALIST EPISTEMOLOGY AND ITS APPLICATION

As critical rationalism explains, there are no 'supporting justifications'.[18] Empirical theories have infinite implications, which finite and theory-laden evidence logically cannot support but can test. A counterexample, if true, logically refutes a theory (but all within the realm of provisional conjecture). So-called 'supporting arguments' face a trilemma: infinite regresses, or circularities, or dogmatic ('axiomatic') starting assumptions. Arguments are really conjectural explanations. Hence libertarianism, like all theories, is unjustifiable in the sense of unsupportable. However, it can still be conjecturally explained and defended (and criticized and tested), both philosophically and social scientifically. And this needs to be in terms of theory, practice, and morals: three quite different things. Then, if it survives scrutiny, it can be a critically preferred conjecture; rather than, at the other extreme, an uninformed, inchoate, and untested conjecture.[19]

Therefore, libertarianism can only be provisionally squared (or 'justified': a non-foundationalist homonym) with all currently known tests and criticisms. We might even say that a 'supporting justification' is logically impossible but a 'squaring justification' is provisionally possible. As even philosophers often conflate the two—and, therefore, think both senses are being rejected—that is one reason they might find critical rationalism baffling or even absurd. But if a heliocentrist need not eschew the use of 'sunrise' and 'sunset', then, *a fortiori*, a critical rationalist could in principle use '(squaring) justification'. However, unlike with heliocentrism, there is still a real risk of confusion or equivocation. And so promiscuous use of even the squaring sense is probably best avoided.

Consequently, the abstract theory of liberty, the stages of application, and their connections involve conjectural explanations that remain always open to potential criticism and testing. In principle, of course, one could adopt the abstract theory and its implications but reject critical-rationalist epistemology. That is why it is possible to explain the abstract and practical theory of liberty without mentioning epistemology.[20] And this was partly done here because there is a risk of conflating the two, or not clearly seeing the theory of liberty and its implications because of confusion about the epistemology and its role. But if one does separate them, then one would still be left with the logically impossible task of attempting to provide 'supporting justifications'.[21]

5 CONCLUSION

This is conjectured to be a complete philosophical theory of social libertarianism, in outline at least. That is, its application offers solutions to all of the philosophical problems of social libertarianism that have been discussed in the literature *ad nauseam*. But its relatively heterodox and somewhat complex approach appears to be a barrier to understanding it or to taking it seriously. Perhaps this short essay can help to dispel some of the misunderstandings and dismissiveness. As a concise explanation, it is ineluctably philosophically terse. It thereby risks being opaque in at least some places or suggesting obvious questions or criticisms that it does not answer. Fortunately, there is a more-detailed philosophical essay on this liberty-centered and critical-rationalist theory.[22] There is also an earlier book that goes into far more detail.[23] That initial book raises many additional and peripheral

[18] For detailed explanations of critical rationalism see, for instance, Popper ([1963] 1978) and Miller (1994)

[19] The idea that a theory can, at least, be 'corroborated' seems to be a justificationist error: for 'corroborate' means 'support' (etymologically, 'strengthen'). But if a theory survives our best tests and criticisms, then it is logically coherent to 'critically prefer' it and conjecture that it might be true (i.e., it accurately describes or depicts).

[20] However, critical rationalism fits libertarianism in a variety of ways; although Karl Popper himself drew different conclusions: see Lester (Popper's epistemology versus Popper's politics: A libertarian viewpoint, 1995).

[21] See Lester, (Arguing with 'Libertarianism without Argument': Critical Rationalism and how it applies to Libertarianism, 2017)

[22] See Lester, (The Heterodox 'Fourth Paradigm' of Libertarianism: an Abstract Eleutherology plus Critical Rationalism, 2019)

[23] Lester [2000] 2012.

issues, but it often expresses the arguments with less clarity than has subsequently been possible (in light of receiving and responding to further criticism). Consequently, there are two further books—so far—with elaborations and defences.[24] However, there should be more than enough of an explanation here to stimulate criticisms. And some of those criticisms, whether by chance or skill, may reveal new unsolved problems, or even be partial or complete refutations.

APPENDIX: REPLIES TO SOME TYPICAL COMMENTS

It has become apparent over the years that it is difficult to bring even libertarian philosophers to a broad understanding of this philosophical theory of libertarianism, or to understand that they do not yet understand it, or even to criticize it. The following comments[25] (indented) are quoted on the basis that they do not appear to be at all unusual, and that the replies might help to alleviate the situation. Perhaps the greatest problem, but also the most easily solved, is that reviews often fail to quote the actual text or even to read it attentively. Instead, they criticize their own impressionistic interpretation, or a few words taken out of context.

Quotations from "Comments to author" 1

The first comments have oversights in reading, but they are relevant and carefully thought-out.

> First, I would put upfront that the piece is a concise summary of a view that has been elaborated at greater length elsewhere. I think it would really help readers figure out how to approach the article.

It is not only a "concise summary", but also far more precise than explained elsewhere. Both these points are now in the introduction: "to explain a particular philosophical theory of social liberty in a far more precise and concise manner than has been achieved hitherto".

> Second, even knowing that this is a sketch deriving from a larger work, …

It is not "a sketch deriving from a larger work". Now added: "it contains all of the main elements made much clearer compared to the three earlier books and various additional articles, plus some important new elements".

> … I don't understand why the section about critical-rationalist epistemology was included at the end. I would say either to eliminate it, as I think it was answering a question, I can't see many people raising, or explain why that section is included.

It is somewhat mysterious that some reviews cannot understand the relevance of critical rationalism. The article itself explains both it and its relevance. First, the philosophical theory itself is "eleutheric *conjectural* libertarianism": the "conjectural" part refers to critical rationalism. So, it would be an obvious omission not to explain it. But the explanation was placed at the end just to emphasize, as is stated in the article, that it is 'only' the epistemology and not part of the theory of *liberty* itself (as some criticisms err in assuming, despite explicit explanations to the contrary). The critical-rationalist approach is needed to explain why mainstream accounts of libertarianism must be mistaken in asserting that they are, or ever could be, 'supporting justifications' (or words to that effect). But it is also included to explain that the philosophical theory of liberty is not itself intended to be any kind of 'supporting justification' for libertarianism (as some criticisms err in assuming, despite explicit explanations to the contrary).

> Third, I have questions about the content of the article, though I hesitate somewhat to ask them, as you're answering them is something you have probably done elsewhere. Thus, I don't want to waste your time.

Questions, comments, and criticisms are rarely a waste of time. At worst, they can indicate possible unclarities in the text that may need to be remedied. At best, they may be–or at least suggest–refutations.

> On page 2, you write, "Imagine two lists of property-rights: one list is all those that are libertarian; the other list is all those that are not." It would be helpful if examples of property-rights were given.

[24] See the relevant chapters in Lester 2014 and, to a lesser extent, Lester [2011] 2016.

[25] On which basis the article was rejected for publication by a libertarian journal.

Some are now added. It had initially seemed best not to give such lists, as that might seem to suggest that doing so is unproblematic; so why is there a real problem? But that is now explained better in the article. And for readers with little or no grasp of libertarianism it might help to give the general idea.

> E.g., "rights to that which you mix your labor with" – would that be an example of a property-right (presumably, on the libertarian side of the ledger)?

Yes, but "mix your labor" is a metaphor: there is no 'labor substance' that we literally "mix" with natural resources. It is clearer to be literal. We do modify and use natural resources. 'Modify' is a literal counterpart to "mix your labor". However, it does not appear to be necessary or sufficient for a libertarian claim to property; unlike 'use'.[26]

> And "rights to enough material possessions so that you can meet your basic needs" – would that be an example of a property-right too (presumably on the non-libertarian side of the ledger)?

Yes, but we can't always meet all of our "basic needs"; that is why we must eventually die (given current science and technology, at least). And potential medical interventions to meet "basic needs" to live only slightly longer often become overwhelmingly expensive as people approach their deaths. Hence, property claims based on 'welfare' might be clearer.

> And what of those people who claim to believe in liberty, but who say, "all property is theft"? Do they (nonetheless) believe in what you would call property rights (e.g., the right to use any material you find for your own purposes, if it respects other people's projects, or whatever it is such people believe)? In other words, this is a request for clarification.

Perhaps this new footnote is an adequate clarification: "There will be no discussion of non-libertarian theories of liberty and how they might relate to property, or to its absence. That would be a digression, and probably a lengthy one".

> On page 3, you write, "Therefore, this abstract liberty can be theorized as 'the absence of interpersonal proactively-imposed constraints on want-satisfaction'. But for brevity we may use 'no proactively imposed costs' or simply 'no (proactive) impositions'. This also solves the problem of what, in abstract principle, constitutes 'inflicted harm' from a libertarian viewpoint." I think the word "proactive" is supposed to be doing a lot of work.

As the text now shows, and explains, this has been changed. 'Proactive' was supposed to be slightly clearer than the original 'initiate'. The proactive-reactive (or initiate-respond) distinction explains how not all 'constraints on want-satisfaction' limit interpersonal liberty. Reactive or responsive constraints can rectify previous proactive or initiated ones. No one word bears the bulk of the burden of the theory: they are all required for the theory to make sense. Some very useful comments from David Burns, in email communications, have criticized the adequacy of each significant word within the theory (and in its various versions). But on each occasion, the criticism appeared to be taking the word out of the context of the whole theory. Each word modifies the others.

> Imagine the following: I want person P to fall in love with me. P doesn't want to fall in love with me. Is P constraining my want? Am I constraining P's?

As it stands, this is not well-formed and clear enough to answer. There are several complicating factors that would better be dealt with in separate and simpler examples. Is this to assume that love is a choice (that "P doesn't want")? That does not seem true, and so the apparent counterfactual adds an unnecessary complication. Also, not giving wanted love must mainly—but not entirely—be failing to benefit someone. And is this to assume a scenario that is pre-propertarian/act-libertarian (before self-ownership) or propertarian/rule-libertarian (with self-ownership)? Why is this even asking about "constraining [a] want" rather than, from the theory of liberty,

[26] See the section "My Comment on Lester's Q&A2" in Lester (Libertarian Philosophy versus Propertarian Dogma: a Further Reply to Block, 2021), pp. 117-118.

whether there is any *proactive* or *initiated* constraining of want-*satisfaction*?

> I'm guessing you would say, "P's not wanting to fall in love with you is not a proactively imposed cost. Instead, it's a reactively imposed cost, which doesn't count as a violation of your liberty."

We can adapt the example to be somewhat more precise, clear, and realistic: to be made less want-satisfied either by unrequited love or unwanted love. Then, a libertarian pre-propertarian scenario appears to imply this: in each case the existence of the other person proactively imposes a cost (or initiates an imposed cost); but there may be nothing that can be done in either case without proactively imposing to a greater extent. However, a libertarian propertarian scenario appears to imply this: once self-ownership, etc., is derived (as being liberty-maximizing rules), proactive/initiated impositions are only counted when they flout libertarian property or legal remedies, which they don't do here.

> But what about the following: my want is for P to be unhappy, and P knows this, and P also wants me to be unhappy, and one of the ways P can make me unhappy is by seeming happy? […] In this case, wouldn't P's wanting me to be unhappy, and so appearing to be happy, constitute a proactive imposition of a cost?

Don't try to run before you can walk. It is a bad idea to attempt deliberately difficult and multi-part problems before clarifying the solutions to simpler and separate problems. And are we supposed to assume a pre-propertarian or a propertarian scenario? Enough should already have been said to leave the problem as an exercise.

> On page 3, you write, "[…] The most libertarian option is to minimize overall proactive impositions, with situation-specific compromise or compensation […]." Here I ask: why is the most libertarian option to *minimize* overall proactive impositions?

Ex hypothesi, we have clashing proactive (or initiated) impositions. The closest we can approximate to liberty is to minimize them, i.e., maximize liberty. How could this not be "the most libertarian option"? (And, realistically, it might well *maximize* overall impositions to place all of the loss on one side.)

> That sounds consequentialist to me. Don't get me wrong, a libertarian theory could, for all I know, be one that maximizes overall liberty within a society (or that minimizes liberty-infringements), but why that? Why not something more deontological?

There is confusion about the theory here. Maximizing liberty in the event of a clash between individuals, is not a direct attempt at maximizing liberty *collectively* in society (although it probably does have this outcome). As the article explicitly says, this does "not amount to collective libertarian consequentialism". And, of course, the theory of liberty and its application is not itself a moral one. Nevertheless, the theory does have what might be called a 'deontological structure': liberty is protected and promoted by normally adhering to the derived legal property rules and remedies. If these legal rules and remedies appear to fail to promote liberty, then we resort to the "abstract theory of interpersonal liberty" and the "individualistic liberty-maximization theory". But this is always to resolve clashes among individuals and never to maximize liberty by sacrificing the liberty of some people solely to increase the liberty of other people.

> On page 4, you write, "Therefore, we see that some broad interpersonal comparisons of normal cost-impositions are necessary to solve these problems." This seems right to me, but is this supposed to be a dig at those libertarians who claim that interpersonal utility comparisons are impossible (e.g., Rothbard, Block, and Gordon, among others)? If so, you might want to footnote who you're responding to.

The article is primarily supposed to be an impersonal statement of the philosophical theory. It is not in itself a response to other texts or people, although some are mentioned for general context. That it is inconsistent with innumerable other texts is a logical consequence but not very relevant. And to start to footnote all the texts that it is even only significantly inconsistent with could make for some very long footnotes. It might also invite the irrelevant criticism that the specific arguments in those texts have not been examined and refuted in the article.

> Alternatively, maybe I'm mistaken in equating "utility" with "normal cost-impositions", but if I am, it *still* seems like you're responding to someone, because otherwise why bring up this consequence of your theory? So, who are you responding to?

It is part of this libertarian theory that interpersonal "normal cost-impositions" sometimes need to be broadly assessed or compared (for damages, minimizing clashes, etc.). This is brought up simply because it is necessary to explaining how the theory works. But "utility" generally is not relevant, let alone in any way that entails some covert overall utilitarianism or, at least, libertarian consequentialism (although both are common misreadings of the theory). For some years now, all the published texts appearing as authored by the same "J. C. Lester" have responded to no person (as far as is practical); as is the case in this reply also. They have been either stand-alone articles or responses to other texts. Writing impersonal text helps to avoid any mistaken impression of *ad hominems*, which also risks provoking real *ad hominems*. Scholarly science and even social science articles tend to avoid a personal essay-type style. Why should scholarly philosophy articles not do the same?

> On page 4, you write, "This is an individualistic liberty-maximization theory." So, it's only the people in the particular interaction over whom we're maximizing liberty.

Yes, but as it says that "could be indefinitely many people".

> OK, an [sic] two questions: (1) why just the individuals involved in the exchange? Why not try to maximize liberty overall?

It is maximizing the liberty of *everyone* affected by a *clash* (this could be many more than two "individuals" and there need be no "exchange"). It is necessary to solve the problem of clashing individual liberties; and maximizing their combined liberties appears to be the most libertarian solution. When there is no clash of liberties, then there is no similar libertarian problem to solve; and, therefore, no need for "collective libertarian consequentialism (with the local-knowledge problem and perverse incentives probably causing self-defeating unintended consequences)". That said, it does appear plausible that the theory's 'deontological structure' just is the best way to "maximize liberty overall".

> (2) Assuming you have good reason not to maximize liberty overall, how do you figure out who is a party to an interaction? I worry here in particular about environmental pollution.

This changes from a theoretical problem to a practical problem, and one that is not peculiar to libertarianism. In practice with "environmental pollution" it may be efficient to have, for instance, class actions with lawyers on contingency fees advertising for affected people (as indicated by expert analysis but applying *de minimis non curat lex*) who stand to gain compensation or have the pollution stopped. Exactly what would happen is unpredictable in any detail just because the market itself is the discovery process. However, having a clearer theory of liberty and its application might assist this process.

> On page 4, you write, "Next, people want to have ultimate control of any unused resources they start using, […] all interpersonal interactions and resource-transfers need to be consensual, or they are likely to significantly proactively impose." I wonder: couldn't there be some kind of middle-ground? When people starve to death, a lot of their wants [g]o unfulfilled.

Extreme poverty, up to and including starvation, is rapidly disappearing thanks to relatively free trade, greater division of labor around the world, and technological progress; and no thanks to state interventions. Popular books—for instance, by Julian Simon, Bjorn Lomborg, Steven Pinker, and Hans Rosling—now more or less illustrate these things (but usually without much explanation from economics and even less from philosophy).

> Maybe there could be a kind of "libertarianism of emergencies"? So: when your not having certain resources means you will die, or, even stronger, when your not having certain resources means you will not have your basic needs met, then there has to be a consensual interaction between you and the person who has the resources to save your life/meet your needs? That's still very strong, but it's weaker than a kind of common property regime, where any use of any resource has to be agreed upon first.

As we have already seen, taken literally and universally, resource claims based on avoiding death or having "basic needs met" are impossibly strong. And this looks more like *abandoning* libertarianism in emergencies. But those emergencies appear in reality to be caused by flouting libertarian principles. So, this is suggesting a 'solution' that is more of the cause of the problem, which can only exacerbate it.

> Or is your response simply, "look, it may be that it would be *morally* bad to refrain from taking some people's property to save the lives of others. In fact, it may even be that a government should take some people's stuff to help others! That's fine! But it's irrelevant because I'm talking about what makes a government libertarian. Redistributing wealth to prevent starvation may be what a government should do, but doing it makes it less libertarian." Is that the view?

No. It is true that the philosophical theory being explained is only about what is non-normatively libertarian. However, as the section on morals asserts–but cannot take space to explain or defend–"Correctly interpreted—philosophically and empirically–deontologism, consequentialism, and contractarianism (the three main moral theories) all point towards libertarian liberty-in-practice as the outcome". In realistic terms, it looks as though any so-called "libertarianism of emergencies" must be via state-controlled foreign aid. But then there are the devastating criticisms of this, notably by Peter Bauer.

> Finally, I think coming up with an independent theory of liberty is important. I'm not sure that no one has ever tried to do this before, and I'm not sure yours succeeds, but it was quite intriguing, and helped me clarify the relationship between libertarianism, property, and morality!

With luck, these responses add further clarification.

Quotations from "Comments to author" 2

At the outset of this response, it ought to be noted that comments that are uninformed by any apparent background in philosophy or even any serious attempt at a careful reading are of limited usefulness as regards responding to a philosophy text. The following quoted comments appear to fall squarely within this category. It might be thought that any response to such comments is a waste of time. However, as there are often such non-philosophical (anti-philosophical?) and careless-reading responses, it seems worth pointing out where and why they are in error.

> You never make it clear what a theory of liberty might look like…

It is precisely specified. The slightly amended version follows: "this abstract liberty can be theorized as 'the absence of interpersonal initiated constraints on want-satisfaction'. But for brevity we may use 'no initiated imposed costs' to mean the same thing".

> …or why it would be essential to understanding libertarianism.

Why it "greatly clarifies matters" (rather than being "essential") is explained: "orthodox private-property libertarianism is severely philosophically confused. It conflates theories of rights, property, consequences, and so-called 'supporting justifications'. And this is all done without an explicit theory of liberty: an eleutherology". And without that theory it is unclear how we assess property-rights or remedies as being libertarian or not libertarian.

> Later on, you wave around the topic of critical rationalism, …

The relevance is explained: it is an epistemological error to seek supporting justifications, as many libertarian texts do.

> …though again it is not clear how this relates to an abstract theory of liberty, …

It is explained: it is not part of the abstract theory of liberty but the applied epistemology.

> …though we are told that there are unmentioned volumes which would explain this in greater detail.

Two volumes on critical rationalism are fully cited. But the relevant volumes are about the general theory; redacted to avoid self-citation.

> A great deal more work would be needed for this to reach a standard worthy of publication.

A great deal more knowledge of philosophy and careful reading would be needed for these comments to reach a standard worthy of submission.

Quotations from "separate correspondence" (presumably elaborations from 2)

Having apparently been offered a chance to elaborate, 2 does not do any better.

> Certainly, the implication that utilitarianism appears to have something which libertarianism lacks in no way counts against the latter since it is the better theory.

How can it not matter that most libertarian texts are unable to give an account of the very thing they are supposed to be about? And if they cannot, then how is it possible to tell whether they have made progress towards it or not? Even if we assume that libertarianism "is the better theory" (in whatever way "better" is intended), of course it still "counts against it" that it has this glaring omission. But it ought to be clear enough that the analogy is not intended to suggest any kind of comparison between the two theories except in respect of the clarity of their fundamental subject matter.

> Indeed, much of the essay is proof that there is little to be said for trying to get clear at the outset as to what perfect liberty might amount to.

This is common-sense dismissiveness of philosophical arguments. It makes an assertion without any clear location and explanation of where the text is supposed to be mistaken. An analogous anti-economics response to an economics text might say, 'Indeed much of the essay is proof that there is little to be said for trying to get clear at the outset as to what perfect competition or economic efficiency might amount to'. Perfect competition and economic efficiency are useful explanatory theories in economics, but they are not realistic goals by which all markets should be judged and state-regulated. Perfect liberty is a useful explanatory theory in social philosophy, but it is not a realistic goal by which all interpersonal interactions should be judged and state-regulated. In any case, the essay explains fairly clearly how there is confusion about liberty in libertarian texts and how the theory of liberty can sort this out. Consequently, it is possible to deduce more libertarian solutions to problems and to answer philosophical criticisms. Of course, economics is generally more useful for explaining libertarianism, but it has its limits; and then we turn to philosophy. Similarly, good nutrition and exercise are generally more useful for maintaining health, but they have their limits; and then we turn to medicine.

> although the writer keeps telling us that it [perfect liberty] is something we should strive for, [it] never becomes clear what it amounts to or how it might help us better understand libertarianism.

Examining a philosophical text armed only with dogmatic common sense is like examining a chess game informed only by the rules of draughts (checkers). The essay does not at any time assert that there is anything that "we should strive for". It is a non-normative analysis. Moreover, perfect liberty is explicitly explained as being something that often cannot be achieved; liberty can only be maximized. In what way is the theory of liberty not "clear"? Under the heading "*The abstract theory of interpersonal liberty*" there is an explanation of just over 300 words. And "how it might help us better understand libertarianism" is just in the following various stages of explanation as to how the theory applies (in the subsequent sections). If the review does not engage with the philosophical arguments by quoting them and stating precisely what the problems are supposed to be, then there is no likelihood of comprehension.

> Later in the discussion we get some handwaving in the direction of critical rationalism, but it is not clear what bearing this has [on] the theory of perfect liberty which is supposedly essential to a proper understanding of libertarianism.

This combines superficial reading with strawman caricatures. The role of critical rationalism is precisely explained. It is the solution to the error of justificatory support (or foundationalism) that is found in much of mainstream libertarianism. Ironically, the criticism that this is only "handwaving" is itself only handwaving. The epistemology is clearly explained to be no part of the theory of liberty. And the theory of liberty is not alleged to be "essential to a proper understanding of libertarianism". Rather, the more modest claim is that it "greatly clarifies matters to have an explicit theory of this entailed conception of abstract liberty and how it relates to its practical application and to morality".

> The writer admits in the conclusion that his attempt to characterize abstract liberty will be rather terse and opaque in places raising more questions than it answers.

But it is also explained in the conclusion why this attempt is necessary: the theory's "relatively heterodox and somewhat complex approach appears to be a barrier to understanding it or to taking it seriously. Perhaps this short essay can help to dispel some of the misunderstandings and dismissiveness". And it is also explained at the beginning: "to explain a particular theory of social liberty in a far more precise and concise manner than has been achieved hitherto […] This appears to be needed because less-focused and longer explanations of it have evoked some confusion about what the theory is really asserting and how the various parts fit together". However, careful reading is still required to understand it.

> As for what critical rationalism might have to offer to the problems of libertarianism, we are simply told that there are other books which go into more detail, though he fails to tell us which ones or why it is they might be of any assistance.

The role of critical rationalism is explained within the essay. The "other books" are about this philosophical theory of libertarianism. Their relevance is also explained: the "initial book raises many additional and peripheral issues, but it often expresses the arguments with less clarity than has subsequently been possible … there are two further books—so far—with elaborations and defenses". As this was an anonymous submission, self-citation of those books was not allowed (as any competent reviewer should have realized).

Unfortunately, 2's level of response is not unusual.

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Received for publication:	31.01.2022
Revision received:	24.03.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Lester, J. C. (2022, 07 15). Eleutheric-conjectural libertarianism: A concise philosophical explanation. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 111-123. doi:10.12709/mest.10.10.02.12

Style – **Chicago** *Sixteenth Edition:*

Lester, J. C. "Eleutheric-conjectural libertarianism: A concise philosophical explanation." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 111-123.

Style – **GOST** *Name Sort:*

Lester J. C. Eleutheric-conjectural libertarianism: A concise philosophical explanation [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 111-123.

Style – **Harvard** *Anglia:*

Lester, J. C., 2022. Eleutheric-conjectural libertarianism: A concise philosophical explanation. *MEST Journal,* 15 07, 10(2), pp. 111-123.

Style – **ISO 690** *Numerical Reference:*

Eleutheric-conjectural libertarianism: A concise philosophical explanation. **Lester, J. C.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 111-123.

MEST Journal
doi: 10.12709/mest.10.10.02.13

ADVERSUS "ADVERSUS HOMO ECONOMICUS": CRITIQUE OF THE "CRITIQUE OF LESTER'S ACCOUNT OF INSTRUMENTAL RATIONALITY"

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JEL Category: **D11, D91, Z13**

Abstract

*This essay goes through Frederick 2015 (the critique) in some detail, responding to the various paraphrases and criticisms therein. It is argued that in each case the critique is mistaken about what Lester 2012 (*Escape from Leviathan*: *EfL*) says, or about what the critique presents as a sound criticism, or both. Introduction: the three problems with the critique and the philosophical problem that* EfL *is attempting to solve. "Abstract": the critique's confusion about* EfL*'s aprioristic theory of instrumental rationality. There are then detailed replies (too many and too diverse to summarise) to quotations from the critique's confused interpretations and criticisms under the following headings (quoted from the critique): "2. Instrumental Rationality"; 3. Weakness of Will"; "4. Desires and Values"; "5. Free Will"; "6. Self-Interest"; "7. Maximisation"; "8. Morals". Finally, in "9. Conclusion", the philosophical problem for economics is briefly restated. The philosophical interpretation of* homo economicus *in* EfL *(as with its overall philosophical theory of libertarianism) has yet to be given adequate critical consideration.*

Keywords: Homo economicus*, instrumental rationality, social libertarianism, weakness of will, desires and values, free will, self-interest, categorical morals*

INTRODUCTION

There are three major and general problems with Frederick 2015 (the critique) that occur repeatedly throughout. (1) Not showing any grasp of the philosophical problem being tackled and how the philosophical theory is supposed to solve it. (2) Paraphrasing with great inaccuracy, instead of quoting, and then replying to the inaccurate paraphrases. (3) Repeating the same, or very similar, points. There are various ways of dealing with these problems, including the following three general approaches. One way would be to dismiss the whole essay as substantially irrelevant unless and until it is rewritten to deal with these points; but then such rewriting seems unlikely to happen.[1] Another way is to deal with each type of criticism only the first time that it occurs in the critique; but this could make for a very short reply that might be

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[1] Especially since the author has now died.

perceived as not doing justice to the detail in that long essay, possibly because of a perceived failure to be able to respond to those details. A third way is to go through it all fairly thoroughly; but this must result in much repetition of similar points that might try the patience of the reader. On balance, the third way seems to be the least of the three evils and so that has been chosen.

To put things into context, then, it might help to start by outlining what philosophical problem *EfL* chapter 2 is trying to solve and how it tries to solve it; something that the critique fails to do, just as Frederick 2013 (the liberty critique) also fails to do.

To quote from the opening paragraph of that chapter:

> *The standard, modern, economic assumption of instrumental rationality holds people to be self-interested utility-maximizers. Economists usually intend this to mean egoistic preferences and perfect calculation over time. Insofar as people think this to be unrealistic, it throws doubt on the (generally pro-market) conclusions of the economists. Here we give the assumption of self-interested utility-maximization an aprioristic interpretation that may help to reconcile standard economics with Austrian School aprioristic economics. This a priori sense does not imply egoism and is not trivial. Economics requires this sense as a core assumption in order to link its results more convincingly to liberty, welfare, and anarchy. This book's conceptions of liberty, welfare, and anarchy also presuppose some such account. (11)*

This can be explained more generally. Assume a central aprioristic[2] theory of instrumental rationality, as an interpretation of 'economic man'. People are thereby—other things being equal—better, albeit still fallible, judges of their own liberty (deciding which things are free personal choices) and welfare (deciding which things makes them better off). And their empirical choices will tend to reveal their judgements. So, if we disagree with their choices—whether those choices are purely personal or initiate impositions on other people—then it usually makes sense to reason with them, at least in the first place. Without the assumption of such core rationality, it is common to view people as sufficiently irrational as to make at least some authoritarian paternalism a default assumption (although this appears to leave any actual authoritarian paternalists as equally irrational, and that is before considering the limits of knowledge with respect to ruling other people efficiently, and the temptations of such power). People are thereby often supposed to smoke or take 'drugs', drink 'too much' alcohol, eat 'too much' of the 'wrong' foods, not exercise 'enough', 'bigotedly' discriminate against certain people or practices, and generally not to know what they 'rationally' ought to do (whether prudentially or morally), or to know it but fail to do it anyway—all because they are 'incorrigibly irrational'. Hence, they often need to be ruled by proactive coercion, both for their own sakes and the sakes of the other people with whom they interact. Belief in this view is one important reason that the popularly-elected oligarchs of modern states pay only lip service to both liberty[3] and democracy[4] in order to help to legitimise their rule. In reality, both liberty and democracy conflict greatly with their own preferred, and jealously preserved, oligarchical rule (as well as conflicting with each other). Consequently, if one is defending individual liberty both as an end in itself and as welfare-enhancing, then the hypothesis that people have no core instrumental rationality is a problem, and the hypothesis that they do is a solution. Moreover, many of the other ascriptions of 'irrationality' do not appear to survive philosophical scrutiny.[5] None of this is to suggest that people are anywhere near being perfectly prudent, or that they do not make many mistakes.

This can be given more context still. As the subtitle of the hardback of *EfL*—and now

[2] Or, at least, at the more *a priori* end of the spectrum with *a posteriori*—if that distinction is not ultimately defensible as completely separable. Also, in accordance with critical rationalism, "*a priori*" is here intended conjecturally rather than as 'justified', proven, or apodicitic.

[3] 'Liberty' is here understood in the orthodox classical liberal and libertarian sense of, in concrete practice, the absence—failing which, minimisation—of 'invasions' or 'aggressions' on people and their non-invasively-acquired property (where this must ultimately, but more controversially, be derivable from an abstract theory of liberty such as 'the absence of interpersonal initiated imposed costs'; see Lester 2012, 2014, and 2016).

[4] 'Democracy' is here understood in the classical sense of direct rule by the people in some manner; such as by plebiscite or sortition.

[5] See, especially, Percival 2012.

subsubtitle of the paperback—states, the book is about “Rationality, Liberty, Welfare, and Anarchy Reconciled”: their systematic congruence being an extreme form of the, usually implicit, “classical-liberal compatibility thesis”. That reconciliation is about providing and defending philosophical theories of economic rationality, interpersonal liberty, want-satisfaction welfare, and private-property anarchy. This is done in order to make better sense of their apparent consistency in terms of the social scientific evidence; from economics, in particular, but also politics, history, sociology, psychology, etc.. The often perceived ‘improbable coincidence’ of their real compatibility has caused some critics erroneously to suppose that *EfL* is providing what are mere stipulative *definitions* that have simply been engineered in order to fit together. But *EfL* clearly explains how each one is a genuine *theory*, and how it could be false or clash with the others. However, there are both philosophical and, to a lesser extent, empirical explanations that they are not false and do not clash.

CRITIQUE OF THE “CRITIQUE”

This essay will now go through the critical responses in the critique in the order in which they appear, dealing with most of the errors therein.

“Abstract”

The “Abstract” of the critique includes the statement that *EfL*

> *defends two hypotheses: that instrumental rationality requires agents to maximise the satisfaction of their wants and that all agents actually meet this requirement. (1)*

This is mistaken. The utility-maximisation aspect is explained in *EfL* as follows:

> *4) Utility-maximization: What one has the strongest desire to do, one has the strongest utility at the thought of doing. Agents aim at the goal the thought of which gives them the greatest utility, or least disutility, at the time of aiming at it …. (14)*

There is no statement or implication that agents, are trying to, “maximise the satisfaction of their wants” over time or that “all agents actually meet this requirement”. An inaccurate paraphrase is used, and later criticised, instead of an accurate quotation—as also occurs throughout the liberty critique.

“2. Instrumental Rationality”

The *a priori* theory of economics’ ‘instrumental rationality’ (self-interested utility-maximisation) that *EfL* is defending can be expressed thus: everyone has self-perceived interests (i.e., desires/wants/valued outcomes), whether these are egoistic or altruistic, and he always attempts to act on the interest that maximises his utility (i.e., gives him the greatest desire-/want-/value-satisfaction) at the time of the attempted action in the circumstances as he, conjecturally, perceives them to be.

The critique tells us that

> *A minimal conception of instrumental rationality is this: an action is instrumentally rational if and only if it is a suitable means to the achievement of the agent’s ends (2)*

A *more* minimal conception (in the sense that it is, more or less, *a priori*) of instrumental rationality is this: an action is instrumentally rational if and only if it is *intended to be* a suitable means to the achievement of the agent’s *current subjective* ends. And that is, roughly, the conception that is used and defended in *EfL*.

But the critique goes on to assert that

> *As it stands, this statement may be interpreted objectively, subjectively, or part one way, part another. (2)*

“As it stands”, the critique’s statement is ostensibly only objective: “it *is* a suitable means to the achievement of the agent’s [actual/objective] ends”.

The critique continues,

> *Lester undertakes to defend a thesis, which he labels ‘instrumental rationality,’ according to which every agent seeks to maximise the satisfaction of his wants over time (2012, 13-16). (2)*

As shown, the cited pages explicitly reject that. There is no such hypothesis in *EfL* (if there is, then why not quote it?). Hence what immediately follows on from this in the critique is irrelevant.

The critique goes on,

> *The second half of Lester's a priori thesis of instrumental rationality is a hypothesis about agency, namely,*
>
> *(LA) all actions are instrumentally rational.*

Only by intention under the perceived circumstances. But the critique immediately rejects this:

> *A qualification needs to be added. … we should say that the agent will act to satisfy his strongest desire provided the action is possible for him and he thinks that it is. (3)*

No: we *always* do *attempt* to satisfy our strongest desire in the circumstances as we conjecturally perceive them to be. The action need not be possible.

"3. Weakness of Will"

As *EfL* says, nothing is here meant to deny the existence of 'weakness of will' in the sense of 'lack of determination or willpower'. For instance, Peter might be able to hold his hand in painfully cold water significantly longer than Paul (assuming, *arguendo*, very similar subjective experiences of pain). That some people are 'strong-willed' and others are 'weak-willed' in terms of 'determination' or 'willpower' is not the same sense as occurs in discussions of supposed '*akrasia*': meaning, 'not acting in the way that one believes to be the best'. More centrally, *EfL* holds that much confusion is avoided here by distinguishing levels of desire/want/value. One may have a first-level (or immediate) desire/want/value in favour of X, but a second-level (or meta) desire/want/value that is against the first-level one. And the stronger of the two levels necessarily prevails. When the first-level is stronger, and so prevails, that is mistaken for *akrasia*. (In principle there could be a third level, and so on, but such complications do not need to be discussed here.)

The critique asserts that *EfL*'s exposition of how weakness of will (i.e., akrasia) can be explained away "is not entirely clear" (4). But there is no quotation to illustrate this alleged lack of clarity. Therefore, as usual, an attempted paraphrase by the critique follows instead (here in three parts):

> *(i) of all the agent's first-level desires for action in the circumstances, the agent's strongest desire is the desire to perform the action he does perform;*

Wrong: he attempts to perform the action consonant with his strongest first-level desire in the conjecturally perceived circumstances—unless there is a relevant stronger second-level desire (such as a desire to resist that desire).

> *(ii) that action has consequences, or aspects, which the agent desires not to be, and this first-level desire is greater than any second-level desire he has to retain the desire to perform the action;*

Where this says "to retain the desire", this might be an error for 'to refrain from the desire'. Otherwise, how does it make sense? But again, in any case, so much for the critique's attempt at being "entirely clear".

> *(iii) as a consequence of (ii), of all the agent's second-level desires about the first-level desires in play in the circumstances, the agent's strongest second-level desire is the desire not to have the desire to perform the action.*

Whether and how and this is a "consequence of (ii)" is not clear. In any case, the first-level desire to perform the action is, at that time, *stronger* than the second-level "desire not to have [or to refrain from acting on] the desire to perform the action".

To supposedly illustrate its three parts, the critique then quotes the examples of the smoker and the chocolate-eater in *EfL* and asserts that "this alternative account of apparent cases of weakness of will is not convincing" (4). This is because

> *Contrary to (i), the smoker who suffers weakness of will fulfils his desire to continue smoking despite the fact that he thinks he would be better off if he did not.*

This is simply to restate the common sense, but paradoxical, view of weakness of will (*akrasia*). The two-levels of desire explain away the paradox with *akrasia* that the critique apparently fails to see, because for the critique having a greatest "desire" for X and believing that ~X makes one "better off" are held to be incommensurable phenomena. But "desires" (or what is wanted) and what is thought "better" (or what is valued) are often translatable into each other: in some obvious sense, someone must value what he desires/wants and must desire/want (in some way) what he values. So, it appears to be inconsistent to say 'I *most* desire (or want) X but I think best (or *most* value) ~X', hence the paradox of *akrasia*. We must want what we genuinely think, at the time, is overall best under the perceived circumstances.

The critique continues:

> *Similarly, the woman suffering weakness of will does not feel that life without satisfying her desire for chocolate is too miserable to forego satisfying that desire. On the contrary, she feels that life without satisfying that desire would be better than life in which the desire is satisfied. (4)*

Again, this merely reasserts the paradoxical common-sense view whereby we do not do what we supposedly think it better to do.

The critique asserts that

> *These seem to be descriptions of ordinary facts of life and ones which many smokers and chocolate-eaters offer as a description of their situations.*

But how can these be *true* "descriptions of ordinary facts of life"? This is analogous with hearing evidence that the Earth, other planets, and stars revolve around the sun (heliocentrism), and then saying in response to that evidence that the sun, etc., going around the Earth (geocentrism) is one of the "descriptions of ordinary facts of life".[6] This ignores the problem and the proffered solution and simply restates the common-sense view.

The critique goes on to say that

> *Often people make such assertions, or have such thoughts, as a prelude to taking steps to prevent themselves from smoking or from eating chocolate. Such steps may involve other people who can help to restrain them from actions they strongly desire to perform but which they think it is better not to perform. (4)*

There is a coherent distinction between actions people "strongly desire" and those that they "think it is better not to perform". But can this distinction between "desire" and what is "better" be coherently made in the context of *akrasia*? For that would be saying that what we '*overall most* desire to have' need not be what we think to be '*overall* best to have'. The appetitive connotations of "desire" are not relevant here. 'Most desired' means only 'most wanted'—for whatever reasons, including prudence and morality. So, one is supposed to hold both that, 1) all things currently considered, at this moment, I most want X, and 2) all things currently considered, at this moment, I think it best that I do not have X. But what you 'most want to have' you must, in some obvious sense, think it 'best to have', and *vice versa*. Admittedly, it is not possible to deduce a clear contradiction (A & ~A) if there is an insistence on a distinction between what is 'most desired/wanted' and what is thought 'best'. But there is an intuitive inconsistency—hence the problem with *akrasia*—and so the alleged distinction is not at all clear.

That said, there are two relevant ways of interpreting the above quotation. One is binding one's future self and the other is binding one's current self. There is no weakness-of-will paradox in binding one's future self. People can consistently ask other people to "help to restrain them from actions they [will most] strongly desire to perform [later at T1] but which they think [now at T0] it is better not to perform."[7] And the distance in time between T0 and T1 can be a mere moment. It is only all this happening at the same time that is inconsistent. And, as explained, it is not clear that the critique can avoid this inconsistency by trying to distinguish a "desire" from what one genuinely thinks is "better". For what is inconsistent is, at time T0, both most desiring (thereby thinking it overall best in some sense) to perform some action and thinking it overall best (thereby most desiring in some sense) to be restrained from performing it.

The critique then makes an interesting and related suggestion:

> *Contrary to (iii), the weak-willed agent might not desire to be rid of the desire to perform the action he performs. For example, the woman who eats chocolate even though she most wants to stop eating it,*

Here, incidentally, the critique slips into clear inconsistency. How can one willingly do what one

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[6] Neither theory is true, but heliocentrism appears to have more verisimilitude (despite the logical problems with that idea).

[7] The possibility that one could "contract into a penalty system" is mentioned in *EfL* (25).

"most wants" not to do? The critique continues that she

> *may desire to retain her desire to eat chocolate; and her desire to retain her desire to eat chocolate may be stronger than any desire she has to be rid of the desire to eat chocolate. For, although she would rather not eat chocolate, she may value very highly her desire to eat chocolate, perhaps because she values having that desire for its own sake, or perhaps because she values having that desire frustrated, either intrinsically or as evidence of her willpower (or for some other reason). Therefore, while her first-level desire not to be fat conflicts with her first-level desire to eat chocolate, it need not conflict with her second-level desire to retain her desire to eat chocolate. (5)*

It is true that one can desire to keep a desire that is problematic in some respects. To respond relevantly, we first have to make the second-level desire more precise: the desire (or thinking it overall 'better') that the first-level desire continues but is somehow "frustrated". In the previous case, the stronger desire to have or do X overrides the weaker desire to not have—or to resist—the desire to have or do X. But now there is no direct clash of desires. For the desire (or thinking it overall 'better') to have some desire but have it "frustrated" is merely an idle wish unless we can act on it. However, if we can act on it (e.g., pressing this button will somehow cause the frustration of the first-level desire), then we are back with a direct clash (the agent will only press the button if his second-level desire to have but frustrate his first-level desire is stronger than that first-level desire). Therefore, the second-level 'desire to have a desire but have it "frustrated"' fits the two-level analysis just as well as the 'desire not to have, or to resist, a desire' (and doubtless there are other types of second-level desire that also fit). The apparent paradox of *akrasia* has still been explained away. So, the critique remains confused to conclude that "The phenomenon of weakness of will refutes (LA). (5)".

"4. Desires and Values"

It is not unusual to make a linguistic distinction between 'desires' and 'values'. 'Desires' are often thought of as more basic and more appetitive, while 'values' are often thought of as higher and more reasoned. Thus, desires and values can appear to be quite different, and even incommensurable, things. But *EfL* observes that to desire something must in some sense always be to value it (if only as a way of satisfying that desire) and to value something must in some sense always be to desire it (if only as a way of achieving that value). Thus, no essential difference, or incommensurability, need impede the instrumental rationality that is being defended.

The critique quotes Watson 1975 on the supposed distinction between reason and desire. It is then asserted that

> *In contrast, Lester (2012, 28-31) thinks there is only a single source of motivation, of reasons for action. We desire something if and only if we value it; though to say that an agent values a thing is not to spell out the nature of his desires about it. (5)*

Why does the critique repeatedly resort to dubious paraphrase instead of relevant quotation? It is less clear and less useful to have to reply to such gratuitous imprecision. The critique continues,

> *It is, Lester claims, absurd to say that someone is inclined to do something yet does not have even a prima-facie reason to do it. (5)*

Or as *EfL actually says*, and in a little more context,

> *Here 'reason' is again apparently being used in the sense of a value that we have arrived at verbally. That, at least, is the only real sense I can make of Watson's distinction. This may be a consistent way of talking about things, but it is confusing. For in plain language, it is absurd to say that someone is inclined to do something yet does not have even a prima facie reason to do it. If he can see no reason whatever to do it, then he can hardly desire it. Desire is at least a prima facie reason to do a thing. In Watson's examples the benefits of acting on such desires are really seen as hugely outweighed by the costs. (31)*

The critique responds to the examples in Watson 1975 as follows:

> *It seems to me that this argument about whether the woman and the man, in Watson's examples, value as well as desire to perform the actions in question, is a dispute over linguistic nuance. The same goes for whether we should say that each of those agents has a pro-tanto reason for, or a consideration in favour of, the actions. (5)*

The idea that philosophy (*qua* philosophy) is ever arguing about “linguistic” usage is false and even philistine. To have a desire for something is *ipso facto* to value that thing and to have a reason to have it, at least in that respect and to that extent. To deny that there is any real value or reason here is to deny the facts.

The critique continues,

> *But there is a real distinction behind Watson’s more restrictive linguistic proposal. The woman thinks that drowning her child would not be an objectively good or valuable action, even though she desires to do it and, therefore, in some sense, values it.*

She does not merely think that “drowning her child would not be an objectively good or valuable action”. She most likely thinks it to be clearly immoral, and thereby categorically undesirable/unacceptable (although *EfL* does not discuss morals at this point). And this “real distinction” in a type of desire is thereby not being denied but, rather, explained (whether, and in what sense, that moral view is held “objectively” is a separate matter). As discussed later in *EfL*, and also defended later here, what we genuinely hold to be immoral we thereby desire to avoid at all costs. Therefore, her desire to avoid an act felt to be immoral necessarily trumps her weaker desire to do that act. There is no need to abandon the realm of desires or wants. This matters because of the core rationality thesis that is being defended.

The critique then asserts that

> *The man may, in some sense, value sexual activities, given that he desires them; but he thinks that it would be objectively bad or wrong to satisfy those desires. If, with Lester, we want to say that people always value what they desire, then we can say that the woman and the man value something they think is not (objectively) valuable.*

Or as *EfL* would interpret it, they feel it to be immoral and hence categorically undesirable/ unacceptable; and so, *ipso facto*, they will not choose to act in those ways. It is not necessary to posit the realm of the “(objectively) valuable”.

The critique says that “Lester recognises (2012, note 46, 209), that this is the point behind Watson’s proposal” but

> *he misstates what is at issue when he says that Watson needs an account of objective values. That is not quite right. To make sense of the man and the woman, what Watson needs is to attribute to them a belief in objective values; but he does not need to endorse that belief himself. (6)*

EfL does not say or imply that Watson does or need “endorse” a belief in objective values. It only says that “perhaps” he needs “an account of objective values”. Because without an *intelligible* “account of objective values” we cannot even “make *sense* of the man and the woman … [having] … a belief in objective values”.

The critique continues:

> *Lester seems reluctant to accept that there are objective values,*

Speaking literally, values are inherently subjective: they are someone’s feelings of value.

> *and because he mistakenly thinks that acceptance of such is required to give the account of the woman and the man that I just gave,*

Not “acceptance”, merely intelligibility.

> *he offers a different account, one which invokes, again, the distinction between levels of desire. (6)*

That idea is merely mentioned in passing on these issues. The main point in *EfL* here is, rather, the general one that in “Watson’s examples the benefits of acting on such desires are really seen as hugely outweighed by the costs” (31). But the critique ignores this given explanation and launches into its own “levels of desire” account (6) that is simply not in *EfL* on these issues. In any case, moral values/feelings/desires can also be at the first (immediate) level. What else is wrong with the critique’s objections to a “level analysis” has already been explained.

The critique claims

> *We have seen that, on Watson’s view, an agent has desires and values, and only the latter give (legitimate) reasons for acting, while on Lester’s view an agent simply has desires, which we may also call ‘values.’*

We have seen that Watson 1975 and the critique are confused. We can only act on the basis of what we desire/want/value. That does not in any way entail or imply that all desires/wants/values are equivalent in terms of prudence, or morals, or importance, or critical preference.

The critique's confusion continues: "Lester seems to see all desires as appetites (2012, 16)". But the fact that *EfL* happens to use "appetite" in a broad sense on that particular page does not mean that a narrow sense is being denied. When "Watson distinguishes appetitive or passionate desires from those which are the products of culture or habituation", *EfL* can happily allow this, as it in no way conflicts with the general instrumental rationality that *EfL* is defending. When the critique says that the "latter rank as desires rather than values for Watson because, being merely inherited, they are not the products of the agent's rational judgement [i.e., critical preference] (1975, 214-15)", this overlooks that all sincere and literal values must be felt (valued) and thereby, in some sense, imply relevant desires. All this seems to be another case of the critique's insisting on keeping conventional distinctions—which *EfL* innocuously analyses in terms of general desires or wants to defend instrumental rationality—rather than showing that *EfL*'s analysis is genuinely flawed.

The critique then suggests that we "distinguish" the following:

(1) an agent's felt desires.

(2) things an agent thinks are valuable.

(3) things an agent thinks are valuable for him.

(4) an agent's goals. (6)

All of these things can be colloquially distinguished. But that is irrelevant to the problem that *EfL* is addressing: whether instrumental rationality can be defended by explaining all such things in terms of an agent's attempting to maximise his desire/want satisfaction (in the perceived circumstances, at the time of the attempt). This is not to imply that they are all illusory distinctions that are completely reducible to the same thing, or that they are all equivalent in terms of morals, or prudence, or importance, etc. And, clearly, they can be thus explained. "(1) an agent's felt desires": these are unproblematic. "(2) things an agent thinks are valuable": an agent must in some sense still desire these, if only desire that they exist. "(3): things an agent thinks are valuable for him": he must in some sense desire these for himself. "(4) an agent's goals": however, these are construed, they cannot be his genuine goals unless he desires to realise them in some way. The critique asserts that theorists "have tended to conflate these" four things. But to point out the necessary role of desire- (or want-) satisfaction in them all is not to "conflate" them. By analogy, to point out the necessary role of physical competition in different sports is not to "conflate" those different sports either.

The critique asserts,

> *I may value something that I do not desire, and vice versa. For example, if I am not hungry and lack a desire to eat, I may nevertheless eat because I value eating for social or nutritional reasons;*

This all makes good colloquial sense, of course. However, to eat for "social or nutritional reasons" is to act on the desire to eat for those reasons. Desire cannot be eliminated. And that is all that our *homo economicus* requires.

> *or I may go to work despite feeling no desire to do so, because I think going to work is valuable for me.*

In other words, there is a desire to work but for reasons other than the work itself. The work is a means and not an end.

> *Alternatively, I may be hungry and feel a strong desire to eat, but not eat because I am on a diet and think that eating is not valuable for me;*

In other words, this is to desire the consequences of not eating more than giving in to a "strong desire to eat".

> *or I may yearn to get back to work but remain at home because I am recovering from illness, and I value a swift and full recovery.*

In other words, this is to desire a "swift and full recovery" more than the immediate desire "to get back to work".

> *However, I may also both desire and value something, as when I eat because I have a healthy appetite.*

In other words, this is both to desire to eat and to desire that desire because of the good consequences.

> *So far I have spoken of what is valuable for the agent. But all except the most self-centred of people think that many things have value*

> *even though those things are not valuable for the person himself. (6-7)*

Things that are “not valuable for the person himself” in a narrow self-interested sense, may still be “valuable for the person himself” in the altruistic sense that he values (and thereby desires) certain goods for other people (or animals, or the environment, etc.).

> *For example, someone might think that classical music is valuable for some people, and thus valuable, even though he thinks (correctly, perhaps) that it is not valuable for him.*

This is ambiguous. Either someone has an altruistic value (and thereby desire) that other people can consume classical music if they value (and thereby desire) it, or he is merely aware that some people value (and thereby desire) classical music. Whichever is meant, this is not inconsistent with the given account of how values have a desire aspect.

> *This person may have no felt desire for classical music, despite valuing it.*

In other words, he has “no felt desire for classical music” in his own life, but he values it and thereby has a “felt desire for classical music” in the lives of people who do personally value it (and thereby personally desire it).

The critique then moves on to “(4) an agent’s goals”:

> *An agent’s goal may be to perform an action of a particular type even though performing an action of that type is neither desired nor valued by him. (7)*

Not clearly appetitively “desired” or deliberatively “valued”, perhaps. But such narrow interpretations are not ‘true essences’ that can refute broader interpretations.

> *For example, when I come downstairs in the mornings, while I am waiting for the kettle to boil, I pour and drink a glass of orange juice. I do this as a matter of routine, without thinking about it.*

Or, more precisely, without deliberation or significant self-awareness. Some form of thought is required.

> *Sometimes I only know I have drunk the orange juice because I can see the used glass. On some such occasions I will not have had a felt desire for the orange juice nor will I have thought that drinking it was valuable for me or valuable for anyone else. I just drank it out of habit.*

Let it be granted that he “just drank it out of habit”. We can only engage in a habit because of some sort of a desire to do so. Such actions might not require significant deliberation or significant self-awareness, but there must be some conscious desire or we would be, temporarily at least, like unconscious automata (forgetting how we felt at the time about some habitual action seems far more plausible than that we were literally not conscious at the time). And what we desire we must thereby, in some obvious sense, also value—if not value in any second-level sense that we might colloquially reserve for talk about ‘values’ and what is “valuable”.

The critique continues:

> *the action was intentional, that is, goal-directed: I was in control of what I was doing and of whether I was doing it (I could stop if I wanted); it was something that I aimed to do … and if, as I was about to do it, I was asked what I was going to do, I could truly have said that I intend to drink the juice. Thus, we can have goals that we neither value nor desire*

“I could stop if I wanted” implies that he wanted to act as he was doing. But to want something must be to have *some* sort of desire to have it and in *some* way to value having it. So, it looks like another fairly plain, and quite perverse, inconsistency to hold that one’s “action was intentional, that is, goal-directed” but in *no sense* desired or valued. And it is only very general senses of ‘want’, ‘desire’, and ‘value’ that apriorist instrumental rationality requires.

The critique says that “in practice, the term ‘desire’ or ‘want’ is extended to such cases”:

> *a person who knows my habit and who sees me go, absent-mindedly, to the fridge in the morning, may say that I want to drink some orange juice, or that I desire some orange juice. But, in this sense, to say what I ‘want’ or ‘desire’ to do is just to say what I aim to do.*

But how can one consistently “*aim* to do” something without a plain ‘want’ or ‘desire’ to do it? These terms do not seem to be “extended” in any metaphorical or “attenuated” (7) sense. Even if what one has an “*aim* to do” is what is habitual without any thought whatsoever as to the content of the habit (if that is possible), still that habitual "aim" itself must be what one does 'want' or 'desire' to do or achieve. The critique is apparently restricting the meaning of 'desire' and 'want' to something directly appetitive. This seems to be essentialist language-policing. In this case, it both disallows an innocuous, and useful, account of instrumental rationality and entails, instead, an intuitively incoherent way of describing actions.

"5. Free Will"

In *EfL*, an agent acts out of 'free will' when his body moves as he chooses to make it move. This Hobbesian sense of 'free will' is compatible with someone's threatening to shoot him if he does not do what is demanded, and so he does it. *EfL* supposes that all acts of free will involve the agent's trying to achieve what he most desires/wants/values (i.e., gets the most utility/satisfaction at the thought of doing) at the time, in the circumstance as he conjecturally perceives them to be. *EfL* also supposes that an agent's free will cannot escape physical determinism (he chooses but as he must choose) without falling into the randomness of indeterminism. However, this 'compatibilist' assumption is not necessary for instrumental rationality.

In the critique we are told that *EfL* "employs a passive conception of agency" because the "agent always performs the action that he thinks will most satisfy his wants" (7). It is not yet clear how this is supposed to be "passive". Also, it is only about *attempting* to perform the action that *does* "most satisfy his wants" *at that time* (although this might relate to the future, or to altruistic concerns).

According to the critique, this is "not a conception of agency at all" because

> *the supposed action is brought about by the agent's motivational factors: the supposed agent does not act, but is rather the passive recipient of impulsions which propel him hither and thither. The agent's body moves in response to desires or values, but the agent does not act. (8)*

EfL's account is fully compatible with the agent's reasoning carefully about his possible courses of action to select which one is the most preferred. Of course, he has first to find the idea of reasoning carefully to be his most preferred option. But it is not clear how an agent can possibly avoid ending up with attempting to do what he most desires or wants to do (at the time in the perceived circumstances). To not do that would appear to mean 'acting' without motivation (or, at least, with a lesser motivation).

The critique continues:

> *Curiously, Lester contrasts his view of the agent, as following his consciously felt, self-perceived interests or desires, with a view of the agent as an unconscious automaton without a spontaneous will of his own (2012, 14). But how can someone who is doomed always to follow his strongest desire be said to have a spontaneous will of his own? If Lester's agent can be distinguished from an unconscious automaton, it is only because he is a conscious automaton.*

How can we be "doomed" to being able to, try to, do what we most want to do? Especially as that will include as much reasoning, ambition, morality, self-control, etc., as we want. The critique asserts that "if actions are always dictated by the strongest desire, the agent has no choice". Again, "dictated" is an odd word to choose. So, what is supposed to be a more attractive alternative?

The critique tells us that it is a sense of free will that is

> *incompatible with determinism … incompatible with that agent's actions being determined by prior circumstances, whether or not those circumstances include desires or valuations. (8)*

One thing to mention first is that in Lester 2017 (25-26) there is an extremely brief and highly speculative account of how intellectual activity might escape physical determinism without falling into mere randomness. That said, it does not appear to be relevant here which account of free will is right: compatibilist or incompatibilist. It is not about causality but the intelligibility of the account. It does not make sense that an agent finds action X to be the most desired/wanted/valued at time T, but intentionally does Y at time T instead. This is like the alleged existence of *akrasia*, but more clearly inconsistent.

The critique quotes *EfL* where it says "'The school of thought that demands a kind of free will that escapes both determinism and mere randomness has never given an intelligible account of a third option' (2012, 21)". The critique calls this "the infamous 'chance objection' to free will: if my actions are not determined, they are a matter of chance; but if they are a matter of chance, they are outside of my control". But "chance" does not seem quite appropriate, as it appears compatible with determinism that some things happen by "chance" in the sense that they are not intended or predictable. The critique says that this is "confusing an undetermined act with a random event" and asserts instead that an "act, specifically, an act of will, is something that is inherently under the agent's control and that is therefore undetermined". How this escapes the compatibilist account of free will without falling into randomness is left mysterious. Perhaps there is an explanation in the references the critique gives. However, as Lester 2017 does give an attempted explanation, and as this is, in any case, irrelevant to the *a priori* argument just given, those references won't be pursued here.

The critique then offers the account that

> *many substantial goals that agents pursue, including in some cases getting married and raising a family, or spending the weekends getting drunk, or working in the family business, or going to church on Sundays, are such that the agent himself pursues them without desiring them or thinking them valuable: he is merely acting in accord with an inherited theory, doing the done thing. (9)*

Even if someone could do the listed things *entirely* "without desiring them or thinking them valuable" *in themselves*, in any way at any time (which seems far too general to be plausible), then in order to have a motive he must desire and value "doing the done thing".

Then there is an analogous account:

> *Similarly, many of the things an agent holds to be valuable, including things he holds to be valuable for himself, will be such that he has never questioned whether they are in fact valuable: he is merely taking on trust the truth of a theory handed down to him from his elders and teachers by the varied processes of cultural transmission.*

Even if it is possible that someone has "never questioned" the valuable nature of some things that he "holds to be valuable", in any way at any time (which seems implausible: introspection reveals us to doubt things quite readily and easily), then when he values them he will thereby have relevant desires, or wants, about them. Such questioning is not required by instrumental rationality.

However, the critique later incorrectly states that "Lester deems adherence to inherited theories rational because he claims they have withstood the test of rational assessment" (10), and he quotes *EfL* as a purported illustration of this assertion:

> *people must clearly perceive certain advantages in traditions, evaluate them as superior, if only in terms of the costs and benefits associated with those who keep them and the costs and benefits associated with those who break them. It is true that most people do not go in for radical criticism of all customs or habits they practise. They often give very little consideration to some of these, its being sufficient that they are content with them and see, on occasional reflection, no advantage to mending, at a cost and some risk, what does not seem broken (2012, 31-32).*

This is then rejected by the critique for making two false assumptions: (1) "the possibility of a rational assessment independent of unexamined inherited assumptions"; and (2) "that such an assessment, in however minimal a form, has been completed".

(1) As the quotation shows (thereby illustrating the value of quotation), *EfL* is making a point about traditional *practices* ("customs or habits they practise"); i.e., such things as marriage, celebrating Christmas, political elections, shaking hands, etc. These involve *intended actions* that can be given *instrumentally* "rational assessment". The critique is extending the clearly cited sense to include all "inherited assumptions" and all "rational assessment". But "inherited assumptions" of beliefs are not intended actions and "rational assessment" of beliefs is not instrumental (except insofar as thinking is a form of 'action'). Therefore, it is invalid to criticise the instrumentally "rational assessment" of an intended action because it involves "inherited assumptions" that have not themselves been given (because they are not intended actions) instrumentally "rational assessment". This is reminiscent of the invalidity of the criticism that the empirical-falsifiability criterion of being a science is self-refuting because it fails to be itself empirically falsifiable: it is invalid because the posited criterion is a philosophical theory and not itself a scientific theory.

All that said, it is not clear that we can even have *completely* "unexamined inherited assumptions". For to use an "inherited assumption" is to assume that it is in some way correct (whether this means true, moral, prudent, etc.) rather than incorrect, and that seems to require some "assessment … however minimal": if only seeing that it does appear to us to be correct (hence we use it) rather than incorrect (in which case we would not use it).

(2) At least some "minimal" instrumentally "rational assessment" must have been "completed" in the sense that the agent deems it enough for action rather than further thought. If it had not, then the agent would be moving without having any idea of what he was trying to achieve and why; and that would not be an action. Of course, as *EfL* assumes critical rationalism, all assessments are held to be conjectural and provisional. In that sense they are never 'justified' and "completed".

"6. Self-Interest"

In *EfL* the interpretation of 'self-interest' as all "self-perceived interests" is simply explained and shown to be compatible with genuine altruism, including by a thought experiment. Every agent perceives that he takes an interest in all manner of things. Some of these are—ultimately, even if involving other people, etc.—narrowly self-interested; relating to his own pleasure, happiness, status, health, etc. (although an agent can be mistaken about the consequences and what is really best for himself). Some of these are interests in the interests of other people or projects as ends in themselves; relating to family, friends, charities, science, etc. (although an agent can be mistaken about the consequences and what is really best for these). In order to be motivated, an agent must feel utility at the thought of promoting the interests of other people and projects. But these are altruistic to the extent that he would not wish or choose to lose these interests in other people and projects (by somehow forgetting them or ceasing to care about them) even if he knew that he would thereby gain more personal utility.

The critique goes back to abandoning quotation in favour of tortuous attempted paraphrase. Responses will be made as these proceeds.

> *I will state Lester's point as follows. In addition to his first-level interests, each person also has second-level interests, that is, interests in what first-level interests are fulfilled.*

EfL does not mention the "level" analysis at all in this context.

> *When people act consciously, they are pursuing their second-level interests.*

That seems to be acting self-consciously (or self-reflectively). First-level interests are still conscious.

> *Psychological egoism states that each person's second-level interests are concerned only with the fulfilment of his own first-level interests.*

No, psychological egoism states that each person is necessarily concerned only with his self-referential interests (at whatever level); other people can only ever be means to his ends.

> *Psychological altruism states that some people's second-level interests are sometimes concerned with other people's first-level interests.*

No, altruism is being concerned (at whatever level) with the interests of other people (at whatever level or none) for their own sakes.

> *Lester's thesis of self-interest says that each person pursues his own second-level interests.*

No, people pursue those things they have a self-perceived interest in (at whatever level). Some interests will ultimately be about themselves (self-referential) even when involving other people. Some interests will be about other people for their own sakes, or as "ends in themselves" (which expression the critique finds "obscure" for some unexplained reason).

> *This is consistent with psychological altruism because some people may have second-level interests in other people's first-level interests.*

No, it is consistent with altruism because people can have a perceived (any-level) interest in the interests of other people for their own sakes (at any of their levels—or none: because they are perceived not to know what is good for themselves).

> *Thus, second-level interests belong to the self but they may concern others.*

As may first-level interests concern others (as ends in themselves or as a means).

> *It seems clear to me that this talk of ‘interests’ is far too amorphous and woolly to be useful if our aim is to obtain anything approaching a clear or precise understanding of agency or instrumental rationality.*

As George Berkeley (1685-1753) observed in another context, “we have first raised a dust and then complain we cannot see”. *EfL* does not give anything whatsoever like this concocted “amorphous and woolly” and completely inaccurate “level” account of how people are always and only motivated by their self-perceived interests (in the self-perceived circumstances at the time) but are not thereby psychological egoists. Instead of quoting and dealing with *EfL*’s quite straightforward actual account, the critique’s earlier “classification” (four numbered distinctions in section four) is asserted “to be far more illuminating because it permits us to distinguish cases that Lester’s scheme lumps together” (11). The various inadequacies of the critique’s “classification” have already been dealt with in section four.

The critique then continues that “to use the same term for different cases slurs over differences that can be important. It achieves a simpler theory but, rather than advancing our understanding, it seems a barrier to it” (11). *EfL* is not replacing all different kinds of motivation with a single one. It is only explaining how these different kinds of motivation can still be self-perceived interests that can fit in the framework of instrumental rationality and utility-maximisation. Hence, this is “advancing our understanding” of how these things fit economic analysis and can thereby be related to want-satisfaction welfare and interpersonal liberty; which is the philosophical problem that *EfL* chapter two is trying to solve. As an analogy, suppose that the problem was to see how DNA-analysis explains all life-forms (on this planet, at least). It would be similarly confused to complain that “to use the same term for different cases slurs over differences that can be important. It achieves a simpler theory but, rather than advancing our understanding, it seems a barrier to it”. Of course, the critique just does reject the possibility of an instrumental-rationality analysis of all actions (analogous with rejecting a DNA-analysis of all life-forms), but none of the given criticisms appears to withstand scrutiny.

We are then given five possible ways of explaining why “Fred goes out of his way to cheer up a friend, despite the fact that it means missing a concert for which he has a ticket” (11). All this simply repeats the critique’s “classification”, which has been answered. But then the critique also posits the responses that are taken to be consonant with *EfL*. Replies will follow the quotations.

> *What does Lester say about these different cases? In each case he says that Fred acted in his self-interest.*

No, *EfL* implies that Fred necessarily acted on a self-perceived interest, but not all interests *of* the self are interests *in* the self: for some interests are about other people (or other things) as ends in themselves.

> *Fred’s helping his friend was in his self-interest*

It was one of his self-perceived interests, whatever the reason it was done.

> *because it was what he most desired (in (A)), or most valued (in (B)), or aimed to do (in (C) and (D)), or felt obliged to do (in (E)).*

Except that, *a priori*, these must all be what in some sense he has the strongest overall desire (or want, or preference, or value) to do in the perceived circumstances at the time—or he would not attempt to do them.

> *What does it contribute to our understanding…?*

To “our understanding” of which *problem*? For *EfL* it is the problem of how an *a priori* core of instrumental rationality can always relate to agency (and thereby to economics, want-satisfaction welfare, and interpersonal liberty).

> *…to be told that there is a flimsy (indeed, vacuous) level of description at which all these different cases can be described in the same way?*

It solves the real and important philosophical problem. It is no more “vacuous” than DNA-analysis of all Earth life-forms, or mathematical-analysis in game-theory, or—more relevantly—‘aprioristic’ Austrian economics. Moreover, there is also the reply given to David Ramsay Steele’s similar criticism that this is "all too promiscuously applicable" (*EfL*, 46):

> *On the contrary, action that does not fit the supposed end-means scheme is primarily begging for the, possibly difficult, task of suggesting a plausible, testable, enlightening new theory of the motive in operation. The alternative too often is idly, promiscuously, and unenlighteningly to assert some non-specific 'irrationality'. (EfL, 46)*

But the critique answers, "Nothing that I can see". Because it ignores the explained philosophical problem and how the offered solution is supposed to work (just as the liberty critique does). Instead, we are given common-sense, colloquial classifications that are presented as essentially incommensurable.

The critique goes on to state that in "response to a somewhat different complaint from Amartya Sen (1977) that self-interest theories of action are vacuous, Lester asks three rhetorical questions" (12), which it quotes:

> *How can we choose to do what we do not in some sense prefer to do? Must not the chosen alternative be better for us in some sense? Otherwise, where is the personal motivation? (2012, 42)*

The critique asserts that "these questions, intended as rhetorical, have more or less obvious answers contrary to those assumed by Lester" (12). Let us see whether the critique's "more or less obvious" 'rhetorical answers' withstand scrutiny. As usual, relevant quotations will be followed by replies at suitable junctures.

> *First, I can do what I do not prefer to do, in the sense that I do not desire to do it, or in the sense that I do not value doing it.*

Which question is this supposed to be answering? Only the first question or all of them? Let us assume it is the first question. The first question asks, "How can we choose to do what we do not in *some* sense prefer to do?" The critique simply does not answer that question. It is completely irrelevant to that question to assert that there is *also* a "sense" in which "I can do what I do not prefer to do". *EfL* does not, and need not, deny that there are colloquial, common, and *other* senses in which we do not do what we prefer. It is making an *a priori* point that we must "in *some* sense prefer to do" what "we choose to do" (and hence instrumental rationality, etc., is possible). Similarly, of course, there is also "*some* sense" in which one must also "desire" and "value" doing what one does, and it is irrelevant that there are *other* senses in which one does not.

> *Of course, if one stipulates, as Lester seems to do (2012, 42), that to act is to reveal a preference, then there will always be that sense in which whatever I do is what I prefer to do; but that is trivial.*

What one "stipulates" to be the case is thereby not a substantive part of any theory. It is held to be so by stipulative definition. *EfL* does not stipulate that "to act is to reveal a preference". It observes that there appears to be a "sense" in which this is *a priori* true. And what is *a priori* true is not thereby "trivial". In this case, we have an apparent *a priori* truth that allows for the instrumental rationality of all agency that economics can use (as can related theories of welfare and liberty).

> *Second, an agent may choose to do something that is less valuable for him than an available alternative because it is more valuable for someone else (or for some other reason or none).*

Rather, "an agent may choose to do something that is less valuable for him [egoistically] than an available alternative because it is more valuable for someone else [whom he altruistically values more than his egoistic value in this case]". What about, "(or for some other reason or none)"? It just looks unintelligible to imply that an agent need not in any way value what he chooses to do, or may even have no reason whatsoever to do it. It appears to be *a priori* true that an agent *qua* agent must have a reason to act (or it would not be an action) and that he must most value that action (or he would have attempted the one he valued more).

> *Third, we often act intentionally without motivation, in that we neither desire nor value what we do.*

Again, there are some senses in which "we neither desire nor value what we do". Those senses would include not feeling an appetitive "desire" (or lust) and having no higher-order (second-level) "value" (including moral principles). But those senses are irrelevant to the *a priori* point that intentional acts must also in "*some* sense" be desired (or wanted) and valued (or thought good).

> *Further, when we do desire or value what we do, the desire or valuation does not make us do it: our intentional actions are undetermined at every time before they are begun.*

The irrelevance of the determinism-indeterminism debate has already been explained. This is about what is *a priori* the case, not what is causal. However, it seems worth noting here that adherence to a "free will" that rejects compatibilism, determinism, and random-indeterminism without offering any account of how that could operate, is another example of the incoherent background assumptions of the critique.

> *Lester's treatments of the objections of C. D. Broad and Tibor Machan (2012, 43-46) seem similarly question-begging.*

What does the critique mean by "question-begging"? Presumably, in this context, this is a charge of *petitio principii*. But all valid arguments are *petitio*s (the conclusions have to be implicit in the premises), and so this is not a valid criticism. There is sufficient detail in the replies to Broad and Machan that they could have been properly criticised instead of being dismissed in this cursory and invalid way.

"7. Maximisation"

In *EfL* agents are explained and defended as utility-maximisers in the *a priori* sense that they attempt to take the action that maximises their utility (or want/preference-satisfaction) at that time in the circumstances as they conjecturally perceive them to be. This core sense thus differs from mainstream economics, which interprets utility-maximisation as a successful long-run achievement concerning all an agent's preferences (fully realising that this assumption of perfect calculation over time can only be a useful, broad approximation to the truth).

The critique quotes *EfL* on how "we seek to maximise our want-satisfaction":

> *'as we compare possible choices we cannot help but take the option that in some way feels to be the most want-satisfying, or least want-dissatisfying, at the time.' … (2012, 50-51).*

Two criticisms are then given:

> *First, most of our decisions are habitual or conventional rather than reasoned … , so what is chosen is the usual rather than the best or the most want-satisfying.*

A first thing to note is that there is simply no inconsistency between choosing what is "habitual or conventional" or "usual" and what is "the most want-satisfying" thing at that time; and therefore the "so" is an invalid inference. In fact, choosing in this way is often "the most want-satisfying" thing to do. And where it is not, we choose in the way that is. As *EfL* observes and discusses, this is "introspectively knowable" (50). Otherwise, we would have to say that habits, etc., sometimes bypass our wants and cause our bodies to move like puppets. No very great self-consciousness is required. So, it might superficially appear—especially after the largely-forgotten event—that one 'automatically' or 'unconsciously' made a cup of tea first thing in the morning as usual. But if one were to consider, or be asked about, one's behaviour at the time, one would immediately see that this habit is being followed because it is more want-satisfying, or preferred, than any alternative action that comes to mind (including simply not doing it).

The critique's use of "reasoned" is apparently intended to imply significant deliberation. But all thought—however superficial, panoramic, unselfconscious, and non-linguistic—is 'reasoning' in a more general sense of that term. Thus, we cannot engage in what is "habitual or conventional" without having "reasoned" about what we are doing in that sense. As in so many similar cases, with "reasoned" the critique does not capture some narrow, essential, correct usage.

> *Second, even in cases where we reason about options, we usually cannot identify all the options, all their consequences or all the relevant evaluative principles …, so we often cannot identify the best, or the most want-satisfying.*

But the instrumental rationality thesis being defended only holds that we choose the "most want-satisfying" from among the options that we perceive at the time. So, this criticism is the usual, unwitting, attack on a straw man.

The critique cites Simon 1997's "bounded rationality" and the idea that we "'satisfice,' or look for a course of action that is good enough, rather than seeking to maximise, or look for the option which is best". The critique mischaracterises *EfL*'s response, writing that "apparent satisficing is really maximising because, in such cases, at some point we guess that the disutility of search costs is likely to outweigh any other utility that we will achieve"; and the critique says that "it seems to be a wholly inadequate one" (13). First it is asserted that we "saw this in connection with habitual and conventional actions". But that has already been answered. The following additional reasons are then given (and will be replied to here, as and where seems appropriate):

> *First, suppose that Lester were right that the decision-maker is able to say that further search will be more costly than it is worth.*

EfL does not say that it "will be". In terms of the *a priori* instrumental rationality being considered, it is not a matter of whether the decision-maker is able correctly to predict the consequences of his decision. He makes the judgement, however cursorily, *now* that as he considers what he conjectures to be further search costs and the likelihood of a better outcome, his *current* most want-satisfying (or utility-maximising) option is to stop searching and act.

> *This does not alter the fact that the decision-maker would still not have enough information about the options before him to be able to say which is better than the others.*

As we always operate within a framework of conjectures, and as the potential information is infinite, and as we never know what relevant possibilities we might have overlooked, then it is in principle impossible in any objective and supported sense to know that we have "enough information about the options". It is, as we have seen, also irrelevant.

> *Second, when Lester says that the decision-maker guesses that further search would not be worthwhile, he might mean that the decision-maker just makes an arbitrary, unreasoned decision to search no farther.*

No. A guess, or conjecture, aims at a certain outcome and is shaped by critical considerations, insofar as these occur to us. Thus, it is never "arbitrary" or "unreasoned".

> *Third, if Lester means … that he calculates whether further search is worthwhile, then we get a vicious circle.*

And then the critique goes, yet again, into fanciful and elaborate "first-level options" and "second-level options" that he asserts, wholly incorrectly, to be "Lester's view". It is not held, or logically implied, in *EfL* that the decision-maker inevitably "calculates" in any complicated way, although he may if he prefers that option. At some point, he simply finds that the thought of acting now gives him more utility now than engaging in further search costs. Of course, in terms of his overall long-term utility he might be making a mistake. But the *a priori* instrumental rationality that is being defended is not about efficiently maximising long-term utility.

"8. Morals"

In *EfL* morals are given a formal interpretation that explains how moral beliefs or sentiments fit instrumental rationality, rather than being outside it or conflicting with it. In short, the categorical nature of moral obligations means that, when they are genuinely held, they necessarily override all non-moral goals in terms of the utility from keeping them and the disutility from breaking them.

A first important thing to note is that the interpretation of the categorical nature of moral obligations defended here is not necessary for making sense of *a priori* instrumental rationality. It would be sufficient that different moral obligations were ascribed variable amounts of (dis)utility, and that these compete with the (dis)utility of the other choices that an agent has. That said, if we assume that people can simply choose to act immorally, then that would tend to undermine the extent that it is thought worth attempting to reason with them about what is moral and immoral (and perhaps thereby even discovering that they are right and that we are mistaken). Dogmatism and coercion become the default positions, which will tend to militate against liberty and welfare (thereby being both undesirable and not fitting the "compatibility thesis" of *EfL*).

The critique attempts to paraphrase *EfL* on how morals fit into instrumental rationality, and then selectively quotes *EfL*:

> *fully to hold a moral obligation sentimentally, not to feel it uncertainly or as a slight pricking of the conscience, is always to act on it in appropriate circumstances…It is possible to defend moral theories intellectually without really feeling them. Without seeing this, one can fail to realize that one's 'official' or 'theoretical' moral position is a sort of public*

> *recommendation that one might not personally feel, value, or desire…we cannot knowingly do what we feel, at that moment, is immoral (2012, 51-52).*

As usual, the critique responds with more common sense than philosophy (responses will follow the quotations):

> *Lester's position here seems to fly in the face of human experience.*

This "human experience" seems on a par with the critique's earlier "descriptions of ordinary facts of life". It is the problematic, philosophically unexamined, way that things are usually seen.

> *I seriously doubt that that there has ever been, or will be, any person who has not on many occasions acted in a way that he is at the time of acting convinced is wrong.*

This is emphatically to reassert the common-sense position instead of criticising the philosophical arguments that *EfL* presents.

> *One type of case involves weakness of will,*

Which myth has been dealt with already (section three):

> *but in many cases, there is no such weakness because the agent is resolute in pursuing the course, he is convinced is wrong and perhaps steels himself to do it.*

As this fails to directly address the arguments in *EfL*, the most useful response is probably to repeat some of them. It is generally accepted that moral theories are about categorical—or absolute—limits on acceptable behaviour, irrespective of any other conflicting aims an agent might have. This categorical feature is, *ipso facto*, never overridable. If there are perceived extenuating reasons to do something that is generally described as "immoral" (such as a clash with a more important moral principle, or some great evil that would otherwise occur), then it is perceived as not actually immoral in those circumstances after all. If behaviour that is immoral ("wrong") is behaviour that is absolutely unacceptable/impermissible/undesirable, then it is *a priori* necessary that someone cannot sincerely hold, at time T, that X is immoral (i.e., feel it to be absolutely unacceptable) and also, at time T, try to do X (thereby implying it is felt to be acceptable). The critique does not criticise this philosophical line of reasoning, it merely confidently asserts the common-sense position that is inconsistent with it.

> *The varied situations and ways in which this happens has been explored extensively in literature, and also in film,*

That the common-sense position is accepted in popular culture is not a philosophical argument against *EfL*'s position.

> *and its effects have been analysed in some psychological studies of cognitive dissonance*

Something or other may be "analysed" in those studies. But without a coherent explanation of chosen immorality, that is like saying that the effects of seeing square-circles "have been analysed in some psychological studies of cognitive dissonance".

> *Typically, the person who knowingly does wrong*

There is still no explanation of how this is coherent.

> *tries to dissipate the discomfort he feels by seeking a way to justify himself: 'It is not so bad,' 'the circumstances are exceptional,' 'I have a good excuse,' 'other people would do the same in my position,' and so on.*

But some of those reasons will sometimes be sufficient to persuade the agent that, despite the general moral rule, his circumstances do constitute a genuine exception. And some such reasons must be believed if he is to decide that what at first might appear to be completely unacceptable is actually acceptable in his circumstances. Alternatively, as the quotation of *EfL* says, it is possible that he doesn't genuinely believe his "official" or "theoretical" moral position. Due to confusion, he might even genuinely believe that he believes it, but that is not the same thing as genuinely believing it. Actions speak louder than words here: when people act, it will tend to be based on what they really believe.

> *He tries to delude himself into thinking that he has not really done wrong at all.*

Note first this switch to after the event: "he has not really done wrong". Of course, someone can change his mind about the moral status of his action even moments afterwards. That said, it seems—by introspection—impossible that we can intentionally delude ourselves in the sense of making ourselves believe what we do not believe (try to believe that you are Napoleon, or can fly by flapping your arms). It is possible to try, but it will be in vain. However, it is quite plausible that, around the time of the action, the agent is seeking sound reasons to believe that he is not about to do wrong. And at the moment of his action that is what he must believe—however influenced by emotion his reasoning might be—in order to overcome the moral view that his behaviour is completely unacceptable. He will always feel that whatever he actually does is fully acceptable (in fact, the best thing to do in the perceived circumstances) and thereby not immoral (categorically unacceptable) at all.

> *This, indeed, may be the truth behind Lester's claim: not that no one knowingly does wrong, but that most people who knowingly do wrong succeed in deluding themselves that they have not done so.*

All this has now been explained, but it might help to recapitulate. It is, on analysis, *a priori* incoherent to assert that someone "knowingly does wrong": by understanding that immoral behaviour is categorically unacceptable and what that logically entails if a moral view is genuinely believed. Moreover, no one can choose to delude himself. And it is, in any case, irrelevant that we might assess the morality differently *after* the act ("that they have not done so").

The critique then asserts, without a page reference, that "Lester refers to Hare for further argument for his [Lester's] position" (15). However, *EfL* rejects Hare 1952 on this matter, despite agreeing with parts of its moral theory (*EfL*, 53, 209). The critique then digresses into a paraphrase of Hare 1952's moral theory and adds criticisms of it. It is not relevant to defend Hare 1952 itself here, but—in the interest of replying comprehensively to the critique in *EfL*'s terms—some tentative attempts at responses will follow quotations of the criticisms.

> *the objection I want to raise here is that we can discuss dispassionately whether a thing is good or right, without making any prescriptions;*

Of course, if we fail to reach any conclusions. Or, perhaps, if we are interested in which things are, in themselves, "good or right" rather than prescribing what ought to be done about them.

> *indeed, we can even prescribe what we think is not good or not right.*

To *sincerely* "prescribe" a moral view seems to imply that the ends are, overall, perceived by the prescriber to be "good" and that actively promoting them is "right".

> *Hare's response to this objection is to say that, in such cases, we are not making genuine value-judgements, but are rather making an 'inverted-commas use' of the terms 'good' or 'right,' that is, we are using the terms to refer to the non-value properties which incline some people to call things 'good' or 'right' (1952, 163-70).*

If this means that we can insincerely prescribe things according to how other people use 'good' or 'right', then that makes sense. We must think that such insincerity is not immoral.

> *However, Hare is here merely re-describing the examples to fit his theory.*

To show how putative counterexamples can be interpreted to fit a theory that is being defended is not thereby to engage in "re-describing the examples" in any invalid way.

> *Perhaps this can be seen most clearly if we consider a character like the devil, who may prescribe what he thinks to be bad or wrong.*

Rather, the devil will prescribe some things that are "bad or wrong" for humans because he perceives those things as good and right in his terms. He has different moral values.

> *Hare has to treat this as an inverted-commas use of 'bad' or 'wrong' (1952, 175). But that is mistaken, since what the devil intends to prescribe is not whatever some people consider to be bad or wrong; rather, being the devil, he intends to prescribe what is really, objectively, bad, or wrong.*

Rather, the devil "intends to prescribe what is really, objectively, bad or wrong" for people because he perceives it as good and right for him to do this.

> *If he says 'what is good is bad,' he is using one term descriptively, to talk of what is good (or bad) and the other term to deprecate (or commend);*

If the devil means that what is good for people is perceived as bad by him (or what is perceived as good by him is bad for people), then that seems to make sense. Similarly, what is good for the greenfly is perceived as bad by the gardener.

> *and similarly, if he says, ‘the right thing to do is the wrong thing to do.’*

If the devil means that what is “the right thing to do” for people is perceived as “the wrong thing to do” by him (or, again, *vice versa*), then that also seems to make sense. Similarly, avoiding the slug traps is the right thing to do for the slugs but the wrong thing to do as perceived by the gardener.

> *We can understand this easily enough, because there is a bit of the devil in each of us, though some people seem to have more of it than others.*

Rather, we can understand this easily enough because we can see the different perspectives of different agents.

> *Thus, while it is true that terms such as ‘good’ and ‘right’ may be used by speakers to prescribe, we should acknowledge that this is a secondary use, their primary use being to ascribe a value property.*

Possibly true, but not relevant to the real dispute.

> *Hare’s view is mistaken because it omits mention of the properties of goodness and rightness.*

As they are described, the “properties of goodness and rightness” are relative to the different values, ends, and perceptions of the different agents. (This is not to deny that there could be a correct theory of “goodness and rightness” that transcends individual perceptions of these things.)

Back to the critique of EfL:

> *As so often, Lester attempts to bolster his case by asking a rhetorical question: ‘can you recall doing anything that clearly felt immoral at the time that you did it?’*

As so often, the critique attempts to bolster its case by ignoring the details of the surrounding arguments in *EfL*, seizing on some illustrative question that is asked as a serious test, and then calling it “rhetorical” and giving a common-sense rhetorical answer to it.

> *His assumption, of course, is that the answer is ‘no.’*

In fact, *EfL explains* why the answer should be ‘no’, but clearly assumes that the question is always likely to be answered ‘yes’ if faced with common-sense assumptions that ignore the explanation.

> *However, my answer is ‘yes.’*

Quite.

> *I can recall many examples of my doing things that I clearly thought were immoral.*

That means “doing things” that were sincerely believed at the exact time of the chosen actions to be categorically impermissible/unacceptable/undesirable chosen actions. How can that make sense? (That question is not rhetorical.)

> *Anyone else could do the same, provided he has not deluded himself with the self-justifying chicaneries of cognitive dissonance.*

Anyone else might be equally confused by common-sense assumptions, but he cannot choose to delude himself. And being “deluded” *after* the event would be irrelevant to the thesis, in any case.

> *On Lester’s mechanistic theory of motivation, the supposed fact of the impossibility of doing what one knows to be wrong is explained by positing that moral desires are always stronger than non-moral desires (2012, 52). He says:*
>
> > *what is felt to be immoral is what we feel no one should ever do in the circumstances; it is a categorical sentiment… (17)*

And here the critique’s ellipses cut out and ignore the explanation of the categorical nature of morals:

> > *about a type of behavior in some group. One cannot at the same time (at least, not without confusion) do what one feels no one should do. Moral values must be obeyed because if disobeyed they are, ipso facto, not held categorically. Most moral philosophers seem to agree that morals are at least categorical whatever else they are. (EfL, 52)*

Instead, the critique jumps to,

> > *One source of confusion here is where our general moral feelings (such as feeling that lying is usually immoral) differ from our specific moral feelings (such as feeling that some particular lie is moral). This seems to occur because such general morals are usually held* ceteris paribus *(2012, 52-53). (17)*

And the critique’s reply (with responses made here) immediately follows.

> *Is it possible to have a feeling with so reticulated a propositional content…?*

The feeling does not have a propositional content but is a response to an idea. It is a feeling of complete rejection at the thought of a certain type of behaviour. We then typically call that behaviour 'wrong' or 'immoral'. Similarly, a feeling of belief might be the response to the thought of some descriptive proposition. We then typically call that proposition 'true'. Or a feeling of delight might be a response to a passage of music. We then typically call that music 'beautiful'.

> *as no one should ever do an action of type A in these circumstances (where an appropriate action-description is substituted for 'A')*

It seems clear enough that someone can have a feeling of complete rejection (categorical impermissibility) for an action of type A in circumstances X (e.g., A: punching someone, X: when we do not like the look of him).

> *or lying is usually immoral*

The feeling of complete rejection is a response to the thought of typical examples of lying.

> *or, even more implausibly, ceteris paribus, no one should ever do an action of type A in these circumstances (where an appropriate action-description is substituted for 'A')?*

The thought itself may be as complicated and qualified as someone is capable of entertaining.

> *The supposition seems ridiculous.*

EfL does not assert or imply the "supposition" that the feeling of complete rejection itself includes the idea to which it is a response.

> *Of course, one might say, 'I feel that no one should ever do that sort of action in these circumstances.' But there one is not using 'feel' literally, to talk about a desire or sentiment, but to indicate one's uncertainty about the thought one is expressing.*

This, typical, lapse into the common-sense usage of colloquial language is, typically, entirely beside the point. If there are moral feelings about certain types of action—and it seems that there are—then one of those feelings can quite intelligibly be expressed by saying, "I feel that no one should ever do that sort of action in these circumstances". It is irrelevant that those words could also be given the interpretation that the critique does.

> *It is, indeed, possible to have an attitude toward a complex thought, for example, one might admire it or feel happy at the contemplation of it,*

Or have a feeling of absolute rejection towards the type of action it describes.

> *but the feeling itself does not have the structured complexity of the thought.*

And *EfL* does not say or imply that it does.

> *Lester seems driven to supposing that it does, not simply by his mechanistic theory of motivation,*

There has to be felt motivation or we would not have anything to make us act. That does not make that motivation "mechanistic". The critique appears to interpret all felt motivation as thereby mechanistic and so opts instead for an incoherent and mysterious motivation that is somehow supposed to be a pure "act of will".

> *but by that in conjunction with his attachment to construing values as felt desires.*

To value something must be to desire it in some respect: if not for oneself, then that it exist, etc. All real values must be felt. It is only a metaphor to speak of "values" that are not felt. For instance, "liberty is a value" cannot literally make sense. What social, or interpersonal, liberty is literally—on *EfL*'s abstract interpretation, at least—is the absence of interpersonal initiated constraints on want-satisfaction (see Lester 2012, 2014, 2016). One can certainly value such liberty, but liberty in itself does not thereby become a literal value (similarly, one can believe theory X, but theory X in itself does not thereby become a literal belief). The idea that one can genuinely hold any kind of value without having any desire as regards it is not intelligible.

"9. Conclusion"

The critique's "conclusion" summarises its criticisms of what it construes to be *EfL*'s arguments. Rather than here summarise all of the responses already made, a more general conclusion might be more useful.

If we were to take the critique completely seriously, then this would appear to give rise to one obvious and severe problem. Economics is about the efficient allocation of scarce resources when there are alternative uses and ranked goals.[8] But, as a social science, economics is also based on some interpretation of every person being an instrumentally rational 'self-interested utility-maximiser' (*homo economicus*). Abandoning this assumption as being realistic in any serious sense would appear to make economics as a social science impossible or almost uselessly abstract (it would be somewhat like the joke about the physicist's farming advice that starts by assuming spherical cows in a vacuum).

Otherwise, this critique and the earlier liberty critique comprise the most sustained criticisms so far of the overall theory of eleutheric-conjectural libertarianism that *EfL* (etc.) propounds (although the current critique is less central and there is a great deal more in *EfL* than both critiques even touch on). If only for this reason the two critiques have some merit; and that they have, thereby, prompted further explication of the relevant parts of the theory. However, as both this reply and the previous one show, they fail even to demonstrate a grasp of either the relevant philosophical problems or the offered philosophical solutions. Unless and until this philosophical theory of libertarianism is given competent critical consideration, libertarianism will remain at the level of fundamental philosophical confusion that has barely made any progress since Locke's *Second Treatise*.[9]

(2016; revised February 2022.)

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[8] Thus interpreted, it can be applied to the evolved structure and behaviour of non-human animals and even plants: greater economic efficiency having a greater survival value.

[9] This essay has benefitted from comments provided by Mark Brady and David McDonagh.

Received for publication:	18.03.2022
Revision received:	30.03.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Lester, J. C. (2022, 07 15). Adversus "Adversus homo economicus": Critique of the "Critique of Lester's account of instrumental rationality". (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 124-145. doi:10.12709/mest.10.10.02.13

Style – **Chicago** *Sixteenth Edition:*

Lester, J. C. "Adversus "Adversus homo economicus": Critique of the "Critique of Lester's account of instrumental rationality"." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 124-145.

Style – **GOST** *Name Sort:*

Lester J. C. Adversus "Adversus homo economicus": Critique of the "Critique of Lester's account of instrumental rationality" [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 124-145.

Style – **Harvard** *Anglia:*

Lester, J. C., 2022. Adversus "Adversus homo economicus": Critique of the "Critique of Lester's account of instrumental rationality". *MEST Journal,* 15 07, 10(2), pp. 124-145.

Style – **ISO 690** *Numerical Reference:*

Adversus "Adversus homo economicus": Critique of the "Critique of Lester's account of instrumental rationality". ***Lester, J. C.*** *[ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 124-145*

MEST Journal
doi: 10.12709/mest.10.10.02.14

A CRITIQUE OF "A CRITIQUE OF LESTER'S ACCOUNT OF LIBERTY": A REPLY TO FREDERICK 2013

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JEL Category: **A11, P14**

Abstract

Frederick 2013 (the critique) offers criticisms of the Escape from Leviathan (EfL*) theory of libertarian liberty and also of its compatibility with preference-utilitarian welfare and private-property anarchy. This reply to the critique first explains the underlying philosophical problem with libertarian liberty and* EfL*'s proposed solution in a concise and precise way. It then goes through the critique in detail showing that it does not grasp the problem or the solution and offers only misrepresentations and unsound criticisms. 1. What the "compatibility thesis" really states. 2. What "initiated imposed costs" really are. 3. Paradoxes solved. 3.1 Why the forced reduction of the population would not increase liberty. 3.2 Why illiberal measures would not increase liberty. 4. How liberty relates to property. 4.1 How liberty relates to self-ownership. 4.2 How liberty relates to initial acquisition. 5. How liberty relates to free markets. 6. Understanding the solution requires prior understanding of the problem.*

Keywords: *Liberty, theory of liberty, social libertarianism, paradoxes, property, self-ownership, initial acquisition, free markets*

1 INTRODUCTION

This essay is a reply to Frederick 2013 (the critique). The critique attempts to offer a rigorous criticism of the theory of libertarian liberty in Lester [2000] 2012 (*EfL*). However, it is immediately noticeable in the "references" that the critique does not give the full title (it omits the subtitle) or the name of the author as they appear on *EfL*, or the exact publisher's name (it is "*The* University of Buckingham Press"). All quite trivial, of course, but indicating a lack of precision. The critique references only six "critical reviews" of *EfL*, although there have been at least twelve. And there are replies to all those reviews, which rebut all criticisms while adding useful elucidations. All these replies might easily be located online in moments.[1] The critique does not list even one of these replies and appears to be completely uninformed by them. Moreover, since the original book in 2000, there have been many additional essays by the same author that must now also be said to be part of what the critique calls "Lester's

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[1] For convenience, links to replies to all those reviews can currently be found at http://www.la-articles.org.uk/lwa.htm.

account of liberty". These basic oversights do not bode well. And as is evident on going through the critique, its criticisms invariably aim at inaccurate paraphrases and misinterpretations. Consequently, there is no criticism that cannot be rebutted. The critique is mainly remarkable for managing to sustain at such great length the combination of a fundamental misrepresentation of everything it criticises with supreme confidence that it has totally mastered it. However, the greatest fault is one that is shared by all the reviews: there is simply no apparent grasp of the philosophical problem with libertarian liberty or how *EfL*'s theory of liberty is supposed to solve it. Therefore, the only way that the critique might be mistaken for any kind of genuine refutation would be by a reader making similar errors or—which is more likely—taking on trust the specious rigour and confident claims of the critique.

EfL is neither simple nor orthodox. And because there is so much ground covered, many matters that could fill a substantial article are often dealt with in a paragraph or two (*verbum sapienti satis est*). It is extremely easy to misunderstand it. Therefore, it usefully clarifies the relevant theories and arguments to reply to any misunderstandings. And if there were no reply, then undoubtedly the critique would be more likely to be perceived as a refutation. However, the critique might have been much more concise and relevant if it had only focused on what it takes to be the main problem, rather than misrepresenting *EfL ad nauseam* in a plethora of unnecessary detail.

It should be useful to begin with a brief explanation of the main philosophical problem with libertarian liberty, and then of the offered solution to that problem. This is done partly because there is considerable confusion among libertarians generally about the problem; although there is even more confusion about the suggested solution, where it has been noticed at all. This is analogous with the problem of epistemological 'supporting justifications' and the critical-rationalist solution.[2] Moreover, the issues here do not appear to be of any less philosophical, practical, or moral importance.

1.1 The crucial philosophical problem with libertarian liberty

The problem can be explained as follows. Some kinds of property are assumed to be compatible with interpersonal liberty: e.g., self-ownership, initial acquisition by use, acquisition by trade, etc. Other kinds of property are assumed to be incompatible with interpersonal liberty: e.g., slavery by seizure, acquisition by conquest, acquisition by transfers based on welfare claims, etc. How are the different kinds of property being distinguished as libertarian or not libertarian? It cannot be because certain kinds of property are merely defined, whether explicitly or tacitly, as compatible with the mere word 'liberty': for words, as such, are of little or no importance. It must be because they are thought to be factually compatible or incompatible with real liberty: for the word 'liberty' refers to real phenomena in the world just as much as does the word 'light'. But libertarians usually have no explicit theory of what such liberty is. So, they must have a tacit theory of liberty. And that tacit theory has to be independent of property (or ownership). Otherwise, we could not explain why one kind of property is compatible with liberty while another kind is not. There would be no real libertarian liberty; there would be only different forms of property. And libertarians would be deluded in thinking that liberty, as such, could be genuinely increased or reduced. They would really be referring to property that promotes rights or utility in some way, or maybe promotes something else entirely. But that does not seem to be correct. So, it looks as though there must be a tacit theory of pre-propertarian liberty. And if there is such a tacit theory, then it ought to be possible—and should be enlightening—to make this tacit theory explicit.

What must libertarians be referring to by 'liberty'? What most of them explicitly say they mean does not withstand scrutiny, where they have any explicit theory at all. For instance, Robert Nozick has no explicit theory of liberty in his *Anarchy, State, and Utopia*. And some self-described libertarians take something like Hobbesian freedom of action to be the libertarian

[2] For detailed explanations of critical rationalism see, for instance, Popper, K. R. *Conjectures and Refutations* (London: Routledge & Kegan Paul [1963] 1978) and Miller, D. W. *Critical Rationalism: A Restatement and Defence* (Chicago and La Salle, Ill.: Open Court, 1994).

sense.[3] But this cannot be right because that is a zero-sum view that people must compete over rather than one which can be either protected or increased for everyone. Less-confused libertarians rightly opt for something more like the Rothbardian theory of interpersonal liberty: of not being aggressed against by other people. But when they try to make this sense explicit, they run into problems. A first thing to note is that very few focus on liberty directly. Instead, they write about being against (initiated) coercion or aggression[4] as the implied opposite of liberty, without explaining exactly how these are theoretically related to liberty.

'Coercion' fails completely and obviously, if taken literally. For 'coercion' is, in plain English, the use or threat of physical force against people to obtain their compliance. And thus (initiated) coercion is neither necessary nor sufficient to make an action infringe liberty as libertarians understand it in practice. For some liberty-flouting acts do not involve (initiated) force or the threat of force against people: for instance, fraud is not coercive, and theft is usually surreptitious rather than coercive. And some (initiated) coercion is used to defend against or rectify such non-coercive acts that flout liberty: for instance, policing and law enforcement. In recent years, however, (initiated) 'coercion' has increasingly been dropped as the one, or main, thing that libertarians are against.

What about 'aggression'? There seems to be no similar inherent problem with saying that libertarians are against aggression.[5] The problem occurs when libertarians try to explain 'aggression'. For they then typically do so in terms of acts that infringe 'legitimate property rights'.[6] There appear to be at least four mistakes in one here. First, as it stands, this view is compatible with every system of property: they are all perceived as 'legitimate' from within themselves. Second, to some extent it appears to be circular: to simplify somewhat, 'aggression' is infringing 'legitimate property rights' and 'legitimate property rights' are what is acquired without using 'aggression' (and throwing into the mix self-ownership, 'homesteading', 'labour-mingling', 'rights', etc., only expands the circle). Third, there is a conflation of what is positive (factual) with what is normative or conventional (moral or legal): such 'liberty' is presented as being inherently moral or legal. Fourth, there is no independent theory of libertarian liberty from which it is possible to deduce what kinds of property are factually libertarian (whether they are 'legitimate').

1.2 The solution to the crucial problem[7]

The fundamental sense of 'liberty' that libertarianism implies is too abstract to be explained first and foremost in terms of property—even self-ownership—or morals. That is why problems and paradoxes arise when this is attempted.[8] And standard putative solutions to them are, albeit unwittingly, fudged rather than sound.[9] An abstract theory of libertarian liberty (pre-propertarian and non-normative) is both possible and required.

1.2.1 The abstract theory of interpersonal liberty

'Liberty' in its general sense means 'absence of constraint' (a relevant contrast is 'presence of

[3] For a brief criticism of this view see, "Explaining the First Thing about Libertarianism", PhilPapers: https://philpapers.org/rec/LESETF-2.

[4] See, for instance, any number of essays on LewRockwell.com.

[5] However, there are non-libertarian senses of 'aggression' that must be kept distinct from the libertarian sense: such as the word is used in sport or in animal behaviour.

[6] For a reply to an example of this see "Some Critical Comments on Long 2013: 'Why Libertarians Believe There is Only One Right'", In Lester, J. C. *Explaining Libertarianism: Some Philosophical Arguments*, Buckingham, England: The University of Buckingham Press. pp. 85-94 (2014).

[7] This section has been revised to match the more recent and much clearer expression of the general theory that is in "Eleutheric-Conjectural Libertarianism: A Concise Philosophical Explanation", *MEST Journal* (forthcoming), and, also, on PhilPapers here: https://philpapers.org/rec/INDNLA.

[8] As found, for instance, in chapters 41 and 42 of Friedman 1989.

[9] As found, for instance, in the Block 2011 response to Friedman 1989. And see the response to Block 2011 that is "A Critical Commentary on Block 2011: 'David Friedman and Libertarianism: a Critique' and a Comparison with Lester [2000] 2012's Responses to Friedman", in Lester 2014, pp. 106-143.

assistance'). The issue here is interpersonal liberty: the absence of constraints on people by each other (not any natural constraint, whether intrapersonal or external). But what is it, most generally, that we want other people not to constrain? That general thing appears to be the satisfaction (i.e., fulfilment or achievement, not a psychological sensation) of our wants, or preferences, themselves. However, simply failing to assist someone's want-satisfaction (not providing a benefit or gain) is not equivalent to initiating a constraint on that want-satisfaction (initiating a cost or loss). Therefore, this abstract liberty can be theorised as 'the absence of interpersonal initiated constraints on want-satisfaction'. But for brevity we may use 'no initiated imposed costs'[10] to mean the same thing.[11] This eleutherology[12] is the theory of abstract perfect, or complete, interpersonal liberty-in-itself that libertarianism implicitly presupposes. This is a descriptive theory of libertarian liberty that is falsifiable by counterexample or sound criticism (e.g., showing that it is somehow incoherent, or that it cannot explain some aspects of libertarianism, or that another theory of liberty fits libertarianism better). It is not a definition (as the non-philosophical may mistakenly view it), whether stipulative, persuasive, or about usage. However, any theory can also be used as a definition.

1.2.2 The individualistic liberty-maximisation theory

There are three general theoretical problems with applying this account of perfect liberty: clashes, defences, and rectifications. 1) What if our want-satisfactions clash? I want to do something which, unintentionally, would initiate imposed costs on you (e.g., my starting a fire would cause you obnoxious and hard-to-avoid smoke), but to stop me would also initiate imposed costs on me (I want a fire for warmth and cooking). The most libertarian option is to minimise overall initiated imposed costs, with situation-specific compromise or compensation. Thus, we see the error in assuming that libertarianism is absolutist: that individual liberty can always be perfect and without any infractions. 2) How far can one go to defend oneself from initiated imposed costs? Not so far as to initiate them oneself by overall exceeding any that are threatened (e.g., putting landmines in one's garden to stop children using it as a shortcut). 3) If an initiated imposed cost occurs, then what would rectify it? Restitution matching the degree of cost,[13] including retributive-restitution and any risk-multiplier proportional to the chance of evading rectification.[14] Therefore, we see that some broad interpersonal comparisons of normal initiated imposed costs are sometimes necessary to solve these problems. But these three solutions are only about the liberty of the people directly affected, although that could be indefinitely many people. They do not amount to collective libertarian consequentialism (with the local-knowledge problem and perverse incentives probably causing self-defeating unintended consequences). This is an individualistic liberty-maximisation theory.

1.2.3 The immediate practical implications of instantiating liberty

If such liberty were to be observed in a state of nature, then what general things would this entail? Primarily, people want to have initial ultimate control of the bodies that they are. They do not initiate imposed costs on other people by having this, unless trivially and reciprocally by merely existing and being composed of resources now unavailable to other people. Therefore, liberty-maximisation entails that they have this initial ultimate control of their bodies. Next, people want to have initial ultimate control of any unused resources they start using, and thereby closely involve in their want-satisfactions (the resources

[10] Thus "initiated imposed costs", whether used in an abstract or in a libertarian propertarian context, is the philosophical clarification of the very confused mainstream libertarian idea of "aggression". This also solves the problem of what, in abstract principle, constitutes '(inflicted) harm' from a libertarian viewpoint.

[11] For a long time 'proactive imposed cost' has been used instead of the original 'initiated imposed cost' (and with 'initiated' usually being implicit). However, to some readers 'proactive' appears to connote intention, knowledge, or foreseeability of the consequences. As none of these things is meant to be implied, this essay uses 'initiated' as being slightly clearer.

[12] A theory of liberty: from 'eleutheria', an Ancient Greek term for, and personification of, liberty.

[13] Within reasonable limits to deal with exaggerated claims, the pathologically passionate, and to stop the (self-defeating) evolution of "utility monsters"; on which, see Lester ([2000] 2012), pp. 65, 69, 77, 159, 160.

[14] See Lester 2000.

they use for clothing, tools, habitation, etc.). They do not initiate imposed costs on other people by having this, unless trivially and reciprocally by their chosen use and those resources now being unavailable to other people. Therefore, liberty-maximisation entails that they have this initial ultimate control of their used resources. Otherwise, and consequently, all interpersonal interactions and resource-transfers need to be consensual, or they are likely to significantly initiate imposed costs. These three principals, positive, *prima facie*, libertarian rules of liberty-in-practice fit abstract liberty-in-itself almost perfectly. They maximally internalise externalities with respect to want-satisfaction and are thereby economically efficient (in the sense of maximising general want-satisfaction). To break any of these three positive rules infringes interpersonal liberty *prima facie*. However, problematic cases may require the abstract or maximisation theory.

1.2.4 Private property and legal remedies are additional aspects

In a hypothetical world of perfect libertarians, those three practical rules and three solutions to application problems might be enough for libertarianism to function. But to better protect and promote liberty-in-practice in the real world, these positive rules and solutions can be instituted as enforceable private property[15] and legal remedies. As a result—strictly speaking—self-ownership, such private property, and such legal remedies are not *inherently* liberty-in-itself or even liberty-in-practice (as propertarian theories of libertarianism sometimes appear to assume[16]). Otherwise, we risk conflating liberty and property into an unfalsifiable theory (or even a mere stipulative definition). Nevertheless, once libertarian legal principles have been thus derived, then 'initiated imposed costs' can normally be interpreted in terms of breaching them: there is no need to return to the abstract theory and pre-legal implications except for philosophically problematic cases. Therefore private-property libertarianism alone has so much intuitive verisimilitude and cogency; and it is, therefore, sometimes mistaken for the necessary and sufficient totality of libertarianism.

1.2.5 Moral explanations are a separate issue

It is a further separate and normative matter whether this overall positive system of liberty-in-practice is moral, just, rights-observing, valuable, etc. Only after deriving the positive account is it possible to ask normative questions about it. As a result—strictly speaking—self-ownership, such private property, and such legal remedies are not *inherently* moral, just, rights-observing, valuable, etc. (as moralised theories of libertarianism sometimes appear to assume[17]). Otherwise, we risk conflating libertarian law and morality into an unfalsifiable theory (or even a mere stipulative definition). Nevertheless, correctly interpreted—philosophically and empirically—deontologism, consequentialism, and contractarianism (the three main moral theories) all point towards libertarian liberty-in-practice as the outcome: the real top of Derek Parfit's moral mountain.[18] However, libertarianism can simply be morally posited and defended in itself without requiring that it follow from any allegedly more-fundamental moral theory.

Does any of this really matter? Yes, it is absolutely vital. Because without some such theory, libertarianism at its very core is a completely vague and *ad hoc* philosophical mess—however true and important its associated economics and other social sciences might be. Self-described 'libertarians' cannot even explain what liberty as such is or relate it to anything at all. But with this theory it is possible to have sound and precise libertarian philosophical answers and solutions to myriad criticisms and problems. A tacit muddle is resolved into explicit clarity.

1.2.6 The social problem with the new solution

This non-normative, pre-propertarian, liberty-centred, theory is also combined with critical-rationalist epistemology: it is held, in every part and at every stage, as a conjecture for criticism—

[15] One added sophistication is similarly derivable intellectual property. See Lester ([2011] 2016), chs. 30, 32.

[16] Many publications by Walter Block say they are about libertarianism and liberty, but property-rights appear to be placed first and last with libertarianism being held to be a theory of law.

[17] As we see in *Anarchy, State, and Utopia* (op. cit.).

[18] *On What Matters: Volume One* (Oxford University Press, Oxford, 2011), p. 419: "These people are climbing the same mountain on different sides".

epistemologically unsupported and unsupportable (whether by self-ownership, rights, utility, eudaemonism, contractarianism, argumentation ethics, etc.) but not unexplained or unexplainable, or undefended or undefendable. And that combination seems more than sufficient to make it a new paradigm: eleutheric-conjectural libertarianism. Consequently, this is something that most of the old guard of libertarians are very unlikely to accept, or even to understand. Most reviews of *EfL* are clearly unwittingly confused by what is really being said about liberty, *inter alia*. Therefore, the 'supporting justifications' (although epistemologically quite impossible) of 'libertarianism' (although with no proper theory of liberty) are not likely to die out soon. It will likely be mainly a new generation of young Turks that can understand and accept the new paradigm.

With this background outline of the problem and of the offered solution, it is now possible to examine the critique with less chance of not being able to see the wood for the trees. In fact, the above explanation constitutes the substantive reply to the critique. What follows is the equivalent of footnotes dealing with the critique's sundry confusions in detail.

2 REPLY TO "1. INTRODUCTION"

The critique often quotes misleadingly or paraphrases inaccurately. Thus, it states that "Lester argues for what he calls 'the compatibility thesis'" (45). The reader is deprived of the relevant information that this is intended to be a version of "the 'classical-liberal compatibility thesis', or 'compatibility thesis' for short, though ... a more explicit and more extreme version" (*EfL*, 1). The compatibility thesis is then paraphrased as, "in practice, and in the long term, there are no systematic clashes between interpersonal liberty, general welfare, and market anarchy" (45). Here the reader is mainly deprived of a qualification after "practice": namely, "(rather than in imaginary cases)". Other examples are more serious. For instance, we are soon told that *EfL* "argues ... that this conception":

> *(c) characterises liberty in such a way as to make the maximisation of liberty equivalent to the maximisation of welfare and to free-market anarchy. (45)*

This is particularly misleading. It makes the whole thing sound like a persuasive or stipulative *definition*. In fact, relevant *a priori* and empirical connections among the *theories* of rationality, liberty, welfare, and anarchy are explained. And all four theories are independently defended.[19]

The rest of this reply will continue by dealing in detail with the critique's interpretations and criticisms in the order in which they arise (points of agreement and relatively trivial disagreement will be ignored). It will be argued that none of them presents a problem for a correct understanding of the theory of liberty and the compatibility thesis.

3 REPLY TO "2. IMPOSED COSTS"

The critique quotes out of context that "costs consist of the foregone opportunities of decision-makers" (*EfL*, 60). The full sentence is not making that assertion about the theory of liberty but, rather, is about economics:

> *Some people, particularly economists, might think that 'harm' would be more accurate, and that this step is regrettable because of the difficulty in economics of getting people to see that costs consist of the foregone opportunities of decision-makers.*

And this quoted apparent assertion

> *"the 'cost' I am using is an opportunity cost (so there is no inconsistency with economics), but it must also be imposed to be unlibertarian" (EfL, 60)*

is only one of two given possibilities. The main idea of a 'cost' is "a loss of what one wants" (as the critique quotes first), which is, more precisely and hereafter, 'a preference-utility loss'.

We are then told that, "what it means for a cost to be *imposed* is explained in the following passages" (46). Six different passages are quoted, and it is then concluded,

> *Unfortunately, this appears rather sloppy. Does the parenthetical "that is, without their consent" refer back to "initiated and imposed" or only to "imposed"?" (47)*

What "appears rather sloppy" is the critique's interpretation. Even in the passages it quotes, it is

[19] Unfortunately, *EfL* sometimes slips into using 'definition' and 'define' where it would be clearer to use 'theory' and 'theorise'. So relevant misunderstandings are thereby encouraged.

clearly stated that we “can now define ‘interpersonal liberty’ as ‘people not having a subjective cost initiated and imposed on them by other people’”. The critique eventually realises what must be meant, but then says,

> *It is therefore a recipe for confusion when Lester says that “for short” liberty is the absence of imposed cost. (47)*

And yet the critique goes on to say,

> *However, since the weak sense of “imposed” just means without consent, we can stop using the term in that weak sense and talk instead of the absence of consent. So, I will henceforth use “impose” in the strong sense, as involving an initiation as well as a lack of consent. (47)*

So, having criticised the abbreviation as “a recipe for confusion” the critique itself adopts “impose” as an abbreviation for “an initiation as well as a lack of consent”. (However, as we saw in the earlier new explanation of the theory, usually adding ‘initiation’—in its various grammatical forms—is now preferred to reduce possible confusion.)

The critique also objects that “The term ‘initiated’ is not defined” (47). Why would it be necessary to define an ordinary English word when nothing unusual is meant by the word? And what about the potential infinite regress that this seems to imply? Yet having objected, the critique again appears to go to show that it is clear enough what is meant by it in context.

Next it is asserted that,

> *Lester adds a complication: “The ideas of cost and benefit here obviously relate to the person’s unimposed desires: those not manipulated by initiating force (physical power) or fraud—as these are themselves imposed costs” (2012, 58). This is far from clear. (48)*

How this is “a complication” and “far from clear” is a complication and far from clear. But, doubtless, something could be said by way of illustration. For instance, Peter is not *benefitted* by Paul when Peter chooses to take out ‘insurance’ at the point of Paul’s gun or that Paul has no intention of paying out on. And Peter does not suffer an initiated imposed cost if Jack, in Peter’s defence, is able to prevent the chosen transaction either by, say, disarming Paul or stopping the relevant bank transfer (even if he has not explained the fraud to Peter).

It is erroneously asserted that

> *the complication is intended to rule out conceptions of “positive liberty” (2012, 58), which may attempt to reduce costs by manipulating people’s wants.*

What is actually written about this additional point is that “This rules out, among other things, conceptions of ‘positive liberty’ that really involve paternalism”. This is clearly an aside, not the main intention. Moreover, the critique’s own introduction of the phrase “manipulating people’s wants” overlooks and obscures the requirement that this must be using initiated coercion or fraud.

The critique continues,

> *So, it seems that what Lester means is that subjective losses or gains that depend upon manipulated wants are not (real) costs and benefits: to uncover the (real) costs and benefits, the effects of any manipulated wants have to be stripped away. (48)*

EfL specifically says it is referring to “force” (but more precisely, ‘initiated coercion’) and “fraud”, as we have seen was even quoted correctly by the critique. The extremely misleading, and isolated, paraphrase “manipulated wants” is introduced by the critique (and then used repeatedly in that essay).

We are then told that “The unargued claim that manipulated wants are themselves imposed costs seems false”. But, just as the critique has quoted, what was actually being explained was how “The ideas of cost and benefit here obviously relate to the person’s unimposed desires” (and now this has been explained even further with concrete examples). Nowhere in *EfL* is anything written that implies that all “manipulated wants are themselves imposed costs”. This is yet another of the critique’s inaccurate paraphrases. Consequently, the criticism of that inaccurate paraphrase, that

> *someone who wants his wants to be manipulated by initiating physical power, or is indifferent to it, does not suffer a cost by such manipulation, given Lester’s subjective account of cost (48)*

is, in fact, entirely correct but completely in accord with all *EfL*. Of course, want-manipulation of any kind does not count as an initiated imposed cost if people spontaneously want that or are indifferent to it.

Given the critique's demonstrated liability to misinterpretation of *EfL*, the following words are ominous: "It will help to clarify what Lester is saying if we try to formulate it systematically". The alleged clarification begins:

> *Since a situation of no imposed costs is a limiting case (arguably unachievable) of minimisation of imposed costs, we could say that liberty, on Lester's conception, means minimum imposed costs. (48)*

No, we could not. As is explained in the introduction here, and as is clear enough in *EfL* and even from quotations used in the critique, liberty *itself* is only the absence of initiated imposed costs. The libertarian *policy* is the minimisation of any such costs. In very many aspects of their lives people will have perfect liberty. And in certain situations, people might occasionally have complete perfect liberty.

Thus, the critique is right to go on to say,

> *However, Lester says that liberty has degrees and that an individual gains liberty as the costs imposed on him are reduced (2012, 59), so perhaps the most apt formula, which applies at both the individual and the social level, is:*
>
> *(L) liberty increases as imposed costs decrease. (48)*

Unfortunately, this is then immediately 'explained' as

> *Since a cost is a foregone benefit, ...*

No, it isn't. There is a "non-moral and causal contrast between imposing a cost and, merely, withholding a benefit" (*EfL*, 60). A cost is the opposite of a benefit: a cost is a preference-utility loss; a benefit is a preference-utility gain. And merely to fail to provide a benefit to someone (say, not to give him ten pounds as a gift) is not imposing a cost on him.

The critique goes on to try to express everything in formalised abstract terms:

> *(C) for any persons, x and y, y brings it about that x bears a cost at time t if and only if*
> *i. the position x would have been in at time t, but for some feature of y, is wanted more by x than the position x is actually in at time t,*
> *ii. the want mentioned in (i) is not manipulated by initiating physical power or fraud.*

And this might appear, at first blush, to be correct. However, more precisely, (ii) ought to read 'initiating *coercion* or fraud'. And, as we have already seen (and will soon see further), the relevant senses of "cost" and "manipulated" are not understood in the critique. Moreover, what we seem to have here, and following on for several similar examples, is an account redolent of the deliberately tortuous explanations of "one song to the tune of another" as featured on the BBC radio programme *I'm Sorry I haven't a Clue*. Except that with the critique, unlike in the radio programmes, the unnecessarily complicated explanations often even fail to capture what is required. It would be much clearer to stick to plain English and concrete examples, as was done in the introduction to this reply, to avoid slipping into spuriously rigorous formalisations.

We are told that "The condition specified in (ii) is obscure in that it has not been explained what would constitute manipulating wants by initiating physical power or fraud". It is obscure how this could seem obscure. As was explained, clear examples would be making you want to give me money (given the alternative to not doing so) by threatening you with a gun or by making you want an apparently attractive but actually fraudulent offer. The creation and fulfilment of your want does not benefit you. It is an initiated imposed cost.

Now consider,

> *Thus, y brings it about that x bears a cost if and only if some feature of y either removes a benefit from x or prevents x from having a benefit x would otherwise have had, provided that the relevant wants of x have not been manipulated by initiating physical power or fraud. (49)*

In *EfL* costs (preference-utility losses) and benefits (preference-utility gains) are opposites. Thus, this is at best a very confusing way of expressing matters. Also, this fails to capture the crucial *initiated* aspect: what if *y* was responding to an earlier initiated imposed cost on *y* by *x*? And the final provision is somewhat superfluous, as it is implicit (it might as well say 'provided that *x* and *y* are persons'; or any number of other things). As usual, the critique does not demonstrate any understanding of the basic philosophical problem or how the given solution is supposed to solve it. Instead, it merely unsuccessfully attempts to formalise the theory of liberty and then it criticises its own confused formalisations.

This continues when the critique worries at the problem of producing “a definition, or even part of a definition, of ‘initiation’” (49). But when the theory of liberty speaks of the “absence of initiated imposed costs” it simply means those imposed costs that are ‘started’ or ‘begun’ as opposed to those imposed costs that are ‘defensive’ or ‘rectificatory’. And any “definition” will, in any case, lead to an infinite regress, or an arbitrary stopping point, or circularity. Presumably a *theory* of “initiation” is really what is meant. But no complicated theory of “initiation” itself is required to understand what is intended. Consider some more concrete and simple examples: I punch a stranger I am passing; or I smash the eggs that he is carrying; or I run off with his hat. A slightly different explanation might be required depending on whether we are looking at these events from an abstract pre-propertarian libertarian viewpoint or whether we are assuming that libertarian self-ownership and property have already been derived. However, from both viewpoints, it is fairly clear in what way I am *initiating* an imposed cost in each case.

It is entirely correct to say that “imposing a cost on a person is different to merely withholding assistance (or a benefit) from that person” (the critique, 50). However, utter confusion then follows:

> *withholding assistance from a person will not be a cost to that person if the person does not want the assistance and this want has not been manipulated.*

If one did not in any way cause the problem some other person has, and one has no contractual obligation to assist that person, then “withholding assistance” from him is objectively to fail to provide a benefit (a preference-utility raising). It cannot, in itself, be to initiate a cost (a preference-utility lowering). But if the person “does not want the assistance”, then it is not assistance (a benefit) at all to give it (and it may well be an initiated imposed cost). It is a complete muddle over both the theory and the logic of the situation for the critique to assert that “from (C) and (I), withholding assistance *is* imposing a cost if the person wants assistance, ...”.

The critique concludes the section by reiterating that

> *None of this helps us to understand what Lester means by “initiating.” For that we have to rely on our ordinary understanding of the term or refer to the dictionary (“to begin, set going, or originate”).*

Yes, and that is exactly what *EfL* means by “initiating”. Why does the critique suggest a technical definition is required? Why insist on creating its own technical definitions in place of *EfL*’s plain English? Clearly, the critique is attempting to be intellectually rigorous; but it is thereby merely adding complexity to its own underlying misunderstandings. It would have been better to concentrate on understanding the problem and how the theory of liberty relates to it, as well as accurately quoting and criticising the original text.

The reader has been spared the full quotations and analyses of “Propositions (L), (C), (I) and (*)” (50). But we are told that they “will be referred to repeatedly in what follows”. So, some further replies to them will occasionally be necessary. However, this will not be done by following the critique’s example and trying to “formulate ... systematically” what *its* propositions really appear to be asserting while also requiring and attempting technical definitions of *their* various terms. For it seems better to combat confused, abstract, complexity with plain English and concrete examples.

4 REPLY TO “3. PARADOXES”

4.1 “3.1 Reducing Population Increases Liberty”

At the end of a paraphrased exposition concerning the possibility of “libertarian genocide” (but not titled as such) the critique says that “Lester regards this as a far-fetched criticism and he offers a threefold, but cavalier, response” (*EfL*, 62-63). We shall not immediately unpick the critique’s cavalier paraphrasing of *EfL*’s careful responses but go straight to the critique’s cavalier criticisms (which it gives in reverse order).

It begins:

> *Lester's third point does not apply to the genocide objection, since genocide is not a "mere logical possibility." (51)*

EfL does not say or imply that genocide as such is a mere logical possibility. It argues that the variety that is being considered is not logically implied by the given assumptions but rather, logically precluded by them.

And then,

> *Perhaps it is a "mere logical possibility" that we could decide to prevent all births; but it should not simply be dismissed. (51)*

It is not "simply ... dismissed". It is shown to be not a logical possibility given the assumptions that were being considered. What the critique calls the "third point" was not a reference to the other two points as being logical possibilities, but an additional hypothetical consideration: "even if there were some mere logical possibility" (*EfL*, 63). Of course, it never helps matters that the critique is criticising its own inaccurate paraphrases rather than quoted text.

The critique continues:

> *if maximising liberty entails preventing all new births, but no one is going to consider seriously preventing all new births, then why should anyone consider seriously the aim of maximising liberty? (51)*

Quite. Which is exactly why more or less that question was asked—although, as usual, not in those exact words—and then it was explained how it doesn't entail that. So why does the critique ask the question again as though it has not been asked and answered in *EfL*? It must be because of a cavalier reading.

We are then told that "Lester's second point also seems mistaken". We can stop right there. The critique's typically inaccurate paraphrase of what it calls the "second point" is that "it is doubtful that costs on potential people should be counted". What is actually written in *EfL* is

> *it is far from clear to me that the formula implies that we should count potential people.[80] That is not how I would interpret it. But then this also applies to the original criticism and so undermines it. (63)*

In other words, to spell it out, *EfL* is primarily discussing what the given libertarian formula implies and not whether "potential people should be counted". But *EfL* also explains that even if we accept that potential people count, then this undermines the original criticism (for if genocide is to be regarded as preventing even larger potential future infractions of liberty, then it also initiates an imposed cost that is far larger still on potential people who will not have lives at all—assuming that most lives are worth living, as discussed in *EfL* endnote 80). Hence it is irrelevant for the critique to argue, against its own inaccurate paraphrase, that people often do consider "the welfare of children they have not yet produced" and "future generations", etc.

This is the paraphrase that the critique calls the "first point":

> *First, if future costs imposed on potential people are to be counted, then we should count the countervailing, and greater, costs imposed on potential people by preventing them from being born. (50)*

The critique argues,

> *Lester's first point may seem irrelevant, because its antecedent does not apply to the objection. For the objection does not, or need not, count costs imposed on merely potential people. The claim is simply that preventing births, or genocide, reduces population, thereby reducing imposed costs on currently existing people who remain alive. (51)*

No, the *EfL* "claim" is not "simply that preventing births, or genocide, reduces population, thereby reducing imposed costs on currently existing people who remain alive". The central assertion in "a. Libertarian Genocide?" is stated thus: "genocide, if successful, would be a relatively small imposed cost compared to the costs that are bound to occur if the species continues indefinitely ..." (62). If the critique had only quoted what was written, then it might have had a criticism that aimed clearly at the target.

The critique continues that, "it seems plausible that the life of a person is, in general, a greater benefit to her than the costs she imposes on others". Agreed. But then we are told "even if this is true, it does not help". Help with what? The critique is not referring to things actually in *EfL*. The critique purportedly explains:

> *For if a person's life imposes a cost on us, that is, if it initiates a cost-bearing by us to which we have not consented, then killing that person, or preventing her from being born, is*

> *preventing her from initiating an unconsented-to cost-bearing. (51)*

What does "a person's life imposes a cost on us" amount to? Is their whole life an initiated imposition (i.e., aggression)? Or someone act or aspect of their life? Because of something they actually do or only what they would do if they were to live, or to carry on living? Which is it? And why not give a concrete example to clarify? It might be true that "killing that person or preventing her from being born" would prevent some future initiated imposition against us. But first, how could we know that? And second, we would thereby be the initiating imposers (or aggressors) if killing—but possibly not if it is some kind of birth-prevention (a concrete example really is needed)—and so liberty would seem to rule it out. The critique's vague and muddled explanation does not seem to lead to any clear criticism, paradox, or problem.

The critique then attempts to make the matter more explicit with its usual would-be rigour:

> *by (*), if y prevents x from initiating an unconsented-to cost-bearing of y, and thereby brings it about that x bears a cost without consent, y is not initiating that unconsented-to cost-bearing by x. So, by (I), y is not imposing a cost on x. Thus, taking or preventing the life of a person in order to prevent her from imposing costs on us imposes no costs on her. (51)*

As we have seen, all the critique's "systematic" analysis is an over-complicated way of expressing its own misunderstandings. And so, any argument relying on it is irrelevant to *EfL*. It would be a complicated and repetitive waste of time to unpick every example in detail. However, let us consider the conclusion that "taking or preventing the life of a person in order to prevent her from imposing costs on us imposes no costs on her". We can ignore all of the critique's confusions and interpret this as a stand-alone criticism. Other people that we will interact with are almost bound to initiate some imposed costs on us from time to time. Does this mean that we are, therefore, not initiating an imposed cost on them by "taking or preventing the life of [such] a person"? There are several obvious things that can be said by way of a reply. First, 'getting your retaliation in first' (as the old football joke has it) is precisely not to retaliate (hence the joke): it is *ipso facto* to initiate an imposed cost. Second, even if one is genuinely reacting to an initiated imposed cost, to do so with grossly disproportionate severity is to go beyond any kind of defence or rectification and (as explained in *EfL*, 108ff, and Lester 2011, Ch. 27) itself to initiate a new, and more severe, imposed cost (e.g., a landowner cannot plausibly claim that he shot dead an inadvertent trespasser in *mere* reactive defence of his property claim). Third, by the same argument, she might take our life as a future imposer on her. So, it is not clear how it is she, rather than we, who is allegedly 'initiating' the imposition in this dubious and indeterminate predictive sense. The critique concludes that all this is "contra Lester, on his own account". But all the accounts are inaccurate paraphrases in the critique and not the real ones in *EfL*. And it is not clear that the critique's arguments are valid even in their own terms, but that is not worth pursuing in detail here.

The critique then considers the idea of "drawing the line at killing someone to prevent her from imposing costs on others" but asserts "there appears to be nothing in Lester's account which would explain such a limitation". Even on the critique's garbled account this is a perverse and absurd interpretation, but it is worth explaining further for clarity and emphasis. First, to kill someone *before* she is (supposedly) going to initiate an imposed cost on us is necessarily to *initiate* an imposed cost on her, and so this is ruled out. Second, to *kill* someone to deal with a relatively minor initiated imposed cost is to initiate a new and far greater imposition. It is not a proportional defence or rectification to minimise initiated impositions (this being the theoretically implied libertarian policy).

The critique considers another possible way to rule out its imagined theoretical implication of killing to prevent initiated impositions: "we avoid not only the costs that the person would have imposed on existing people but also the benefits she would have bestowed". And the correct response to this is that it isn't relevant. Other things being equal, the prevention of initiated imposed costs is silent on the issue of benefits thereby also prevented (at least, once libertarian property is derived). That a thief benefits some people when he is not thieving, is not a relevant theoretical reason to tolerate his thieving.

The critique's own response is that "by (C)(i), to be denied a benefit is to bear a cost" (52). But, as has been explained, this has nothing to do with liberty as theorised in *EfL*. In *EfL* to be denied a pure benefit is never to have a cost initiated. The critique supposes that "by taking or preventing a life we bring it about that the people who remain bear a cost". On the contrary, to prevent someone from benefitting others is not thereby to initiate a cost on those others (assuming libertarian property). It might result in a loss of benefits to you if I kill your friend. But the initiated imposition is all on your friend (he has exclusive resource-control over his body). You do not own your friend. It would be different with killing a pet dog that you do own.

It has been necessary to go into some detail to demonstrate the nature and severity of the irrelevant confusions in this section of the critique. And each slight variation of a criticism has been replied to, lest it be thought that it is that one that comprises a refutation. From here on, we will sometimes ignore some of the critique's less important paraphrasing errors and their ensuing erroneous criticisms.

4.2 "3.2 Illiberal Measures Increase Liberty"

Of the typhoid carrier, the critique's criticism again mistakenly assumes that in *EfL* the costs to a typhoid carrier "should not count. Since ... actions taken by those people (or others) to prevent those costs being imposed do not impose costs ..., because they are not initiations: they are self-defence" (53). This error has been dealt with in principle. To go beyond what is proportionate in defence or rectification is to initiate a new imposition: to become an overall aggressor. The critique asserts that if *EfL* "is assuming a principle concerning minimal or proportional use of retaliatory force, his manoeuvre is ad hoc, because such a principle is not a consequence of maximising liberty as he explains it" (53). This is simply the critique's confusion about the theory. The theory is explained to entail that it is possible to initiate additional imposed costs on others even if they started imposing first. And initiated impositions, among the people involved, must be minimised as a matter of libertarian policy.

Of the Salman Rushdie example, the critique first says that it is "irrelevant" to expect people to "try to control their anger" because "we can suppose that the offended people do control their anger but are nevertheless still offended by what they consider to be an insult and they will suffer from a sense of injury or injustice until Salman is extinguished". It is not "irrelevant" because it is a partial answer and is not intended to be a sufficient answer. And, as was also written in *EfL*, they should also try to control their sense of being "offended", of course. In a footnote the critique states, "For a similar objection, and several others, to Lester's response, see Gordon and Modugno (2003, 106-7, 109)". But for detailed rebuttals to all of the Gordon and Modugno objections see the Lester reply, which the critique appears to know nothing about.[20]

The critique notes the "rule-consequentialist" nature of *EfL*'s main response (which the critique calls the "second part"). Lest there be any confusion, it should be understood that it is rule-consequentialist with respect to maximising liberty, and not utility.

A "further objection" is quoted from *EfL*: "it must always remain possible that people could be more upset about something that others do *purely* privately than those others would be upset to be prevented from doing it. Without a concrete example, however, this seems a mere logical possibility—at least on a large scale". And the critique asserts that this "is puzzling since we do appear to have concrete examples" (54):

> *The sort of religious extremists who object to Salman do seem to be greatly upset at the thought of certain types of comments being made or consumed by anyone, whether or not they themselves happen to hear or read those comments. Many of these people seem so upset that they are willing to sacrifice or risk their lives to punish producers or consumers of those types of comment, so it is plausible that they are more upset by such comments being produced or consumed than the producers and consumers would be if they were prevented from doing so. In addition, it*

[20] "The Uncogent Auxiliary Hypotheses of Gordon and Modugno: Reply to a Review", in Lester 2014 pp. 144-154.

> *is quite possible that there are also a great number of these extremists. It appears, then, that Lester does not answer the objection.*

There are various points that can be made against this interpretation. 1) The "religious extremists" are simply upsetting themselves by choosing to think about things that they find offensive. Therefore, that aspect is not an initiated imposition. 2) To the extent that the alleged "types of comment" are, *ex hypothesi*, "*purely* private" how do they even know they exist? 3) Where are there "Many of these people" who are "willing to sacrifice or risk their lives to punish producers or consumers of those types of comment"? There were public displays of supposed anger (if they were even genuinely angry, rather than enjoying self-perceived righteous indignation or doing it as a religious duty). That was not a sign of people "willing to sacrifice or risk their lives". 4) There might be some people who would be "willing to sacrifice or risk their lives" to attack Rushdie, or a publishing house, etc. But they are relatively few and far between. And so there are not a "great number of these extremists". 5) The few "extremists" seem more motivated by indulging their fervour than by genuinely protecting themselves from being intolerably offended. 6) There are genuine initiated impositions that producers and consumers of such "comments" must suffer if they are physically attacked or coercively constrained. 7) What about the reciprocal, and escalating, upset at the Muslim behaviour, etc., that such a suppression of private communications would cause? 8) This cannot plausibly be universalised into a rule that would prevent more initiated imposing than it allows. Therefore, it is not at all realistic for the critique to suppose that the coercive suppression of such purely private communications is a lesser initiated imposition than tolerating them. (It is no more realistic than the view that many people are so unavoidably and intensely offended by the mere thought that homosexual behaviour is occurring in private that it is a lesser initiated imposition to suppress such private acts.) Hence, we can ignore the critique's further discussion of the—in any case, implausible—possibility that such wants "have been manipulated by a combination of threats and frauds perpetrated by influential or powerful religious leaders".

The critique then, as usual, inaccurately paraphrases the discussion about the possibility of, what *EfL* calls, "Libertarian Utility Monsters". And it is possible, as usual, to more than reciprocate the critique's view that the "response to this example seems particularly unsatisfactory". First, contra the critique, it is clearly relevant to the *possibility* of such monsters that there is no incentive for them to exist, because only if they were to exist might they pose a real *practical* problem for the theory of liberty (the theory of liberty is not supposed to be adequate in all logically possible cases). But even given that they do exist, then it is not true that, as the critique baldly states, "maximising liberty requires illiberal restraints" (55). And this is precisely because of the long-term consequences of giving in to them, as *EfL* explains and the critique even quotes: "a society of passionate brutes demanding great compensation or blocking normal activities would undermine the efficient, long-term minimising of imposed costs (or why have we not evolved to be more passionate?)". Although the critique fails to add *EfL*'s conclusion that, "So to avoid their multiplication is a sound libertarian reason not to give way to such people to the extent that they exist" (69).

And yet the critique says this "seems blatantly incorrect" because

> *The point of the objection is precisely that prohibiting normal activities for the sake of Monster's sensitivities is an efficient way of minimising imposed costs and, presumably, will be so for the long term, unless someone can explain why it is not. (55)*

So, the critique simply fails to realise that the explanation is an explanation. It is possible to elaborate, of course. The consequences of always giving in to the extremely passionate—assuming that they are not faking it—are bound to produce more such people. There would be an 'arms race' of cultivated—and possibly eventually evolutionarily-selected—intemperance. The world would have ever more utility monsters. Instead of peaceful cooperation, people would try to impose their preferences on others by developing an uncontrollable frustration at not having whatever they want. It would be a world where people are increasingly either allowed to impose on others to prevent their own uncontrollably great frustration, or allowed to suffer because they are not, yet, sufficiently uncontrollably passionate. There would be more initiated impositions all round in such an intemperate world. Hence, assuming a libertarian policy of minimising long-term initiated impositions, we should not give in to utility monsters.

The critique then states that "What might be an attempt by Lester to give such an explanation (2012, 160-61) is not at all clear" (55). But then very little is clear to the critique, and this is mainly because it does not grasp the basic problem with libertarian liberty or how the suggested theory of liberty is supposed to solve it. In any case, the critique does not even attempt to fault the given explanation or explain what it finds to be unclear.

The critique paraphrastically observes that *EfL* "claims ... that, if it turns out that there really are people like Monster, we might wish to opt for a different conception of liberty (2012, note 86, 213)" and then absurdly supposes that this "is just to concede the objection!" (55). First, the word "might" (which is in *EfL* as well) is not the word "would". But the real problem is that the critique has not understood that the purpose of the abstract theory of liberty is to be practically adequate for libertarianism in the real world, not in every logically possible circumstance.

This error is repeated when the critique paraphrases *EfL* as holding that "Monster is only a logical possibility which can be ignored for purposes of his *practical* compatibility thesis" (55). For it states that

> *this cavalier treatment of logical possibilities seems to impugn Lester's seriousness in giving a philosophically satisfactory account of liberty. A logically possible counterexample signifies a problem that may imply further logically possible counter-examples, some of which may be actual: it should prompt further investigation and testing of one's thesis rather than being simply dismissed. (55)*

The critique simply does not understand what is going on because of its cavalier reading of *EfL*. It does not even understand the problem with liberty that the theory is trying to solve. *EfL* is scrupulous about considering logical possibilities that are *relevant* to the adequacy of the theory of libertarian liberty in the real world and to the classical liberal compatibility thesis. There is no attempt to give a "philosophically satisfactory account of liberty" *simpliciter*, or outside these constraints. Hence a "logically possible counter-example" that is not within the limits of the project will not be one that "signifies a problem that may imply further logically possible counter-examples". They are irrelevant to "further investigation and testing of one's thesis" and should be "simply dismissed"—at least, after they have been shown to be irrelevant if they are raised. The critique's general approach to logical possibility is like that of a schoolboy who has just grasped the idea and cannot stop applying it promiscuously and irrelevantly.

5 REPLY TO "4. PROPERTY"

The critique asserts that "property is a social relation involving rights and obligations, and so any derivation of property rules must be talking about rights and morals" (56). This thereby simply ignores, without offering any direct criticism, *EfL*'s *de facto* account of 'property' (but not *de jure*, as there is no law yet) in the sense of the 'exclusive control of resources'; this being logically entailed by the application of a rule to, real or imagined, circumstances.[21] There is no need for "talking about rights and morals". Ironically, "this cavalier treatment of logical possibilities seems to impugn [the critique]'s seriousness in giving a philosophically satisfactory account of [libertarian property]" (or it fails to understand logical possibility in this case, at least). The critique states that *EfL* "does not assume the correctness of any theory of rights or morals". But *EfL* goes much further than that here: it does not even assume their existence. The critique then suggests that "if maximising liberty is good or right, then, ceteris paribus, the property rights he has derived will be at least part of the correct theory of rights and morals". This is dragging "rights and morals" back in when the entire point of *EfL* is to show what the existence of liberty objectively entails irrespective of whether rights and morals even exist.

The critique's confusion continues as it claims that *EfL*'s "arguments seem to be guided by familiar libertarian assumptions about morality and private property, which he is unable to truly set aside" (56). On the contrary, that is exactly the critique's problem. As a putative illustration contra

[21] Although, as explained in the introduction, property (ownership) is now kept strictly separate from 'exclusive control of resources' in order to avoid such confusion.

EfL, the critique asserts that giving someone impure water by mistake, after they request water, is an initiated imposition: “Since you have not consented to bear a cost that I initiated, I have imposed the cost on you, according to (I)” (56). But to give someone what they request is precisely not to *initiate* an imposed cost. Again, the critique is lost in a sea of words because it does not understand either the problem or the theory. Contra the critique, morals are irrelevant here.

The critique goes on to observe that *EfL* says that (in the critique’s paraphrase) “significant negligence may have made my action an imposition” (57). And the critique irrelevantly asserts that “Significant negligence, of course, may make an unintentional action blameworthy” (57). This is another complete misunderstanding by the critique. If my behaviour negligently imposes on you, then that is an objective initiated imposition on you. It is an entirely separate matter whether that objective initiated imposition is morally blameworthy (and, logically, it might or might not be). A useful tool of philosophy is separating matters that are often conflated in a confusing way by common sense. The critique here sticks to a common-sense conflation in the face of a clear philosophical distinction without offering any critical argument. It is simply fatuous of the critique to assert that *EfL* “seems to be guided, not by his own theory of imposed costs, but by our ordinary conception of what is morally blameworthy” (see *EfL*, 109, i. ‘Torts’ and ‘Crimes’).

The critique is hubristic despite its—here demonstrated—misunderstanding of every aspect of *EfL* that it criticises. It is not merely ultimately erroneous; it is fundamentally confused. And it is this confusion that causes the critique to conclude that “throughout *Escape from Leviathan*, it is familiar libertarian assumptions about property rights and morals which seem to more or less license the steps Lester takes” (57). As the critique simply does not understand the theory, or even the problem to which it is the putative solution, it is in no position to determine that the “theory about minimising-imposed costs is retained only in words”. The critique’s conclusion that the “derivations seem hopeless” is true of its own paraphrased versions of the derivations, but these do not relate to any real understanding of *EfL*.

We are then informed that *EfL*’s

> *premises often conflict with his conception of liberty and his inferences are often invalid. In order to avoid repetition, I will show this only for his attempted derivations of self-ownership and homesteading. (57)*

As the critique demonstrably does not understand the theory of liberty, this does not seem very likely. But let us see.

5.1 “4 .1 Self-Ownership”

Self-ownership can be more clearly, simply, and precisely derived from observing liberty than is done in *EfL*. There is an example at the beginning of this essay, and there have been others in other articles and books. The critique might profitably have examined some of these were its bibliography for “Lester’s Account of Liberty” wider than only *EfL*. That said, the *EfL* version will be defended here.

The critique states that *EfL*’s “derivation of self-ownership from the observance of liberty is set out in the following passage” (57). The critique then quotes one very short paragraph:

> *We have both been washed ashore on an unowned island of frugal resources. I assume that nothing is yet owned, including ourselves. I then assume that liberty is to be observed ...*

For some reason the explanatory “(that is, not infringed)” is omitted. The critique then quotes the succeeding paragraph but with its own numbers inserted:

> *Now, [1] to withhold a benefit, or good, to which one has given rise—without thereby imposing on others or agreeing to give it to them—makes others no worse off. [2] It cannot therefore impose a cost (except in the insignificant, and reciprocal, sense of using any resources that another person might otherwise have used). And [3] the benefit, or good, that one first and most directly gives rise to, merely by existing, is one’s own body. So [4] to decline to allow that body to be used by others is merely to withhold a benefit. By contrast, [5] to use another’s body against his wishes clearly imposes a cost on him. Therefore, [6] the control of one’s body (self-ownership) immediately follows if liberty is to be observed. (2012. 76)*

We might now expect a direct criticism of that brief explanation of how *de facto* self-ownership arises from observing liberty. And such a criticism could be useful. But instead of that, the critique mainly discusses its own example concerning the external property of a "tree-house" that "Alice" builds and denies to "Bob". Exactly how that is supposed to relate to self-ownership is problematic. But it is all the more so because it is also based on a complete misunderstanding. It will be convenient to quote and examine the most relevantly confused parts.

The critique states that "Alice brings it about that Bob bears a cost, by withholding the tree-house from him" (58). However, being kept out of the tree-house is not a, significant, initiated imposed cost, because Bob is not, significantly, worse off because there now exists a tree-house that he cannot use. There is, at most, some minor utility-lowering if Bob cannot now use the same natural resources or is unavoidably envious or frustrated that he cannot just use the new treehouse. But there would be a significant initiated imposed cost on Alice if, against her wishes, Bob was to use the treehouse that she has invested her thought, time, and labour in creating. Therefore, if liberty is to be maximised, then the minimising of initiated imposed costs entails that Alice must have initial exclusive control of the resource that is the treehouse. And to have initial exclusive control of it is *de facto* to own it. Morals, or rights, or laws, or social conventions are not entailed or presupposed. (But, if one thinks that ownership *must* involve these things, then we can stop at 'initial exclusive control of the resource' being entailed: for that is sufficient to solve the central philosophical problem.)

Consequently, the critique is right to observe the possibility that what Alice also "initiated without his consent is the cost constituted by his unsatisfied want to take over the tree-house" (58). But we have now dealt with that in the critique's example. The problem is that the critique is looking only at Bob's side of the story. It ignores the fact that if Bob enters the treehouse without Alice's consent, he will initiate a much greater cost on Alice. And initiated imposed costs need to be minimised if liberty is to be maximised. As ever, the critique discusses the mere words without any apparent understanding of the philosophical problem of how libertarian liberty relates to 'property': that some pre-propertarian form of words must be possible if not exactly the ones used in *EfL*. With these additional and more-detailed responses to the critique's invented example, at least, we can see in what relevant ways the critique is confused to confidently draw as an inference that "Sentence [2], then, is false, given Lester's theory of imposed costs" and so "sentence [1] is also false". Admittedly, with the benefit of hindsight, those two sentences could have been elaborated in more nuanced and convincing ways (as, in the introduction, they now have been). But a new theory—as this theory of liberty was, and to a considerable extent still is—is more about groping for the truth rather than clarifying what is already fairly well understood.

The critique then discusses sentence [1]'s phrase "without thereby imposing on others". It first suggests that this might mean "without imposing a cost on others". Indeed, that is what it does and can only mean. But the critique rejects this because *EfL* "wants to derive as a conclusion in [2] that no cost is imposed, so to include this in [1] would make his argument blatantly circular" (58). All valid arguments are "circular": there can be nothing in the conclusions that is not implicit in the premises. The critique is, in effect, complaining that the argument is valid. (And if it is "blatant" rather than 'flagrant', then that might be when it is read aloud.) In any case, says the critique, "to create and withhold a benefit from someone is to impose a cost on him, if he has not consented to have the benefit withheld and if you initiated the creation and withholding" (58-59). But we have dealt with that criticism as it applies to the critique's example. The critique suggests, instead, that what *EfL* "means by 'without thereby imposing on others' in [1] is 'without using physical force against others'". However, such a suggestion could only be made by completely failing to understand the philosophical problem, and how the pre-propertarian theory relates to it, and by falling back on the normal libertarian confusion over liberty and force. As usual, the critique's "arguments seem to be guided by familiar libertarian assumptions about morality and private property, which he is unable to truly set aside" (56).

The critique asks, "How might Lester respond?" At first it considers that "Bob's current position is no worse *in purely material terms*". The critique correctly rejects this, but for muddled reasons that are not worth examining. The critique also considers the possibility that "Bob's unsatisfied want of the tree-house does not count as a cost because it is a manipulated want". And the critique correctly rejects this, but again for muddled reasons that are not worth examining.

The critique then states that "Sentence [3] also seems to be incorrect" because

> *There is no ordinary sense in which I give rise to my body or to the benefit or good which is my body, let alone doing so merely by existing. (59)*

This is to misunderstand a simple point. If we assume that some human being exists, then this thereby entails that he has—because in some sense he *is*—a human body of some kind. So, merely assuming the existence of a human entails (or "gives rise to") that human's body; and that body is usually a good thing from that human's viewpoint. Moreover, we do only continue to exist as long as we maintain ourselves adequately: and so also in that "ordinary sense" our bodies are continuing goods that each of us "gives rise to". (In any case, why would a philosophical text use what is an "ordinary sense" as the sole criterion of truth or validity in a philosophical argument?)

The critique continues,

> *It seems rather to be the case that my body gives rise to me, since consciousness appears to be an emergent property of certain types of physical organism. (59)*

EfL implicitly assumes that humans are biological beings that usually have personhood in the intellectual sense (at least, once sufficiently mature). The critique is drawing attention to the fact that the existence of a person in the intellectual sense is "an emergent property". However, that does not mean that human persons are not biological beings. In any case, it does not fault *EfL*'s explanation of how liberty relates to 'self-ownership'.

The critique then makes the same point about withholding a wanted benefit, but relative to one's body:

> *Bob may have an acute want to make use of Alice's body. ... So ... Alice brings it about that Bob bears a cost ... that Bob has not consented to bear ... [because] she did initiate the cost-bearing by withholding from Bob the use of her body ... (59)*

Strictly speaking, this is correct. And had *EfL* been more elaborate and qualified at that point, then this matter might have been dealt with in the manner explained at the start of this essay and immediately above with respect to the treehouse (as the critique itself might have seen if it had included more of the recent relevant literature on "Lester's account of liberty"). Put simply, it minimises initiated imposed costs for people to have initial exclusive control over their own bodies. Alice might initiate an imposed cost on Bob in the way that the critique explains. But Bob would initiate a far greater imposed cost on Alice if he were to use her body without her consent. The lesser imposition here is far more libertarian. And because of the reciprocal nature of the matter (for example, Alice might suffer an initiated imposed cost because she cannot enslave or kill and eat Bob, etc.) no compensation is plausibly due.

The critique's suggestion is that we "would avoid this conclusion ... if Alice had refused Bob permission to use her body in response to some feature of Bob that either imposed a cost on her or threatened to do so" (59-60). There are at least three mistakes here. First, the critique overlooks that a clash of initiated imposed costs is possible. Second, the critique overlooks that imposed costs should be minimised when there is such a clash. Third, presumably Alice has *implicitly* "refused Bob permission to use her body in response to some feature of Bob that either imposed a cost on her or threatened to do so": that "feature" being just such use of her body, or threat thereof. The critique states that there is "nothing in the description of the situation that implies this" rejection. But it is unrealistic to think that a rejection needs to be explicit. In any case, this is all an irrelevant confusion. The main criticism has been fully answered.

The critique then criticises "sentence [5]", which is *EfL*'s assertion that "to use another's body against his wishes clearly imposes a cost on him". For, says the critique, "using someone's body against his wishes does not impose a cost on him if it is done in self-defence or to exact redress for a cost he imposed" (60). If we wanted to interpret the critique with equal literalness, then we might reply that this is clearly wrong because it necessarily does impose—but it does not *initiate* the imposition. However, the critique clearly intends to refer to initiated impositions (as does *EfL*). And so, it is more or less right: it does not initiate an imposed cost (unless, as we have seen, it is excessive). How both self-defence and redress fit in with the theory of liberty are explained later in *EfL*. Given the context of *EfL*'s assertion, it ought to be clear that we are assuming a neutral starting point where nothing is owned, and human interactions have yet to start. So, the critique is mistaken to suggest that *EfL* has merely overlooked such a possibility.

The critique concludes that "[6], seems plainly false" (60). *EfL*'s "[6]" is that "the control of one's body ([*de facto*] self-ownership) immediately follows if liberty is to be observed". However, the critique's conclusion is based on the criticisms that have already been fully rebutted here.

Not understanding the depth of the hole the critique is in, digging continues in earnest. For it is now asserted that, "liberty, on Lester's account, seems to endorse rape as a way of reducing imposed costs, since it would remove the cost Alice imposed on Bob without imposing a cost on Alice" (60). But this, yet again, ignores clashes of initiated imposed costs, and that initiated imposed costs need to be minimised, and that excessive reactions can themselves initiate imposed costs.

However, the critique then argues that

> *it may still be that the cost Bob imposes on Alice by raping her is smaller than the cost Alice imposes on Bob by denying him the use of her body. (60)*

This is the critique's usual resort to mere logical possibility. For it is completely unrealistic to suppose that a normal woman would be less imposed on by a rape than a normal man would be imposed on by being denied sexual intercourse with her. For one thing, the man does not even need to look at or think about the woman. To the extent that he chooses to do so, it seems that any relatively slight frustration is self-inflicted. By contrast, a woman that is being raped can hardly ignore the awfulness of it or, even if she were unconscious at the time, stop strongly resenting that it happened. Some very abnormal people exist, of course, but the point is to come up with practical interpretations that can be universalised as libertarian rules. The critique's criticism is analogous with a statist who points out that the view of property that libertarians defend is logically compatible with destitution, starvation, etc. Yes, it is. But that logical possibility is not realistic as a criticism of libertarian property as such; or so a libertarian would usually argue. (A statist version of the critique might still reply that "This cavalier treatment of logical possibilities seems to impugn [libertarians'] seriousness in giving a philosophically satisfactory account of [property]". And, again, the correct response to this is that any realistic and relevant criticisms need to be answered, but otherwise we should not get carried away with mere logical possibilities.)

The critique remains resolutely unrealistic with respect to rape. For it then says that,

> *Even if it could be shown that overall imposed costs would be reduced if there were a rule either permitting or prohibiting rape, the question of which of these rules would involve lower imposed costs has not been answered. (60)*

It was not answered at that point in *EfL*, because it was not being asked. As the critique has raised the question, it has now been answered. Is the critique seriously unsure which rule would "involve lower [initiated] imposed costs"? Being raped is generally a terrible thing for almost anyone. Not being able to rape at will is mainly a self-inflicted and relatively small frustration for a tiny minority of uncivilised men. Another response might be to adapt John Rawls's Original Position: assuming egoism and that you have amnesia about who you are and what your tastes are, which rule would you choose in order to minimise your chances of suffering initiated imposed costs? Clearly, it is the prohibition of rape. However, the point here is so strong that there is no need to resort to the Original Position: given who you actually are, which rule would you choose in order to minimise your chances of suffering initiated imposed costs? Only a tiny minority of psychopathic men might opt for permitting rape. Consequently, the critique's question appears to be of doubtful seriousness, but the right answer does not appear to be in serious doubt.

The critique goes on to suggest that,

> *the argument can be generalised. Indeed, since we all impose some costs on others by denying them the use of our bodies, it seems that liberty, on Lester's conception, leaves us all exposed to infringements of self-ownership. (60)*

And the reply to the critique's argument can be generalised as well. The critique has only logical possibility on its side. Realistically, since we would all find it less of an overall initiated imposed cost to observe *de facto* self-ownership (exclusive control of one's body), it seems that this theory leaves none of us "exposed to infringements of self-ownership". The critique does not understand the philosophical problem with how libertarian liberty relates to all ownership, including self-ownership, and so how a pre-propertarian theory is necessary to solve that. Hence, the critique is reduced to floundering around in a context-free confusion in which its examination of mere words and logical possibilities is bound to be hopelessly irrelevant.

The critique has not yet stopped digging. Having raised the issue of rape, it quotes a later passage in *EfL* on the subject:

> *Assume that no valid property claims yet exist, even in one's own person. A man tries to rape a woman. That woman's interests would thereby be objectively sacrificed to the man's interests. If the woman tries to prevent the rape by, say, running away then she is objectively merely protecting herself, the body that she is, and not thereby sacrificing, or imposing on, the would-be rapist in any way. Merely to withhold a benefit one gives rise to—in this case the use of the body that one sustains—is not to impose a cost or sacrifice on anyone else. (2012, 166-67)*

This very brief passage is, of course, hardly intended to be an exhaustive examination of the matter. The critique states that this "passage does not make much sense in light of Lester's theory". As has been shown, the critique has offered no sound criticism to that effect. The critique goes on to assert that,

> *the statements are true if we reinterpret them according to a moral theory in which people are normally entitled to exclude other people from making use of their bodies without consent (61)*

A first thing to notice here is that if a "moral theory" can make the statements "true", then this seems to imply that moral theories can be true and that we have the true one. It is very odd to have those controversial philosophical implications as presuppositions that require no further explanation or defence. But even if the critique is right, it is irrelevant to criticising the passage.

The critique goes on to irrelevantly "reinterpret" three statements: "the woman's interests would be objectively sacrificed to the man's" becomes "*the woman's right would be violated*"; "she is merely protecting herself, not imposing on the would-be rapist" becomes "*she is merely defending her right without violating the rights of the would-be rapist*"; "merely to withhold a benefit is not to *impose* a cost" becomes "*refusing the man permission to use her body does not violate his rights*" (61). However, this way to "reinterpret" the statements simply ignores the objective theory of liberty and the problem that it is trying to solve and, instead, reinserts the same problematic libertarian moral position without any explanation of how it relates to a theory of liberty. This is analogous with having an explanation of the falsificationist epistemology that a critic chooses to "reinterpret" into an account of how induction is supposed to work. The confusion and irony could hardly be more acute.

Therefore, it is true, but completely misses the point, that "In our ordinary moral view, the woman's 'interests' trump the man's because she has a right to exclude him from using her body". And it is false, and completely misses the point, that in *EfL*'s "conception of liberty, the man's 'interests' trump the woman's because she is imposing a cost on him" (61).

5.2 "4.2 Homesteading"

EfL discusses "initial acquisition" (124-127), preferring it as a clearer expression than "homesteading" (73). As usual, the critique reverts to the old way of writing and understanding libertarian matters and uses "homesteading". The critique first states that *EfL* "argues for a Lockean principle that people are entitled to take possession of unowned resources provided they leave enough and as good for others (2012, note 94, 213)". No, it is not true that *EfL* "argues for a Lockean principle"; rather it explains how the non-moral content of that principle is compatible with the theory of liberty. And *EfL* certainly does not mention what people are "entitled" to. Having a non-normative theory of interpersonal liberty that does not mention morals, or rights, etc., is the whole point.

The critique then asserts that *EfL* "once again ... departs from [its] own conception of liberty". And it quotes this as an example:

> *There is only one natural water supply on the island… Suppose, instead of being already available, the water had been produced by the digging of a well. Then whoever created the well could find the use of it without his permission to be a cost to him. He was not thereby causing a cost to anyone else, provided that the other person had other places where he could dig a well at least as easily. (2012, 76-77)*

The critique objects that on *EfL*'s

> *account of liberty, the truth of the final sentence depends upon what the other person wants. Creating the well does impose a cost on the other person if that person does not want a well there, perhaps because it spoils the view, perhaps because he now has to walk around it on one of his usual perambulations, or for any number of other possible reasons. (62)*

There are, indeed, an indefinitely large number of either trivial or unlikely possibilities, any of which might be mentioned here—but *all* of which could not possibly be mentioned. *EfL* is simplifying matters to get at the general way in which initial acquisition is entailed by minimising initiated imposed costs. And it might have been clearer to have explicitly recognised and stated that this is what was being done. In any case, simplifying matters seems to be a valid procedure, and one that is also followed when theorising in many of the sciences and social sciences. But the critique is also forgetting, or unaware of, the necessity of minimising clashes of initiated imposed costs. Consider the two clashing options: 1) banning one person's much-needed well, and 2) having the other person put up with resenting the well "perhaps because it spoils the view, perhaps because he now has to walk around it on one of his usual perambulations, or for any number of other possible reasons". As long as those "other possible reasons" are, in fact, just as relatively trivial, then clearly 2 is to be entailed as the lesser of the two initiated impositions. Therefore, there is no inherent problem for the derivation of initial acquisition here. There is no "departure from [*EfL*'s] own theory".

The critique alleges another "departure" is to be found "in the following passage, in which he contradicts himself (with numbered sentences for ease of reference)":

> *So, [1] to the extent that I exclusively possess an essential natural resource which you would otherwise have found and had the use of, I am imposing a cost on you ([2] you are worse off than you would have been thanks to me alone, and you did not agree to the change); that is, [3] [I am] curtailing your liberty. But [4] when other wells are equally possible (not harder to locate or inconveniently situated, and so on) then even if you lack the wit or the strength to dig your own well, you would be lessening my liberty (imposing a cost on me) if you were, against my wishes, to use the well I have dug. [5] I do not impose a cost on you by merely creating the well and denying you access. Therefore [6] I have not lessened your liberty and I can libertarianly control, or own, the well. (2012, 77-78)*

The critique says that "[4] seems false, given (*)". And the explanation that is then given is that:

> *Since I have imposed a cost on you, you may be obtaining redress rather than imposing a cost on me by using the well against my wishes. (62)*

What cost has been initiatedly imposed? The critique does not clearly say. It has mentioned "(*)" but we have seen that those various formal interpretations of the parts of the theory of liberty are hopelessly confused, and so that does not help much. Does it mean the possible monopoly cost in [1]? But [4] assumes that [1] is *not* the case: i.e., the "But" at the start of [4]. So that cannot be correct. Does it mean the trivial frustration at not being able to use exactly the same natural resources when there is no shortage of such resources? Or does it mean the frustration at not having access to the new well? But the minimisation of clashing initiated imposed costs deals with both of those. In any case, as we have also seen, "redress" needs to be proportional if it is not itself to initiate imposed costs. And the permanent use of another person's created economic good does not look proportional to a very slight utility loss. As ever, the critique is trying to be argumentatively rigorous. But such rigour is completely impossible when there is no proper understanding of the philosophical problem or of the putative solution.

The critique continues in its delusions of rigour when it asserts that "Sentence [5] explicitly contradicts sentences [1], [2], and [3]" (62). But sentences [1], [2], and [3] relate to a completely different situation in which "I exclusively possess an essential natural resource which you would otherwise have found and had the use of". Sentence [5] relates to assumption [4], "*But* when other wells are equally possible (not harder to locate or inconveniently situated, and so on)". These are two different situations that the critique is mistaking for one. So, it is not true that *EfL* "has to abandon his account of liberty, which gives him [1] through [3], and introduce a postulate, [5], which is inconsistent with it" (62). Sentence [5] is not a "postulate" but follows from [4], given the implicit simplifying assumptions that have been discussed here. And the critique itself admits that "The conclusion, [6], follows from [5]" (62). It adds the logical point that "it also, trivially, follows from the full set of premises, [1] through [5], because their conjunction is a contradiction" (62). For a contradiction entails anything and everything. But it is only the critique that is assuming that the two different and inconsistent situations are intended to be one and the same.

The critique concludes that

> *Lester jettisons his account of liberty when it provides the opposite of the conclusion he wants to reach ... What lies behind [5] seems to be the moral theory that I have a right to the exclusive control of what I create. ... the real work of deriving a system of property rights is done by a theory of property rights which is tacitly or subconsciously assumed even though it contradicts his account of liberty. (63)*

As we have seen, only the critique's confusion could allow it to reach this conclusion. As it does not grasp what is going on, it falls back on accusing *EfL* of "tacitly or subconsciously" assuming the orthodoxy that it prefers. But that orthodoxy is the problem: tendentiously moralised property rights that have no explicit theoretical connection to a non-normative account of liberty.

6 REPLY TO "5. WELFARE AND FREE MARKETS"

The critique asserts that it will now "show that liberty, qua (L), is inconsistent with free markets". The critique begins:

> *An entrepreneur who brings a new product to market creates in many people an unsatisfied want for that product. Since he does not give the product, as a gift, to the people who want it, he imposes a cost on them, either because they have to pay his price, and can thus avoid the cost he imposes on them only by bearing another cost (by giving up something they want), or because they cannot afford his price, and thus continue to have their want for his product unsatisfied. (63-64)*

Realistically, it is hard to see how producing a new product thereby initiates an imposed cost on (i.e., starts an overall utility-lowering of) most of the people who want it. It seems more plausible that most people experience a modest benefit (a slight rise in utility) merely at discovering the opportunity of a new valued product. If they were genuinely made worse off by knowing about its mere existence, then they ought to prefer that the product—which, *ex hypothesi*, they want—does not, or did not ever, exist or that they did not know about it. But few people in reality feel this way. Most people don't usually even feel this way about desired products that they think they will never be able to afford: luxury goods well beyond their means. Moreover, as ever, the critique is also overlooking the minimising of clashes in initiated imposed costs. For even when there is some lowering of utility here, the libertarian policy of minimising initiated imposed costs entails that such things must be allowed: or we should all suffer the much more severe initiated imposed costs of never having valuable new products made available and of never making a living by providing them. An odd phenomenon here, is that the critique's argument appears to have something of the flavour of the socialist criticism of "false needs": the fulfilment of which supposedly does not really make the consumer any better off. But one can undermine such a criticism on its own welfare grounds without needing to resort to a much more complicated, controversial, and weaker argument based on "a theory of property rights".

The critique continues:

> *The entrepreneur will also impose a cost on producers of rival products, since he will reduce demand for their products and thus reduce their income, which they do not want. (64)*

As explained in the introduction, there are two main ways of applying the theory of liberty. 1) One is to derive self-ownership and (initiated-imposition-minimising) private property generally, and then to use these as *prima facie* libertarian rules, which give us the sorts of property that libertarians accept (with initiated imposed costs now being the flouting of such rules). Such property rules approximate closely to what the abstract theory implies rather as classical mechanics approximates closely to general relativity theory for most human-scale purposes. But when clear problem cases arise, then we have to resort to the more-precise abstract theory. 2) The other way of applying the theory of liberty is to assume away any ownership and apply the pure theory directly to whatever the situation is. This is a form of act libertarianism (but non-moral) that is analogous with act utilitarianism. Correctly calculated, the results should not differ much or often from rule-libertarian property. But that is a fiendishly complicated and unnecessary way to proceed (it is like abandoning classical mechanics and using only general relativity theory).

Now we can apply that two-part explanation. 1) If we take the first approach to rival producers, then the answer is that there is no infraction of liberty because no producer owns his customers' continuing custom. Within the derived framework of self-ownership and private property, continuing custom is a benefit. And to lose a benefit is not to suffer an initiated imposed cost. 2) If we take the second, pure pre-propertarian, approach to rival producers, then we are an initiated imposed cost to any rival—and *vice versa* (as the critique, as always, overlooks or does not understand). And to deny the potential consumers the possibility of choosing the new product would be to initiate an imposition on them. But so would not allowing them to seize the product without payment. And so would allowing the producer to have his product seized without payment. Etc., etc. For in the completely abstract pre-propertarian situation we have indefinitely many potential clashes of initiated imposed costs. So, what is the best way to minimise them, and thus maximise liberty? It is simply to observe self-ownership, appropriate private property, contracts, etc., as libertarian rules—unless and until a clear problem arises as regards minimising initiated imposed costs. And there is no such problem with allowing rival producers to compete in the marketplace. Rather, that is the solution to the general problem.

It might be objected that a pre-propertarian libertarian cannot consistently use the, *ex hypothesi*, imperfect rules of self-ownership and (initiated-imposition-minimising) private property. But the abstract theory does explain why those rules are very good approximations to what applying liberty entails. And the propertarian theorist has no explicit and adequate theory of liberty at all. So that objection would be somewhat like saying that a general relativity theorist is inconsistent to ever use classical mechanics in his calculations. For, similarly, the relativity theorist can explain how classical mechanics is false but often a good approximation to relativity. But the classical mechanics theorist has no explicit theory to deal with the wider problems that relativity tackles.

The critique goes on to suggest that "it will *reduce* imposed costs if the entrepreneur compensates" the people he has imposed on. But "it will normally be the case that he cannot compensate all these people". And that "in turn, means that it will *minimise* imposed costs if entrepreneurs are prevented from bringing new goods to market". Therefore, "on (L), maximising liberty requires draconian regulations which stifle all innovation and secure a stagnant and closed society, which in turn requires a totalitarian state" which is "inconsistent with free-market anarchy and with maximising welfare and is also plainly inconsistent with the principal commonsense understanding of interpersonal liberty" (64). As we have seen, all this is based on a complete misunderstanding of the theory and shows no grasp even of the problem that the theory sets out to solve.

The critique then discusses and rejects the idea that "manipulated wants" can help here. But no help is needed and "manipulated wants" are irrelevant. And so, there is no need to analyse the critique's discussion.

In concluding this section, the critique asserts that "Lester's argument that maximising liberty (as he conceives it) is equivalent to maximising welfare fails" (64). It is not completely clear what "equivalent" means here. *EfL* does not hold that there is an *a priori* equivalence. Rather, there is a very high level of both theoretical and empirical congruence as regards their systematic and practical observance. And nothing that the critique has argued refutes this.

The critique appears to accept *EfL*'s paraphrased view that "the literature of free-market economics makes a powerful case that liberty promotes welfare" (64-65). However, the critique's expression "makes a powerful case" needs to be read as "provides explanations that withstand severe criticism" rather than as any kind of epistemological support. And how can the critique agree with the point about liberty when it has rejected the given theory of liberty while providing no theory of its own? Moreover, the critique also then writes of "welfare (using any ordinary conception of welfare)". This appears to imply a rejection of *EfL*'s theory of welfare merely by citing virtually any "conception" that accords with common sense.

7 REPLY TO "6. CONCLUSION"

The critique concludes by asserting that "analysis shows" that *EfL*'s "conception of liberty as an absence of imposed cost ... is not consistent with: any ordinary sense of liberty; libertarian ideas of self-ownership and private property; increasing welfare; free markets" (65). Fortunately, analysis of the critique's faulty analysis shows precisely the opposite.

The critique goes on to assert that "increasing liberty, in Lester's sense ... would not only require illiberal measures but would even require stagnation enforced by a totalitarian state" (65). As we have seen, this is not a sound interpretation of the theory. But a glaring question arises from that assertion: what is the critique's alternative, non-normative, theory of what is liberal or "illiberal" that solves the problem of how liberty relates to property? There is no answer whatsoever in the critique, or even an appreciation of the problem.

The pre-propertarian and non-normative theory of libertarian liberty defended in this essay is clearly far more philosophically complicated than the orthodox propertarian theory. And if propertarian libertarians can understand the theory at all, or even what the problem is, then they might not like the interpersonally compared subjective elements or the looser connection with absolute private property (with the apparent danger of a 'slippery slope' to modern liberalism, or even worse horrors). That simply cannot be helped. As Einstein is paraphrased to have said (apparently expressing a warning about abusing Ockham's razor): "Everything should be made as simple as possible, but not simpler".

(2014; revised March 2022)

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Received for publication:	18.03.2022
Revision received:	30.03.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Lester, J. C. (2022, 07 15). A critique of “A critique of Lester’s account of liberty”: A reply to Frederick 2013. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 146-169. doi:10.12709/mest.10.10.02.14

Style – **Chicago** *Sixteenth Edition:*

Lester, J. C. "A critique of “A critique of Lester’s account of liberty”: A reply to Frederick 2013." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 146-169.

Style – **GOST** *Name Sort:*

Lester J. C. A critique of “A critique of Lester’s account of liberty”: A reply to Frederick 2013 [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 146-169.

Style – **Harvard** *Anglia:*

Lester, J. C., 2022. A critique of “A critique of Lester’s account of liberty”: A reply to Frederick 2013. *MEST Journal,* 15 07, 10(2), pp. 146-169.

Style – **ISO 690** *Numerical Reference:*

A critique of “A critique of Lester’s account of liberty”: A reply to Frederick 2013. ***Lester, J. C.*** *[ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 146-169*

MEST Journal
DOI 10.12709/mest.10.10.02.15

LIABILITY OF ONLINE PLATFORMS IN EUROPE FOR THE ILLEGAL UPLOADING AND HOSTING OF PROTECTED WORKS

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JEL Category: **D23, K11, O3**

Abstract

At the beginning of the 18th century, the Institute of Copyright and Intellectual Property protection was established as a state regulation system of relations in the field of competition in the market and control of the distribution of legal, literary content in the form of physical media. After the spread of the IT products, including the popularization of the Internet, various online platforms appeared platforms through which authors and owners of intellectual property results can post their works to obtain material benefits and advertise the product. Internet "piracy" causes severe damage to the economic condition of the authors, for example, in the form of lost profits. The main document that regulates the issue of responsibility of online platforms is the Copyright Law Directive (EU) 2019/790 of the European Parliament and the Council of 17 April 2019 or, in other words, the Digital Single Market Directive. The European Union strives to protect its users as much as possible by developing recommendations and adopting legislative acts.

Keywords: *European Parliament, intellectual property, IT products, illegal content, online platforms, digital market, DSM Directive.*

1 INTRODUCTION

The international community has been purposefully dealing with the problem of copyright protection for quite a long time, primarily through the creation of international legislation. International conventions are necessary for developing unified norms that can ensure stability and law and order in public relations.

Looking back to the development of the copyright system and intellectual property protection, in general, we must say that changes in this area were initially rare and legally challenging to regulate. Regulation by order, distribution in the form of sale, replication of works, which the relevant laws regarding copyright holders have originally established, authors, and publishers, for example, Statute of Anne 1710, assumed the fundamental nature of works as material objects. Speaking of the production and replication of which is possible only exclusively in the form of things. Until the end of the 90s of the last century, digital space and online platforms were undeveloped, so a digital production method was used, which implied the impossibility of low-cost copying and distribution of works. Previously,

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placement, copying, and replication required severe economic labor costs in factories, physical points of sale, etc. It was impossible to copy a film or a literary work without financial expenses; any magazine had to undergo a similar printing procedure as the original, making it challenging to distribute illegal content, assignments, and intellectual products in general. (Dozortsev, 2017)

The principles developed in the early stage of copyright and intellectual property protection are still applied. One of them is the principle of the temporality of copyright. It reflects in the issuance of temporary licenses for products distribution, the principle of maintaining competition. It protected the author and publisher of the work. However, one of the most important principles is the principle of achieving and maintaining a social compromise, namely, a balance of interests, in which society, represented by the state, agrees to a certain number of restrictions in exchange for the results of creativity of authors of works and publishers.

2 HISTORY OF THE DEVELOPMENT OF COPYRIGHT PROTECTION

At the beginning of the 18th century, the Institute of Copyright and Intellectual Property protection was established as a state regulation system of relations in the field of competition in the market and control of the distribution of legal, literary content in the form of physical media. Later in the 19th century, the same institution developed new regulations to regulate relations between the state and the academic production industry and between the authors of the works themselves and the industry. The development took place precisely in the direction in which the intellectual property law system was adopted in the last century, based on concluded international agreements. That is reflected not only in the basic understanding of the history of the development of copyright and intellectual property protection but also in one of the central documents, the Berne Convention for the Protection of Literary and Artistic Works of 1886, which is a binding international treaty in copyright and intellectual property protection. (WIPO, 1979)

The main emphasis was placed on the author of works' rights, not the publisher. The authors of the Berne Convention, even considering the most recent changes, remained within the framework of the traditional industrial model of copyright, considering things in the form of a physical carrier of works, thus defining literary and artistic works as products. This idea reflects in the leading international agreements in copyright, and intellectual property developed and adopted later. For example, the TRIPS Convention of 1994 (WTO, 1994) and the World Intellectual Property Organization Copyright Treaty of 1996 (WIPO, 1996) contain similar interpretations.

In the 90s of the last century, it was challenging to assume that after a couple of decades, the Internet, in general, IT technologies will be the most important regulator of economic relations, the placement of intellectual property results on online platforms, their sale, and advertising. The Internet has become a decisive factor in influencing the intellectual property system and the lives of modern people. As physical media have begun to lose their value, the digital format is not tied to a specific place, making any content and information easy to access in any part of the planet.

After the spread of IT products, including the popularization of the Internet, various online platforms appeared platforms through which authors and owners of intellectual property results can post their works to obtain material benefits, advertise the product, etc. However, a considerable amount of unauthorized, prohibited, and illegal content has appeared in addition to legal content. Most modern users have encountered this kind of content found on almost every central online platform. For a more detailed understanding of the problem, it is necessary to turn to its origins.

With the adoption of the Chase Act, this situation changed in 1891. According to it, foreign authors were granted copyright in a limited form. However, the agreements reached could not wholly solve the existing problem of intellectual property protection for non-US citizens since the rights were quite limited, and the clash of interests of authors and publishers continued until the American side signed the Berne Convention in 1989. (WIPO, 1979)

3 ENSURING COPYRIGHT PROTECTION IN THE MODERN WORLD

In the modern world, there is a severe problem with regulating the distribution of legal products and removing and prohibiting the distribution of illegal content. Modern "piracy" expresses through the unauthorized distribution of digital content on the Internet. However, there is no consensus on it in society and among legislators of various states in Europe, Asia, Latin America, etc. Internet "piracy" causes severe damage to the economic condition of the authors of works, for example, in the form of lost profits. As defined in Article 9 of the Berne Convention, the right to reproduction, including the exceptions reflected in this article, applies in the digital environment and includes the use of works that are in digital form.

3.1 The negative impact of illegal content

It is worth noting that, in general, a significant and direct negative impact of illegal content is expressed in risks to the property security of the authors of works, losses in sales volumes, brand depreciation, and reduced incentives for innovation and product production. On the part of the state, the negative impact of illegal content is expressed in the loss of tax profits, increased costs for law enforcement in information security, and possible negative consequences for national security.

Summing up, we can say that the nature of the consequences for consumers, authors, the government, and the economy may vary and depend on the type of violations, the industry of production, the kind of content, the variety of online platforms, the main goals of the author of the results of intellectual property and other factors. Another problem of the modern world is that it is problematic to calculate the net damage from the distribution, use, and download of illegal content on online platforms. So, it is almost impossible to determine the volume of prohibited content in the economy. That happens both because of a lack of data and for other reasons. For example, it is difficult to calculate the number of lost profits if the work is quite popular and posted on various platforms in different countries in the world. (Liptsik, 2019)

It is necessary to consider many different approaches and factors to regulate digital content that does not have a physical carrier. But initially, it is worth noting why it is required to fight illegal content and how the international community, especially European countries, regulates this issue. First, unauthorized copies of works: photos, films, music, and literary works do not benefit the authors and official publishers. Secondly, conditional substitution norms are often not fulfilled since unauthorized copies of musical works or cinematographic works do not have a certain high quality, which pushes the consumer away from the brand or manufacturer. The third problem is the deception of the user. For example, there are sites copies of world-famous Internet platforms in some European countries. So, in Ukraine, Belarus, and Russia, the Netflix platform is popular, but there is an exact copy of Netflix, Zetflix. Many novice users can get confused, not distinguish the original platform from the copy and subscribe to the second one.

Visually, the sites are the same and have a consonant name, previously the Zetflix platform claimed to have legal, authorized content, but this is not the case. The consumer pays for counterfeit, illegal content and does not know its distribution is not authorized. When using such online platforms, the consumer may encounter virus programs that collect personal information, bank card data, and information about family members. Such information may become an object of sale on the darknet. (Dozortsev, 2017)

It is necessary to refer to the legislation and experience of European countries to regulate the issue of combating the placement of illegal content on online platforms. Copyright legislation in the EU is quite conservative. Many of the provisions are currently not working since the Internet space is changing daily. New functions, features, payment methods, and IT programs are emerging that require separate regulation and consideration.

3.2 Terms of article 17 of Directive (EU) DSM 2019/790

The European Parliament has organized a working group responsible for the development, preparation of recommendations, the creation of directives, and updating of the provisions of the copyright law. Initially, the working group's task was to develop requirements to protect authors and publishers of music content from illegal downloading and use on large online platforms such as YouTube. Sites' users could embed a piece of music into their video without specifying the author, without requiring prior permission, which violated the manufacturer's copyright.

At present, the most important and complex document that regulates the issues of responsibility and protection of the intellectual property is the Copyright Law (Directive (EU) 2019/790 of the European Parliament and the Council of 17 April 2019 (DSM Directive). (Document 32019L0790, 2019)

So, based on the provisions of Article 17, it follows that content distributors, and large online platforms, for example, YouTube, Facebook, and Spotify, are required to cooperate with copyright holders, especially in situations where illegally downloaded copyright provisions protect content that has been discovered.

When the author or publisher did not permit distribution of the content belonging to him, the content distributor, the online platform, is obliged to develop a proper mechanism that allows one to demand the removal of previously uploaded content if this decision was made inexpedient. He must do it within a specific time. Also, article 17 regulates the importance of avoiding automatic blocking and that the commercial load on enterprises, small and medium-sized online platforms, should be proportional to ensure copyright protection. (Baranovsky, 2019)

In addition to the above, article 17 obliges online platforms, platforms, and large sites to apply copyright law, so the content should be checked by special filters at the stage of uploading and posting and not when receiving a complaint from users- authors. Online platforms should not allow illegal content on their sites, and if this happens, it should be deleted immediately with an express agreement with the author of the work. If there is illegal content uploaded and distributed on the platform, the author, the publisher, has the right to file a claim to protect their copyrights and demand compensation. Each EU directive must be formulated clearly and enforced by law by each Member State. That is to ensure the participation of all interested parties in determining the processes that should reflect in the legal framework. (Document 32019L0790, 2019)

Another conflict of law is the collision of the provisions of article 17 of the Copyright Law and the Directive on Online Commerce, which prescribes limited liability of online platforms and services for copyright infringement when downloading and posting online content. The legislator did not consider that many parody videos, pictures, memes, sounds, or parts of any works become illegal because they are made on the basis and when using the content of other authors or publishers.

It is not physically possible to track the placement of all content. Therefore, online platforms, Internet sites, and social networks implement automated security filters. However, monitoring and checking all the uploaded or previously posted and distributed content are impossible. In a situation with videos or photos, any user of the platforms mentioned earlier can download a video, music, or image, take a screenshot, or record a screen and re-post it on the same online forum or other Internet sources. (EC, 2017)

For example, when an online platform has posted a world-famous literary work without coordinating it with the actual author and sells it on its platform at a reduced price without paying royalties to the author, it is possible to calculate the initial material damage roughly. The calculation will base on the volume of pieces sold on the platform according to the purchase histories. Still, it is impossible to calculate the subsequent damage from the distribution of unlicensed content already purchased at a reduced price since books or films can be distributed by users on other platforms, study groups on websites, and so on. Accordingly, it is challenging to apply measures of material responsibility in full. (WIPO, Information on the World Intellectual Property Organisation, 1996)

Article 17 is the most extensive and establishes special rules for operators, owners, and right-holders of online services; the Directive addresses the sharing of content posted on the Internet. It should be noted that European legislators have made some exceptions in determining the responsibility of operators and copyright holders of online platforms. Thus, the Directive excludes non-commercial online encyclopedias and educational or scientific tutoring platforms from sharing content and software that is publicly available. (COM(2017) 708 final, 2017) The European legislator points out the need to apply Articles 15 and 17 of the 2019 Directive to large online platforms with a broad audience and significant material capabilities. Since it is precise, such media play a central role in the modern virtual market. Well-known online sites can implement filters and use them, but only novice sites do not have such an opportunity.

3.3 Terms of article 15 of Directive (EU) DSM 2019/790

In addition to the previously mentioned article 17, it is worth noting article 15 (article 11 in the draft law). According to it, online platforms are obliged to pay publishers remuneration if they provide a link to the news publications of these publishers. Here we talk about Internet links indicated in the title, quoting a fragment of an event or news. Online platforms mean not only commercial projects but also mean social media spaces. Moreover, they are represented by search services, personal blogs, and non-profit volunteer projects, such as Wikipedia, Wolfram, and Bibliomania.

In a situation where article 15 of the copyright law is violated, a magazine or news publisher may receive a lawsuit from a publication that previously published a piece of news, commentary, or project and did not have any agreements regarding the publication of content on other platforms. This article was adopted to protect small and medium-sized publications and little-known authors. Still, in practice, large corporations stopped cooperating with little-known companies and authors because it is unprofitable from an economic point of view. (Document 52016PC0593, 2016)

The Directive introduced a new object of exclusive rights, which aims at ensuring the protection of European publishers, journals, and authors, especially the protection of publications in the press (press publications).

Speaking about the responsibility of persons who contribute to the illegal distribution and placement of unlawful content on online platforms, in addition to the Directive on Copyright in the Digital Single Market (EU Copyright Directive), the provisions of the national legislation of each EU Member State apply.

According to the Court of Justice of the European Union (CJEU), the online platform operator's passive role is also expressed in the technical measures taken to detect illegally downloaded content (§ 109). In addition, the online platform operator is obliged to rely on freedom of expression when deciding on the removal of content (§ 116).

In addition to the previously adopted regulations, in 2020, the European Commission announced a legislative proposal using the Digital Services Act (DSA). This legislative act reflects the ability of users of online platforms to promptly report on the availability, placement, and distribution of legitimate content on the Internet. It is planned to create working groups to identify such content in each member State of the European Union. When adopting this regulatory action and using it with national legislation, it is planned that illegal content can be deleted regardless of the country or place of its creation. (Andreyeva, 2018, pp. 23-25)

The European Commission insists that the current measures to remove and hold accountable for posting illegal content on online platforms are not effective enough. The European Commission needs to develop new standards of responsibility and regulation on this issue. (Podshibikhin & Leontyev, 2001, pp. 65-68)

In 2018, the Commission issued a recommendation to develop effective measures to combat illegal content on the Internet. The submission text confirms the provisions of article 17 and article 15 of the Copyright Law. Online platforms, namely their owners, operators are responsible for managing, storing, and hosting content. The content must undergo a filtering procedure, preventing unlicensed content from entering the platforms.

The recommendation points to the need for all participating countries to apply the same responsibility measures about this issue, which will allow solving similar matters more quickly and help reduce the trend of repeated downloads or illegal content on online platforms.

4 CONCLUSION

Summing up, it should be noted that adopting the Directive on Copyright in the Digital Single Market is necessary to ensure the right to freedom of speech, freedom of expression, and freedom of opinion, and to protect the property rights to the results of intellectual work. Many of the provisions of this Directive are subject to more detailed elaboration, as many tools allow circumventing these provisions and avoiding liability, including the provisions of articles 15 and 17 ambiguous cause practice when applied in different countries of the European Union. In particular, the owners and responsible persons of online platforms themselves must create a safe environment for the user and the author of works.

It is necessary to regulate the general mechanism of consideration of complaints of the rightsholder, ways of compensation for damages, and the general practice of applying this Directive. It is vital to establish prompt notification of users of online platforms about the availability of appropriate terms and conditions of use, placement and distribution of content, information about restricting access to previously posted unlicensed works, prompt removal of unlicensed content, and immediate assistance to real copyright holders of positions. It is vital to develop user-friendly terms of use of the content, according to the norms of both copyright and related law of the European Union. It is crucial to convey the economic interests of the copyright holders of works to the user and owners of online platforms.

Those responsible for downloading illegal content are not interested in consumers' opinions and the audience's loyalty. Subscribers do not play any role since often such people use either one-day online platforms or create new profiles with encrypted addresses to maximize material profit and avoid any responsibility. The European Union strives to protect its users as much as possible by developing recommendations and adopting legislative acts. For more active development in this direction, the states of the European Union need to act together so that the national legislation of European countries does not contradict the trends and recommendations of the European Commission, which seeks to develop a unified policy on this issue.

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Received for publication:	15.01.2022
Revision received:	22.01.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Prigoda, A. (2022, 07 15). Liability of online platforms in Europe for the illegal uploading and hosting of protected works. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 170-176. doi:10.12709/mest.10.10.02.15

Style – **Chicago** *Sixteenth Edition:*

Prigoda, Anastasiia. "Liability of online platforms in Europe for the illegal uploading and hosting of protected works." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 170-176.

Style – **GOST** *Name Sort:*

Prigoda Anastasiia Liability of online platforms in Europe for the illegal uploading and hosting of protected works [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 170-176.

Style – **Harvard** *Anglia:*

Prigoda, A., 2022. Liability of online platforms in Europe for the illegal uploading and hosting of protected works. *MEST Journal,* 15 07, 10(2), pp. 170-176.

Style – **ISO 690** *Numerical Reference:*

Liability of online platforms in Europe for the illegal uploading and hosting of protected works. ***Prigoda, Anastasiia.*** *[ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 170-176.*

MEST Journal
DOI 10.12709/mest.10.10.02.16

COOT OPTIMIZATION ALGORITHM FOR PARAMETER ESTIMATION OF PHOTOVOLTAIC MODEL

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JEL Category: **O13, Q42**

Abstract

Because of the technical and environmental advantages of many solar energy sources, their use has recently been rapidly rising. The extraction of the unknown parameters in photovoltaic models is one of the key challenges in the modeling and simulation of solar energy sources. To satisfy the behavior of the solar photovoltaic (SPV) cells, the Single-Diode Model (SDM) is recommended as a more dependable modeling method. In this study, we applied the recently introduced meta-heuristic optimization method that inspires the behavior of the swarm of birds called Coot. This Coot Algorithm is used to estimate the unknown parameters of a SPV cell/module at 33 ℃. Simulation results of this study were compared with other nine different previous Optimization Algorithms, which are Moth Flame Optimization (MFO), Dragonfly Algorithm (DA), Whale Optimization Algorithm (WOA), Grey Wolf Optimization (GWO), Ant Lion Optimization (ALO), Harris Hawk Optimization (HHO), Hybrid of Particle Swarm Optimization and Grey Wolf Optimization (PSOGWO), Marine Predator Algorithm (MPA), and African Vultures Optimization Algorithm (AVOA). The obtained results of this comparison showed that the Coot algorithm outperformed the previous algorithms in terms of the root mean square error (RMSE) and the degree of convergence between the power versus voltage curve and the current versus voltage curve compared with the measured data. Moreover, the results confirm that the Coot optimization algorithm is favorable in reducing the time and improving the accuracy.

Keywords: *solar photovoltaic, Coot algorithm, parameter estimation, single-diode model, solar energy*

1 INTRODUCTION

The great demand for energy by the population causes high fuel depletion. This depletion increases global warming and the pollution of the environment. In recent years, renewable energy sources such as solar energy, waves, tides, wind,

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geothermal, and biomass have received more attention due to the little or fewer effects on the environment (Awan & Khan, 2014; Irmak et al., 2014; Jha et al., 2017; Lau et al., 2012). Solar energy is a promising source of renewable energy due to its usability and cleanliness (Abbassi, 2012; Hanger et al., 2016; Mcelroy & Chen, 2017). Moreover, solar energy is widely used for power generation via photovoltaic (PV) cells (Wu et al., 2015). However, PV cells are vulnerable to external environmental factors such as global temperature and radiations from sunlight which affects the efficiency of SPV cells (Chen et al., 2016).

The SPV cell is the main unit of the photovoltaic system. So, it is important to estimate the unknown parameters to obtain a relative analysis of the performance of the SPV panel, which is comprised of cells. The cell represents an equivalent circuit which is typically classified as a single, double and triple diode model. All of these models are most widely used for parameter identification (AlHajri et al., 2012; Chellaswamy & Ramesh, 2016). The single diode model (SDM) has five unknown parameters, while the double diode model (DDM) has seven unknown parameters, and the triple diode model (TDM) has nine unknown parameters. The literature stated that SDM and DDM diodes are more widely used than a TDM, where different techniques have been used by researchers to estimate these unknown parameters of the SPV model based on three methods which are numerical, analytical, and optimization algorithm techniques (metaheuristic techniques) (Louzazni & Aroudam, 2015; Tao et al., 2020).

For reaching optimum solutions to the SPV parameters estimation problem, several metaheuristic techniques have been developed and utilized, which include among others; Moth Flame Optimization (MFO) (Mirjalili, 2015), Dragonfly Algorithm (DA) (Isa et al., 2020), Whale Optimization Algorithm (WOA) (Xiong et al., 2018), Grey Wolf Optimization (GWO) (Darmansyah & Robandi, 2017), Ant Lion Optimization (ALO) (Kanimozhi & Kumar, 2018), Harris Hawk Optimization (HHO) (Sharma et al., 2021), Hybrid of Particle Swarm Optimization and Grey Wolf Optimization (PSOGWO) (Premkumar et al., 2021), Marine Predator Algorithm (MPA) (Sattar et al., 2021), and African Vultures Optimization Algorithm (AVOA) (Kumar & Mary, 2021). Each one of these techniques has different strategies for achieving a specific main goal, and the power of each technique depends upon the accuracy of the estimated unknown parameters, and computation time with less complexity.

In this study, a Coot optimization algorithm (Naruei & Keynia, 2021) has been studied to identify the unknown parameters of SPV cells. The Coot represents a new promising metaheuristic optimizer which mainly represents the Coot bird movement to determine the precise unknown parameters for the SPV model. It constitutes a powerful and vast multidimensional exploration. It can adapt its performance and easily transfer from one stage to another depending upon the surrounding conditions. The benchmarking commercial RTC France solar module is studied and analyzed to evaluate its performance under specific loading and operating conditions.

2 PROBLEM FORMULATION

2.1 Single diode model

The SDM has described the properties of SPV cells most likely better than other models. Fig. 1 illustrates the structure of the equivalent circuit diagram of the SDM, which consists of the generator of photocurrent (I_{ph}), diode current (I_d), shunt (R_{sh}) and series resistor (R_s). Moreover, the output current of the SDM is given by:

$$I_L = I_{ph} - I_d - I_{sh} \tag{1}$$

Where I_L represents the output current, I_{ph} represents the photocurrent, and the I_d is the diode current that can be obtained according to Shockley's equation as in equation (2). I_{sh} is the current passing through the shunt resistor which is expressed as shown by equation (3):

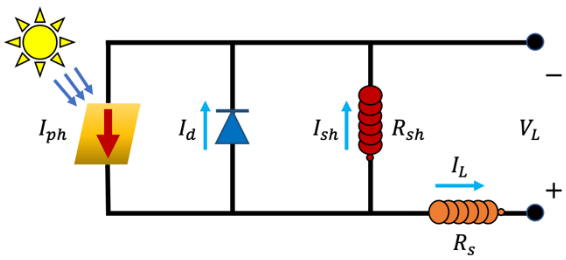

Fig. 1 Equivalent circuit diagram of SDM

$$I_d = I_{sd} \times \left[exp\left(\frac{q \times (V_L + R_s \times I_L)}{n \times k \times T}\right) - 1\right] \quad (2)$$

$$I_{sh} = \frac{V_L + R_s \times I_L}{R_{sh}} \quad (3)$$

The voltage V_L in Fig. 1 represents the output voltage, and I_{sd} represents the reverse saturation current of the SDM, *n* is the ideal diode factor, *k* is the Boltzmann constant $(1.380649 \times 10^{-23} J\ K^{-1})$, *q* is the charge of the electron $(1.60217663 \times 10^{-19} C)$, and *T* is the temperature in degrees Kelvin. So, equation (1) can be converted into the following conveient formula:

$$I_L = I_{ph} - I_{sd} \times \left[exp\left(\frac{q \times (V_L + R_s \times I_L)}{n \times k \times T}\right) - 1\right] - \frac{V_L + R_s \times I_L}{R_{sh}} \quad (4)$$

According to equation (4), SDM contains five parameters $(I_{ph}, I_{sd}, R_s, R_{sh}, n)$.

2.2 Objective function

A comparison has been made between the calculated data of this study and the measured data, which were obtained previously by experiment (Easwarakhanthan et al., 1986). The purpose of this comparison is to figure out the suitable algorithm for the objective function. This algorithm is going to obtain the solutions that produce the best fit for the measured data. Obtaining the best fit is by reducing the root mean square error (RMSE) where this way represents the most common method for minimizing the difference between calculated and the measured data. This RMSE is expressed in the following form:

$$RMSE(X) = \sqrt{\frac{1}{M}\sum_{i=1}^{N} f(V_L, L_L, X)^2} \quad (5)$$

Where *X* represents the solution vector of the *N* unknown parameters. Therefore, this study is focused on finding the value of vector *X* that enables RMSE to reach the minimum value, and *M* represents the number of measured data. Thus, the objective function of the SDM can be written in the following form:

$$f(V_L, I_L, X) = I_{ph} - I_{sd} \times \left[exp\left(\frac{q \times (V_L + R_s \times I_L)}{n \times k \times T}\right) - 1\right] - \frac{V_L + R_s \times I_L}{R_{sh}} \quad (6)$$

$$X = \{I_{ph}, I_{sd}, R_s, R_{sh}, n\}$$

3 COOT OPTIMIZATION ALGORITHM

Previous studies figure out different algorithms for finding the optimum values of unknown parameters (Darmansyah & Robandi, 2017). This study has selected specifically the Coot optimization algorithm for the purpose of finding the value of unknown parameters. Coot optimization algorithm is built on different movement behaviors of coot groups that are moving on the water surface. The coots are small water birds that have many different group behaviors on the surface of the water, the final destination of these water birds being achieved through moving mainly towards food or a specific location. Thus, the movement of these birds on the surface of water generates four different types of movements such as chain movement, leader movement, random movement, and adjustment of position according to the leader (Naruei & Keynia, 2021). Equation (7) and Equation (8) implement the specific procedure of the Coot algorithm (Naruei & Keynia, 2021):

Equation (7) builds the random initialization of the population:

$$cootpos(i) = rand(1, d) \times (ub - lb) + lb \quad (7)$$

Where *cootpos(i)* represents the coot position, *d* is the number of variables or dimensions of the problem, *ub* and *lb* represent the upper and the lower bound of the search space respectively.

In equation (8), the *ub* and *lb* may be different from the ones which are stated in equation (7).

$$lb = [lb_1, lb_2, \ldots, lb_d], ub = [ub_1, ub_2, \ldots, ub_d] \quad (8)$$

After the random initialization of the population is being initialized, and determining the position of each coot, the fitness of calculated data to the measured data is being solved by using the objective function. For doing that *NL* is the number of coots as group leaders where the group leaders have been chosen randomly. Accordingly, the four movements on the water surface by coots will be implemented.

3.1 Random movement

Equation (9) limits the search space of the random position of the coots which are moving towards the random position that is suggested as a search space:

$$Q = rand(1, d) \times (ub - lb) + lb \quad (9)$$

According to the movement of the coots, it can explore different parts of the search space making a possibility for the algorithm to be stuck at local optimal. In this case, the algorithm escaped from this local by this movement, and equation (10) will be used to calculate the new position of the coot.

$$cootpos(i) = cootpos(i) + A \times R2 \times \left(Q - cootpos(i)\right) \quad (10)$$

Where *R2* represents a random number in the interval [0, 1] and *A* is calculated according to the following equation:

$$A = 1 - L \times \left(\frac{1}{Iter}\right) \quad (11)$$

L represents the current iteration and *Iter* represents the maximum number of iterations.

3.2 Chain movement

There are two ways of calculating the chain movement for two coots; one of them is the average position, and the second one is the distance vector. By the two ways, one coot is moving toward another coot which is equal to the half distance between the two coots. In this study, the mathematical average position has been used to calculate the new position of the coot as depicted in equation (12):

$$cootpos(i) = 0.5 \times \left(cootpos(i-1) + cootpos(i)\right) \quad (12)$$

Where *cootpos(i-1)* represents the location of the second coot.

3.3 Adjustment of the position

In this movement, the coot moves toward the group leader, and accordingly, there are many possibilities to move each coot behind many leaders that have different positions. Therefore, it is difficult to calculate the movement of one coot towards many leaders, and to solve this problem; an average position of many leaders has to be considered to limit the position of those leaders. Where *L* represents the current iteration and *Iter* represents the maximum iteration.

In summary, the Coot algorithm has implemented the general problem, as depicted by the flowchart in Fig. 2.

Therefore, each coot can change its position based on the average position and by applying equation (13), the leader can be selected.

$$K = 1 + (i \ MOD \ NL) \quad (13)$$

According to equation (13), the current coot is represented as i and the number of leaders is represented as *NL* where *K* is represented as the number of the leader index. So, *coot(i)* has to change its position according to the leader's *k*. Based on the selected leader the next position of the *coot(i)* can be calculated and equation (14) will be applied:

$$cootpos(i) = leaderpos(k) + 2 \times R1 \times cos(2R\pi) \times \left(leaderpos(k) - cootpos(i)\right) \quad (14)$$

Where *cootpos(i)* represents the current position of the coot, *leaderpos(k)* represents the selected leader position, *R1* represents a random number between the interval [0, 1] and *R* represents a random number between the interval [–1, 1].

3.4 The leading movement to the optimal area

In this movement, the coots have to update their positions to the main position that the leaders are located in, and in the same situation, the leaders are changing their positions trying to find the optimal position where the coots are following the leaders. Accordingly, equation (15) will be applied to find the optimal position of leaders:

$$leaderpos(i) = \begin{cases} B \times R3 \times \cos(2R\pi) \times (gBest - leaderpos(i) + gBest) & R4 < 0.5 \\ = B \times R3 \times \cos(2R\pi) \times (gBest - leaderpos(i) - gBest) & R4 \geq 0.5 \end{cases} \quad (15)$$

Where *gBest* represents the best position ever found, *R3* and *R4* represent random numbers in the interval [0, 1], *R* represents a random number in the interval [– 1, 1], and *B* is calculated according to equation (16):

$$B = 2 - L \times \left(\frac{1}{Iter}\right) \quad (16)$$

4 RESULTS AND DISCUSSION

The results that have been obtained, revealed the implementation of the Coot algorithm which was verified for parameter estimation of the SPV model. The results of the SPV model have been calculated for SDM. The measured data of SDM were obtained from (Easwarakhanthan et al., 1986), where it is carried out on a 57 mm diameter commercial silicon RTC France solar cell ($1000\ W\ m^{-2}, 33\ °C$). A comparison has been made between the results of the algorithm of this study and the other nine algorithms. It is important to confirm that the following input data of all algorithms are the same in terms of, boundary, number of iterations, and population size, as shown in Table 1, through 30 independent runs. In addition, all algorithms are implemented in Matlab 2021b on a Laptop with an Intel Core i9-9980HK processor @ 2.40 GHz, 16GB RAM, under the Windows10 64-bit OS.

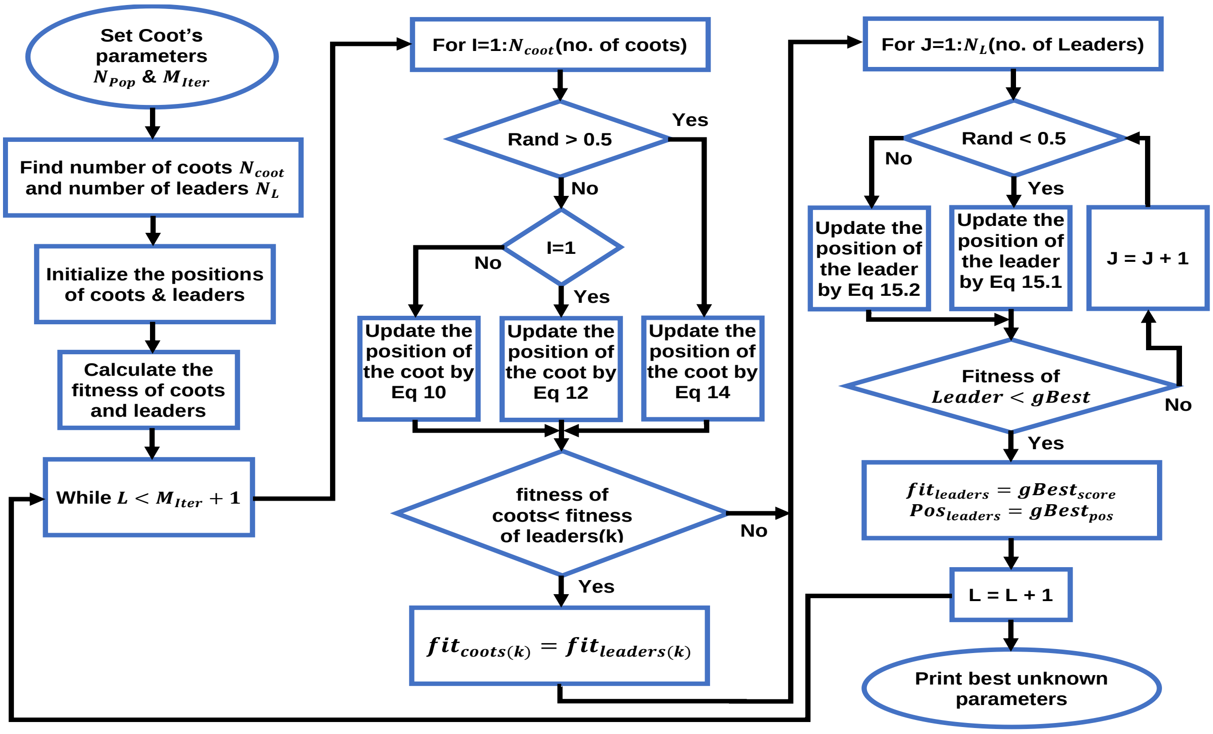

Fig. 2 Flowchart of Coot optimization algorithm

Table 1: Input Data for SPV Model

Parameter Boundaries	RTC France Solar Cell	
	LowerBound	UpperBound
$I_{ph}(A)$	0	1
$I_d(\mu A)$	0	1
$R_{sh}(\Omega)$	0	100
$R_S(\Omega)$	0	0.5
n	1	2
Population size	50	
Number of iterations	1000	

4.1 Results for RTC France solar cell

The results of a 57 mm-diameter RTC France solar cell, which was utilized for SPV parameter estimation. Coot algorithm is compared with (MFO), (DA), (WOA), (GWO), (ALO), (HHO), (PSOGWO), (MPA), and (AVOA) algorithms and the data of this comparison are shown in Table 2.

Table 2 reveals the optimal values of the control variables, which are related to the best run of all algorithms. Also, from Table 2, the Coot algorithm obtains the minimum RMSE of 0.00098602 and less computation time compared with the others. The measured and calculated values of current and the corresponding values of the absolute error (IAE) for 26 chosen voltage values are given in Table 3. Fig. 3 describes the convergence curves of all algorithms and illustrates what has been explained above.

The results obtained from Table 3 reveal the fitness of the P-V and I-V characteristic curves between the calculated and measured data as described in Fig. 4 and Fig. 5 respectively. Also, these figures illustrate the good agreement between the extracted curves based on the Coot algorithm and the experimentally measured data.

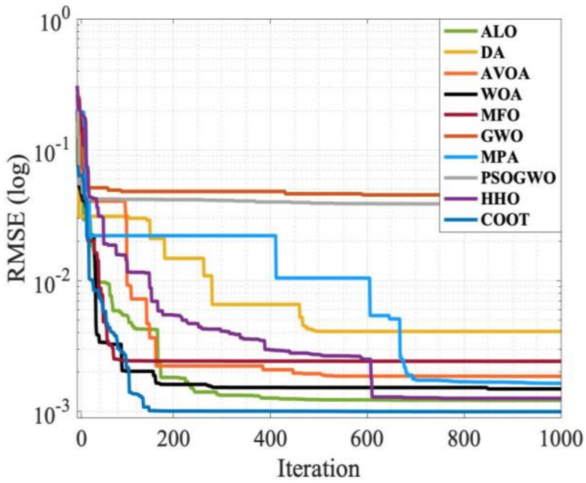

Fig. 3 The Convergence curve of ten algorithms for RTC France solar cell

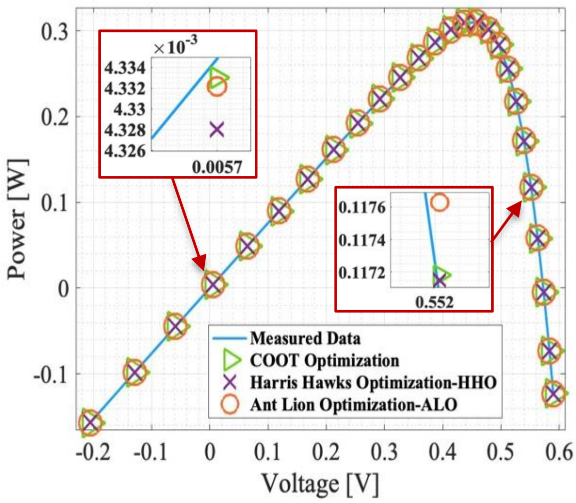

Fig. 4 P–V characteristic curve for RTC France solar cell

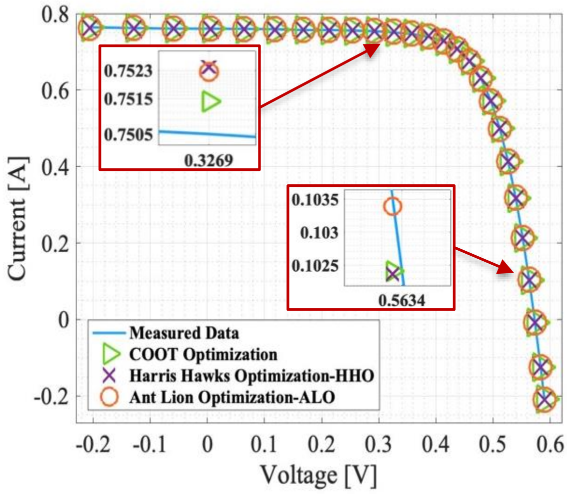

Fig. 5 I–V characteristic curve for RTC France solar cell

Table 2: Parameter estimated for the SDM of the RTC France solar cell

METHOD	$I_{ph}(A)$	$I_d(\mu A)$	$R_{sh}(\Omega)$	$R_s(\Omega)$	n	$RMSE$	$Time(sec)$
COOT	0.7608	0.3233	53.7450	0.0364	1.4813	9.8602E-4	2.498
ALO	0.7605	0.4682	69.0897	0.0349	1.5195	0.0012	9.339
DA	0.7583	0.0732	56.2543	0.0432	1.3448	0.0041	28.523
AVOA	0.7610	0.7113	74.2244	0.0329	1.5653	0.0019	2.732
WOA	0.7605	0.5593	80.2149	0.0344	1.5385	0.0015	3.166
MFO	0.7608	0.9879	100	0.0314	1.6031	0.0024	5.920
GWO	0.7378	1	40.3325	0	1.6145	0.0445	2.634
MPA	0.7607	0.6349	76.0585	0.0335	1.5525	0.0016	5.175
PSOGWO	0.7651	1	7.3537	0	1.6208	0.0382	3.206
HHO	0.7597	0.4006	82.2163	0.0357	1.5029	0.0013	6.209

Table 3: I–V values and individual absolute error (IAE) for the single-diode RTC France solar cell

ITEM	VOLTAGE (V)	MEASURED I (A)	CALCULATED I (A)	IAE
1	–0.2057	0.7640	0.764110	0.00011
2	–0.1291	0.7620	0.762686	0.00068
3	–0.0588	0.7605	0.761379	0.00087
4	0.0057	0.7605	0.760178	0.00032
5	0.0646	0.7600	0.759080	0.00091
6	0.1185	0.7590	0.758067	0.00093
7	0.1678	0.7570	0.757117	0.00011
8	0.2132	0.7570	0.756167	0.00083
9	0.2545	0.7555	0.755113	0.00038
10	0.2924	0.7540	0.753690	0.00030
11	0.3269	0.7505	0.751416	0.00091
12	0.3585	0.7465	0.747378	0.00087
13	0.3873	0.7385	0.740139	0.0016
14	0.4137	0.7280	0.727399	0.00060
15	0.4373	0.7065	0.706984	0.00048
16	0.4590	0.6755	0.675285	0.00021
17	0.4784	0.6320	0.630758	0.0012
18	0.4960	0.5730	0.571926	0.0011
19	0.5119	0.4990	0.499609	0.00060
20	0.5265	0.4130	0.413667	0.00066
21	0.5398	0.3165	0.317558	0.0011
22	0.5521	0.2120	0.212250	0.00025
23	0.5633	0.1035	0.102410	0.0011
24	0.5736	–0.0100	–0.008475	0.0015
25	0.5833	–0.1230	–0.125165	0.0022
26	0.5900	–0.2100	–0.208045	0.0020

5 CONCLUSIONS

The study has shown that the Coot optimization algorithm has revealed the best results for calculating the optimal values of estimated SPV parameters of the RTC France solar cell module at 33 ^{O}C. This conclusion has been drawn according to the comparison of the obtained results by applying the Coot algorithm and the other nine optimization algorithms, where the fitness has been obtained between the calculated data and measured data. This good fitness is due to the minimization of the objective function defined in terms of the RMSE and the reduction in execution time. The results have been observed from the P-V and I-V curves which indicate that the use of the Coot algorithm is interesting in how to generate the optimal value of the estimated parameters for all SPV modules compared to other algorithms.

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Received for publication:	15.06.2022
Revision received:	24.06.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Rushdi, H. K., & Al-Naima, F. M. (2022 , 07 15). Coot optimization algorithm for parameter estimation of photovoltaic model. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 177-185. doi:10.12709/mest.10.10.02.16

Style – **Chicago** *Sixteenth Edition:*

Rushdi, Hussam K., and Fawzi M. Al-Naima. "Coot optimization algorithm for parameter estimation of photovoltaic model." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 177-185.

Style – **GOST** *Name Sort:*

Rushdi Hussam K. and Al-Naima Fawzi M. Coot optimization algorithm for parameter estimation of photovoltaic model [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE , 07 15, 2022 . - 2 : Vol. 10. - pp. 177-185.

Style – **Harvard** *Anglia:*

Rushdi, H. K. & Al-Naima, F. M., 2022 . Coot optimization algorithm for parameter estimation of photovoltaic model. *MEST Journal,* 15 07, 10(2), pp. 177-185.

Style – **ISO 690** *Numerical Reference:*

Coot optimization algorithm for parameter estimation of photovoltaic model. **Rushdi, Hussam K. and Al-Naima, Fawzi M.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE , 07 15, 2022 , MEST Journal, Vol. 10, pp. 177-185.

MEST Journal
DOI 10.12709/mest.10.10.02.17

ANALYSIS OF THE STATUS OF THE FRAUD WITHIN THE ENTERPRISES IN DIFFERENT COUNTRIES AROUND THE WORLD

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Abstract

The consequences of fraudulent actions are losses of significant financial resources in companies, which endangers their business. The resolution of the occurred criminal issues is complex and therefore requires the exchange of the experience of many countries worldwide. It is needed to conduct an internal audit to detect embezzlement in the company. The relevant department must carry out the audit, e.g., the security services department, involving an internal audit, internal control, and legal department. Identification of persons possibly involved in fraudulent actions is a complex issue that carries a criminal responsibility. Different companies impose disciplinary liability, penalties, or criminal liability on employees. The most common are corruption, misappropriation of property, and falsification of financial statements. The variety of fraudulent schemes grows and becomes even more dangerous for businesses. Fraudsters analyze the financial statements of enterprises and find vulnerabilities to create threats and fraudulent actions. Such schemes lead to risks for both large and small businesses worldwide. Most companies have been affected by fraud incidents in recent years. The unreliable partners frequently cause losses in the companies. The negative consequences of risky activities include losses of money, reputation, and trust of customers and partners. All affect the loss of profits, which is the purpose of the activities.

Keywords: *data protection, copyright infringement, fraud in enterprises, confidentiality of information, interference in enterprise data systems.*

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1 INTRODUCTION

Many enterprises lose significant amounts of money because of various types of malpractice, business reputation, credibility, competitive position in the market, and sometimes the entire business. The main reason for the emergence of risks and threats from corporate fraud is an inefficient internal control system.

Domestic and foreign researchers believe that every other company that has incurred financial losses and reported them has lost its reputation and credibility through corporate misbehavior.

Corporate malfeasance incidents negatively affect the financial condition of the company. They undermine its credibility and business reputation. The scale of fraud expands rapidly. Therefore, it is necessary to develop and implement more effective legislation and regulations that would regulate the fight against criminal activities and develop measures for the system of internal control functioning in enterprises and sectors of the economy.

2 PROPOSED APPROACH

Companies often face questions about risks that were caused by negligence. Negligence results in economic losses, inefficient management, low potential privatization of companies for investors, low levels of corporate culture, and significant financial losses, leading to economic risks and company closures, regardless of their size.

Reliable and efficient state development depends on the economic development of the companies. The lack of effective monitoring and assessment of threats does not allow companies to effectively develop their defense system to detect and prevent corporate wrong behavior in the future. Violations against the confidentiality and integrity of information, fraud, copyright infringement, and interference in the data systems of corporate enterprises, banks, and institutions are becoming more common (Rybalchenko, Ryzhkov, & Ohrimenco, 2021).

According to the Association of Certified Fraud Experts (ACFE), the loss of professional fraud to enterprises is estimated at $1.5 million, which is an average of 5% of their annual revenue. In 2020, there were 2504 cases of fraud in enterprises in 125 countries. Considering the period of fraud, which lasted about 14 months until they were discovered the average loss of companies was $8,300 per month.

In detecting fraudulent activities, companies prefer litigation and internal punishment, rather than the transfer of fraudulent crimes to law enforcement agencies. The number of companies that have chosen lawsuits has grown to 28% in 2020 compared to 23% in previous years. The number of appeals to law enforcement agencies decreased from 69% in 2008 to 59% in 2020. Most companies have taken steps to improve domestic discipline and civil justice rather than prosecute (Rivera, Rohn, Donker, & Butter, 2020).

Fraud is a global issue for businesses around the world. Professional fraud is often undetectable, so it leads to large-scale costs, which is a global threat.

Losses from professional fraud are growing every year. That has a significant impact on job creation, production of goods, and providing reliable services.

There are three main categories of professional fraud. Misappropriation of assets, which includes theft by employees or misuse of resources by employers, is the case in 86% of fraud schemes. Such schemes lead to the smallest losses - 100 thousand US dollars. The second category of professional fraud includes corruption, which includes crimes such as bribery, conflict of interest, and extortion, which cause financial losses to 43% of enterprises with an average loss of 200 thousand US dollars (ACFE, 2021).

According to the speed of various professional fraud schemes, the fraud with financial reporting leads to the greatest loss, the average level of which is 39.8 thousand US dollars per month. Next are corruption schemes, with a loss of 11.1 thousand US dollars per month. It is these schemes that cause the greatest losses and occur very quickly. Therefore, companies need to take measures to create priority areas for rapid prevention and detection of such types of fraud.

Corporate fraud is an economic crime activity that benefits from deception, trickery, abuse of trust, concealment of the truth, and so on.

Economic crimes are more common in countries where the level of shadowing of the economy is high. Corporate fraud is common in developed countries with high economies. Ukraine ranks sixth in the national ranking of corporate fraud (45%); Russia - 1st place (71%), South Africa – 2nd (62%), Kenya – 3rd (57%), Canada – 4th (56%), Mexico - 5th place (51%) (according to a study by PwC "Economic Crimes" during the economic downturn"). (Parton, Rajarao, & Skalk, 2009) 59% of domestic companies have been victims of economic crimes in the last two years, which is higher than the world average (43%).

According to recent studies, 67% of all fraud cases are committed by persons aged 31-40 years (ACFE, 2021). Employees (77%) who work in the fields of finance, accounting, sales, procurement, and senior management have the best chances of fraud. According to Ukrainian companies, the most common types of corporate fraud are corruption, abuse of office, and misappropriation of assets.

Fraud in enterprises is growing because it is difficult to detect and identify such crimes. More often than not, corporate fraudsters commit crimes in large companies. Therefore, the losses become very significant.

Fraud is a problem for corporations, manufacturing companies, organizations, and institutions, misappropriating their assets, manipulating money, and taking large amounts of them out of the country.

About 70% of all enterprises in the world, in 2020, suffered from professional fraud (ACFE, 2021). 44% of them were private organizations and 26% were public companies, 16% were government enterprises, and 9% were non-profit. Private and public companies suffered an average loss of $ 150,000, government one's lost $ 100,000, and nonprofits suffered the least $ 75,000.

Enterprises with annual revenues of less than US $ 50 million have a loss of 114 thousand US dollars (this includes 38% of enterprises). The biggest losers are enterprises (ACFE, 2021), whose revenue is more than 1 billion US dollars, and which had losses of US $ 150,000 (26% of enterprises).

Professional fraud leads to material loss and legal costs and can lead to bankruptcy. A company can reduce the risks that may occur in enterprises and take measures to avoid professional fraud by creating a strategic plan and monitoring the planning of activities and development of the enterprise. A modern policy of corporations and enterprises should be aimed at applying modern methods and tools to prevent fraud and ensure their sound economic development.

In particular, the highest absolute indicators of the number of crimes recorded by the police in 2019 are observed in such EU member states as Great Britain - 6.54 million, Germany - 6.5 million, France - 4.11 million, Italy - 2.23 million, Spain - 2.18 million crimes. The lowest absolute figures for the number of crimes registered in 2019 are: in Cyprus - 4.8 thousand, Malta - 17 thousand, Luxembourg - 26 thousand, Latvia - 49.3 thousand, and Estonia - 53.3 thousand crimes (ACFE, 2021).

In the context of the crisis of EU migration policy, a significant increase in the number of illegal migrants trying to find employment in the most economically developed European countries, as well as increasing property crimes, European authorities are trying to strengthen the criminal justice system's response to recent crime in Europe (Rivera, Rohn, Donker, & Butter, 2020).

Thus, as the analysis and generalization of the leading modern approaches to crime prevention in the leading European countries shows, the main element of this activity is not government repression of the committed crime, but the expansion of private sector participation.

Ensuring national economic security is based on:

- the creation of political and legal international conditions of the country's existence,
- providing free choice and implementation of strategic objectives of economic development,
- ensuring the achievement of macroeconomic goals at national and regional levels by creating a domestic subsystem of economic security and protection of economic entities from illegal encroachments, unfair competition with the use of forces, and means of all government institutions of power, including the objects of protection.

Ensuring the national economic security is one of the main functions of the state, which serves as a guarantee of state independence, implementation of the strategy of social and economic development, stability, and reliable protection against possible threats (Rybalchenko, Ryzhkov, & Ohrimenco, 2021). State economic security focuses on ensuring the independence of the national economy, creating stability and sustainability, ensuring effective economic development, and improving the living standards of the population.

National economic security, at first glance, is the protection of the country's economy from dangerous influences, which can be both a deliberate source of danger and a consequence of natural market relations. Danger also arises when the economic situation of any state deteriorates to a critical level and so on.

3 CONCLUSIONS

At the state level, it is crucial to:

- develop appropriate mechanisms to monitor threats to economic security,
- develop measures to minimize threats,
- improve existing legislation in the field of economic security,
- create a system to guarantee the protection of economic security from possible threats,
- identify factors influencing economic security.

It will ensure sustainable economic development and a reliable and competitive state in the international economic space.

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Received for publication: 21.01.2022
Revision received: 27.02.2022
Accepted for publication: 26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Rybalchenko, L., & Ryzhkov, E. (2022, 07 15). Analysis of the status of the fraud within the enterprises in different countries around the world. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 186-190. doi:10.12709/mest.10.10.02.17

Style – **Chicago** *Sixteenth Edition:*

Rybalchenko, Lyudmila, and Eduard Ryzhkov. "Analysis of the status of the fraud within the enterprises in different countries around the world." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 186-190.

Style – **GOST** *Name Sort:*

Rybalchenko Lyudmila and Ryzhkov Eduard Analysis of the status of the fraud within the enterprises in different countries around the world [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 186-190.

Style – **Harvard** *Anglia:*

Rybalchenko, L. & Ryzhkov, E., 2022. Analysis of the status of the fraud within the enterprises in different countries around the world. *MEST Journal,* 15 07, 10(2), pp. 186-190.

Style – **ISO 690** *Numerical Reference:*

Analysis of the status of the fraud within the enterprises in different countries around the world. **Rybalchenko, Lyudmila and Ryzhkov, Eduard.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 186-190.

MEST Journal
DOI 10.12709/mest.10.10.02.18

INTERNATIONAL SCIENTIFIC AND TECHNICAL COOPERATION IN THE REPUBLIC OF BELARUS: MAIN FEATURES

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JEL Category: **F53, F55, I28**

Abstract

The decisive factor in the social and economic development of countries and the world was the contribution of science, innovation, and new technologies. With their help, the production volume of products, goods, and services and their diversity are constantly increasing. At the same time, the key to successful and stable development is not in the availability of the latest achievements but the possibilities for the country's benefit. The more efficient the market mechanism for the transmission and attraction of the latest achievements, the more efficient the distribution of this factor of production in society and the greater the benefit to scientific organizations and the state will be. The role of international cooperation is to support and complement national efforts. Nowadays, an analysis of international trends shows that the effective development of science and the creation of competitive innovation products is impossible without the deep integration of national scientific and industrial spheres into global research and innovation networks. That is the only way to ensure the inflow of foreign investment, highly effective personnel, and new technologies.

Keywords: *International scientific and technical cooperation; International relationships; Research*

1 INTRODUCTION

In the 21st century, the trend towards internationalization and globalization of scientific research increased rapidly. According to the National Strategy for Sustainable Socio-Economic Development of the Republic of Belarus for up to 2030 (MERB, 2017), the basis for economic development is innovative technologies based on new knowledge and information. The developments of science, technology, and innovation are accompanied by an 'intensified race for technological leadership and new areas at the global market for high-tech products' (OECD, 2014, pp. 125-140) (MERB, 2017, p. 12).

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The economy of the Republic of Belarus is mainly export-oriented and dependent on both foreign markets and imports of raw materials and fuel and energy resources (MERB, 2017, pp. 24-25), pays close attention to the development of international relations with a large number of countries in Europe, Asia, Africa, and America. International cooperation, including cooperation in science, technology, and innovation, is seen as one of the significant factors in the successful and sustainable socio-economic development of Belarus. That confirms the provisions of the country's most important program documents: “The National Strategy for Sustainable Socio-Economic Development of the Republic of Belarus for the period up to 2030” (MERB, 2017, pp. 91-93), Decree No. 26 of January 26, 2016 “On introducing amendments and addenda to Belarus President's Directive No. 3” (Lukashenko, On introducing amendments and addenda to Belarus President's Directive No. 3, 2016), “The State Program for Innovative Development of the Republic of Belarus for 2021–2025” (Lukashenko, 2021), Strategy “Science and Technology: 2018–2040” (NAN, 2018).

The productivity of innovation activity directly depends on the level of funding and the effectiveness of the research and development organization.

Despite a small share of budget allocations to the R&D, the role of the state in their development is significant. The public and private sectors are involved in the research process financing as equal partners. The government often allocates funds to start the riskiest development. After that, the business stays connected with the investor (Markov & et al., 2015). As a result, research and development are on average 70% or more financed by the corporate sector of the economy. These proportions most adequately characterize public-private partnership in scientific, technology, and innovation in developed countries.(Markov & et al., 2015, p. 79).

One mechanism for financing scientific and technical activities is international cooperation. It is one of the most dynamically developing areas of foreign economic activity, which includes joint development of scientific and technical challenges, the exchange of scientific results and experience, the joint training of qualified personnel, etc. The scope of international scientific and technical cooperation covers a wide range of issues: from basic research to solving practical problems (Nehorosheva, 2017). The variety of the cooperation forms (mutual consultations, development of scientific forecasts, cooperation in conducting scientific research, and cooperation in the field of scientific and technical information, patents, inventions, standardization, etc.) allows countries to choose those that best suit their national interests and features of economic development (Nedilko, 2007).

2 THE SCOPE OF THE INTERNATIONAL SCIENTIFIC AND TECHNICAL COOPERATION

An international scientific and technical cooperation can be defined as a scientific and creative activity aimed at gaining new knowledge about nature, men, society, and artificially created objects and using that scientific knowledge to develop new ways of their application. It conducts national entities in cooperation with foreign partners. The process aims at the knowledge creation and, that way, it formats an 'offer' and the information exchange (Markov & et al., 2015, p. 259).

The sustainability of international scientific and technical cooperation depends primarily on whether it is beneficial to all parties involved. In science and innovation, the need to maintain balance and mutual benefit becomes apparent when it comes to reducing research costs and risks, faster results, avoiding duplication, and improving R&D implementation, and research results (publications, start-ups). Also, they are significant post-effects like patents, licenses, career development of researchers, or obtaining additional funding.

Scientific and technical cooperation is a rather young form of international economic relations. It exists due to the scientific and technological revolution and the development of interstate specialization, the international division of labor, and cooperation, not only in production but also in the field of research and development. First, this process applies to post-industrial countries (Maksakovskiy, 2008).

In a market economy with a high intellectual component, international scientific and technical cooperation serves mainly to solve global challenges that require coordinated efforts. At the same time, it can take various forms, and be carried out with different goals and participants in innovation activities (the state, private companies, scientific organizations, or individual scientists). International scientific and technical cooperation expands the potential of each of the countries participating in it. It allows solving several significant tasks that are difficult, and sometimes impossible, in conditions of intellectual and informational isolation. That includes:

- providing access to the World Bank support of science and technology development, intellectual products, and their use.
- preservation or development of scientific and technical specialization and strengthening the advantages of the division of labor in the field of science and technology.
- eliminating duplication of expensive research.
- creating conditions for solving common problems of innovative development.
- ensuring international copyright protection.

As follows from the above, the tasks of the international scientific and technical cooperation are much broader than simple financing of R&D. Regarding the topic of the research conducted in this section, the financial component of the international scientific and technical cooperation can be divided conditionally into two types. That can be direct foreign financing of research and development, carried out within the framework of interstate agreements (the optimal amount of which, according to experts, to avoid external dependence, is within 5-10% of the amount of national financing) and indirect, carried out within the framework of transnational corporations.

The deepening of scientific and technical cooperation is ensured through collective protectionism. Also, can be used as corporate technology sharing for general use; agreements on the exchange of expensive equipment; joint production of high-tech products; creation of joint research centers.

Here it is necessary to mention technological networks, consisting of companies using a single basic technology to produce goods and the services provided. At the same time, each company in the technological network is independent, and all relations are built exclusively on market principles. In developed countries, such networks most often include research and design institutes as the main partners (Markov & et al., 2015, pp. 85-87).

The main form of implementation of international scientific and technical cooperation is the joint research and development conducted with foreign partners in the form of small projects in terms of funding. Projects, as usual, are an integral part of scientific and technical cooperation programs carried out under international agreements (Markov & et al., 2015, p. 282).

Scientific and technical cooperation can be carried out on a commercial and non-commercial basis and take various forms: the sale and purchase of scientific and technical knowledge, the implementation of joint international projects, the creation of common research centers, joint experimentation, etc.

The main of these forms was and remains the sale and purchase of scientific and technical knowledge, which in the scientific literature is usually referred to as transfer. When talking about technology transfer, they most often mean trade-in patents – documents containing a description of an invention and the conditions for its use and sale, and licenses that allow other individuals and organizations to use these patents.

Recently, the exchange of patents and licenses has been enriched by the transfer of best practices and knowledge. There is also a transfer of advanced technologies through such new channels as the construction of turnkey enterprises, engineering – engineering services, including design and construction, consulting, technical consulting and project examination, and leasing (Surin, 2008).

International scientific and technical cooperation is an important step toward increasing the efficiency of scientific activity. The main task of international scientific and technical cooperation is to determine the thematic priorities of cooperation, which are formed due to the coincidence of the priority areas of scientific research or scientific and technical activities of the parties. The state's participation in international scientific and technical cooperation, contribution to the progress of science and technology, and the state's image as a partner in the scientific and technical sphere largely determine its position on the world scene (Meerovskaya, 2005) (Zadumkin, 2012).

3 INTERNATIONAL SCIENTIFIC AND TECHNICAL COOPERATION: SITUATION IN THE REPUBLIC OF BELARUS

To determine the priorities of international scientific and technical cooperation in scientific and technical fields and partner countries, it is necessary first to answer the question: "What exactly dictates the need to develop international activities in this field?" and then formulate criteria for the selection. In Belarus, when deciding about some international scientific and technical cooperation project's budget allocation, it is significant to find a balance between socio-economic development tasks, foreign policy, and the interests of scientific organizations and their specific groups.

The choice of priorities can be made at different levels:

- to be the prerogative of the government and interested public administration bodies, acting on the principle of “bottom-up”.
- carried out through broad consultations with stakeholders at different levels on the identification of key scientific areas.
- be determined by existing agreements on scientific and technical cooperation of a framework nature.
- be given at the mercy of the organizations-participants of the international scientific and technical cooperation (Lukashenko, 2016).

However, at any level, the priorities are set, and this process must be accompanied by the identification and understanding of the driving forces, goals, and objectives of the international scientific and technical cooperation in the countries that are potential partners of Belarus.

The international scientific and technical cooperation participants include all those employed in the scientific industry – this is about 26 thousand specialists, of which almost 17 thousand are researchers. They work in more than 450 organizations (Table 1).

Table 1 – Indicators of organizations that carried out research and development

	2000	2005	2010	2015	2016	2017	2018	2019	2020
Number of organizations performing research and development, units	307	322	468	439	431	454	455	460	451
List number of employees who carried out research and development, people	32 926	30 222	31 712	26 153	25 942	26 483	27 411	27 735	25 622
of which researchers	19 707	18 267	19 879	16 953	16 879	17 089	17 804	17 863	16 697

Source: (Belstat, 2020)

The international scientific and technical cooperation coordination system in different countries is built, in general, in the same way. At the center of it is the ministry responsible for the development of science and technology (as a rule, the Ministry of education and science), and less often – the Ministry for innovation development or the Ministry of the economy. It works closely with the Ministry of Foreign Affairs, national agencies, and scientific foundations. The latter work directly with scientific organizations, companies, and individual scientists, that is, with the subjects of international scientific and technical cooperation. Differences between countries lie mainly in the number and variety of agencies and foundations.

The system of coordination of the international scientific and technical cooperation of Belarus is close to the described scheme and corresponds to the system of management of the scientific and technical sphere of the country. The system includes the President of the Republic of Belarus, the Council of Ministers, the Ministry of Foreign Affairs, the State Committee for Science and Technology, line ministries, the National Academy of Sciences of Belarus, foundations, and several organizations that partially act as agencies at the State Committee for Science and Technology.

The mission of the State Committee on Science and Technology is:

- to prepare and, according to the established procedure, submit to the Council of Ministers of the Republic of Belarus proposals on the amount of financing of international scientific and technical cooperation at the expense of the republic budget.
- to conduct competitions for international scientific and technical projects.

- to organize the state scientific and technical expertise of international scientific and technical projects.
- to participate in the work of international organizations, commissions, committees, and associations and organize international cooperation with foreign countries on issues within the competence of the State Committee on Science and Technology.
- to organize exhibitions and fair activities to promote Belarusian scientific and technical products to foreign markets (GKNT, n.d.).

The National Academy of Sciences of Belarus realizes international scientific and technical cooperation and coordinates it, together with its subordinate organizations developing mutually beneficial relations with academies of sciences and other scientific organizations of foreign countries, implementing interstate scientific and technical programs and projects, and participating in activities of scientific and technical organizations and associations. Similarly, branch ministries (ministries of education, industry, health, transport, energy, communications, the Military Industrial Committee, etc.) manage the foreign economic activities of subordinate organizations within their competence, assisting them in establishing relations abroad, promoting potential and project implementation.

In Belarus, there are about 40 normative legal acts affecting the issues of the international scientific and technical cooperation, most of which are non-specialized and determine the procedure for the functioning of the scientific and technical sphere. The most important legal acts include the following:

1. Law of the Republic of Belarus “On the basics of the state scientific and technical policy”.

The law establishes the state bodies of the Republic of Belarus to support and promote the development of institutions, organizations, companies, public, scientific, and scientific-technical organizations, individual scientists, and experts. Their task is also to create the necessary legal and economic conditions for establishing equal relations with foreign and international entities in the frame of scientific and technical cooperation. It also defines the forms of the international scientific and technical cooperation:

- implementation of joint research and development, scientific and technical programs based on international treaties.
- agreements and contracts.
- conducting joint research and development in international teams of specialists, international institutions, joint ventures, and organizations.
- mutual exchange of scientific and technical information, creation and use of joint interstate information funds and data banks.
- holding international congresses, conferences, symposiums, and other scientific meetings.
- mutual exchange of personnel, students, graduate students, and joint training of specialists.

The law establishes that the subjects of scientific and technical activities can take part in the implementation of international programs and projects, conclude agreements, agreements, and contracts with foreign and international organizations and firms, and join foreign and international scientific communities, associations, and unions by the law Belarus (GKNT, 2015).

2. Law of the Republic of Belarus “On International Treaties of the Republic of Belarus” (Law, 2018) defines the concept of an international treaty and establishes the procedure for concluding, entering into force, official publication, registration, storage, execution, suspension, and termination of international treaties The Republic of Belarus.

According to the Law, the International Agreement of the Republic of Belarus is: “the international treaty (the interstate, intergovernmental or international treaty of interdepartmental nature) signed in writing by the Republic of Belarus with the foreign state (foreign states), the international organization (the international organizations), another subject (other subjects) having (having) rights to sign the international agreements which are regulated by international law irrespective of contains it in one document or several documents connected among themselves, and also irrespective of its specific name and method of the conclusion (the agreement, the agreement, the convention, the decision, the pact, the protocol, exchange of notes or letters and other names and methods of the conclusion of the international treaty)”. (Law, 2018)

The concept of an international treaty and knowledge of the list of existing international treaties is of great practical importance: by the law, the subject of the international scientific and technical cooperation has the right to receive funding from the republican budget only for those activities that are implemented within the framework of the obligations assumed by the Republic of Belarus, the Government or a government body Republic of Belarus under an international treaty (Law, 2018).

3. Decree of the Council of Ministers of the Republic of Belarus "On approval of the Regulations on scientific and technical projects carried out within the framework of international treaties of the Republic of Belarus" establishes the procedure for filing applications, competitive selection, financing and implementation of scientific and technical projects carried out by organizations of the Republic Belarus within the framework of international treaties of the Republic of Belarus in full or in part at the expense of the republican budget.

4 CONCLUSION

International scientific and technical cooperation for the Republic of Belarus is vitally important. The Republic of Belarus created enough legal documents to ensure international scientific and technical cooperation. But with all this, the efficiency of the work of documents is not great. Unfortunately, now there is no strategic document that would cover the entire spectrum of the international scientific and technical cooperation, as in the example of Germany, where the Strategy for International Scientific and Technical Cooperation has been developed. In Belarus, the preparation of such a document would be expedient, considering the geopolitical position of the Republic of Belarus and its strategic interests and partners.

Now, the Republic of Belarus has concluded agreements on scientific and technical cooperation at the governmental level with more than 50 countries, but not all of them are practical, several agreements are, unfortunately, declarative. In addition, bilateral agreements on cooperation in the field of science, technology, and innovation are concluded at the level of organizations and institutions, which allows them to carry out several works directly with counterparts.

The success and sustainability of international scientific and technical cooperation depend primarily on whether it is beneficial to all parties involved. Now it is necessary to expand the geography of the international scientific and technical cooperation and improve the quality of existing cooperation with an emphasis on cooperation with developed countries of the world, relying on existing domestic and studying foreign experience.

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Received for publication:	03.03.2022
Revision received:	07.05.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Skuratovich, K. (2022, 07 15). International scientific and technical cooperation in the Republic of Belarus: main features. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 191-198. doi:10.12709/mest.10.10.02.18

Style – **Chicago** *Sixteenth Edition:*

Skuratovich, Katherine. "International scientific and technical cooperation in the Republic of Belarus: main features." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 191-198.

Style – **GOST** *Name Sort:*

Skuratovich Katherine International scientific and technical cooperation in the Republic of Belarus: main features [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 191-198.

Style – **Harvard** *Anglia:*

Skuratovich, K., 2022. International scientific and technical cooperation in the Republic of Belarus: main features. *MEST Journal,* 15 07, 10(2), pp. 191-198.

Style – **ISO 690** *Numerical Reference:*

International scientific and technical cooperation in the Republic of Belarus: main features. **Skuratovich, Katherine.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 191-198.

MEST Journal
DOI 10.12709/mest.10.10.02.19

PARTICIPATORY BUDGETING IN DABROWA GORNICZA - A RESEARCH REPORT

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JEL Category: **G31**

Abstract

This article contains the preliminary results of our research on participatory budgeting in Poland. We did it as part of the research project No. 2019/33/B/HS5/00353 financed by the National Science Center under the OPUS 17 program "Evolution of the participatory budgeting in Poland - towards a deliberation or plebiscite?" The goal of the research was to find out what opinions about participatory budgeting the inhabitants of Dabrowa Gornicza held. In Poland, the participatory budget is called partycypacyjny budżet. The participatory budget is a democratic process in which residents can co-determine public spending in the city in the next fiscal year. In Poland, participatory budgets have been developing for a decade. Until 2018, the decision to introduce a civic budget belonged to local governments. Therefore, although they grew out of one idea, the different variants of budgeting differed among themselves, both in procedural and practical dimensions. In 2018, the law was amended, which introduced the regulation of participatory budgets into the common law.

Keywords: *participatory budgeting, local self-government, governance, civil society.*

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1 INTRODUCTION

1.1 Participatory budgeting - an introduction

Participatory budgeting is a democratic process in which residents can co-decide on public spending in their city in the following financial year. The town determines in its budget the amount of expenditure to be allocated to investments, initiatives, and projects proposed by the local community. The city officials analyze the viability of the proposals submitted by the residents. After verification, the proposals are subject to public consultations and then voted on by the residents. The projects that have gained the greatest approval from the residents are included in the city's budget resolution and accepted for implementation. It is to emphasize, that the idea of participatory budgeting goes with the concept of civic society and public governance (public supervision, co-management). In Poland, Sopot, Bydgoszcz, and Elblag were the first cities that implemented participatory budgeting.

In the world, the Brazilian city of Porto Alegre (the capital of the state of Rio Grande do Sul) was the pioneer city in this respect. It introduced that innovative formula of public consultations on municipal spending in 1989. The local authorities took the initiative to ensure that every city resident could feel that he actively participated in the managing local funds process. So, they had a sense of shared responsibility for the city and trust in the authorities. The initiative of the Porto Alegre authorities has significantly improved the quality of life of the city's inhabitants, proved to be a success, and gained popularity all over Brazil. As a result, this idea was introduced in North America, Africa, Asia, and European cities (Szaranowicz-Kusz, 2014, pp.5-6). The first Polish city that decided to introduce participatory budgeting was Sopot in 2011.

Until 2018, such a decision used to be made autonomously by local self-government authorities, who decided about their budgeting procedures independently. Act of 11 January 2018[1] amended the provisions on local self-government. The amendment introduced the concept of participatory budgeting to generally applicable law. Now public consultations had to be conducted obligatorily with residents of independent cities (cities with *powiat* status) and optionally with residents of other gminas and powiats as well as voivodeships (There are three basic units of administrative division in Poland: gmina, powiat, and voivodeship. The cities with a powiat status include, among others, the cities with a population of over 100,000).

As can be deduced from the paper's title, we will focus on our empirical research methodology and partial data analysis. We will make some theoretical and model generalizations in the *Conclusions* and further develop them in the final part of the article *A seed for discussion*. We will present a detailed theoretical context in the monograph that we are currently preparing.

2 METHODOLOGY OF THE EMPIRICAL RESEARCH

The changes introduced by the Polish legislator prompted us to undertake empirical research and attempt to find out what direction they are heading. Through an analyze selected Polish participatory budgets, additionally, we wanted to determine how often and to what extent the elements of plebiscitary and deliberative democracy appear in the model of local representative democracy.

The research process being part of the undertaken project consisted of several stages:

1. The first stage was a quantitative analysis covering 940 territorial units with independent city statuses. Information on how participatory budgeting is implemented, and how it functions in cities we obtained upon motions to access public information. The information sent to us by officials were e.g., the date of introducing the first edition of participatory budgeting in the city, its type, and legal basis, the number of editions, participatory tools used, and the impact of the 2018 amendment on local regulations.
2. Having analyzed the above-mentioned, we selected 12 cities for in-depth analyzes (Krosno, Tuchola, Opatów, Nowa Ruda, Rypin, Hrubieszów, Puławy, Tarnowskie Góry, Legnica, Gorzów Wielkopolski, Dabrowa Gornicza, Sopot**)**. We based selection on the dates of participatory budgeting implementation. We considered all the cities

[1] Act of 11 January 2018 amending certain laws to increase the participation of citizens in the process of electing, functioning, and controlling certain public bodies, Journal of Laws of 2018, item 130

that had implemented such budgets before 2018 and after 2018. Another selection factor was a non-standard form of participatory budgeting in some of the cities. The research analyzed local legal acts regarding participatory budgeting, e. g. regulations, resolutions of councils, and orders of executive bodies.

3. In the third stage of the research, we gathered opinions on formal procedures and informal rules governing participatory budgeting from representatives of local authorities, i. e. persons directly involved in creating and coordinating participatory budgets, through individual in-depth interviews (IDI) with full transcriptions (5 interviews in each of the 12 cities). In this research technique, the researcher (moderator) talked to the respondent directly (no third parties are involved). The aim of interviewing the main actors of the participatory budgeting process was to increase the knowledge about this phenomenon and determine those persons' emotional and motivational patterns of behavior.
4. The fourth stage of the research consisted in conducting Computer-Assisted Personal Interviews (CAPI) among the inhabitants of the selected 12 cities (1,853 respondents). The respondents were selected using the random-quota sampling method. The questionnaire consisted of 28 questions aimed at obtaining the respondents' opinions on the participatory budgeting procedure in their cities.

This article focuses on the data gathered among the residents of one of Dabrowa Gornicza city.

3 RESULTS OF THE EMPIRICAL RESEARCH

Dabrowa Gornicza lies in southern Poland, in the Silesian Voivodeship, and in the eastern Upper Silesian Industrial Region. The city has a population of about 121,000.

Participatory budgeting has been present in Dabrowa Gornicza since 2013. Throughout those several editions of participatory budgeting, the city officials have been using a variety of participatory formulas, such as public consultations, information meetings, supporting the residents in writing applications, debates, evaluation meetings, application writing marathons, workshops, etc. Until 2017, participatory budgeting took the so-called plebiscite form. In 2017, the city authorities decided to change the way of project selection. A civic dialogue was introduced, which intended to involve the residents of neighborhoods and districts of the city in a series of meetings, both diagnostic and planning ones. The amendment to the Act on self-government initiated by the Polish government in 2018 obliged the authorities of Dabrowa Gornicza to carry out participatory budgeting according to strictly defined guidelines (obligatory voting) and prompted them to run two parallel processes:

- the Dabrowa Gornicza Participatory Budgeting, a model example of participation (implemented according to the mayor's order), and
- the Civic Budgeting, is implemented under the resolution of the City Council and based on statutory guidelines.

The statutory changes aim at triggering deliberative processes. Has that happened? We will attempt to answer that question by analyzing the responses obtained from 210 residents of Dabrowa Gornicza, the survey participants conducted in the city from February to June 2021.

The first question was a request to define participatory budgeting. As shown in table 1, more than every second respondent (55%) defined it correctly as a decision-making process within which inhabitants co-decide about a part of their city budget. The remaining respondents were not able to produce it. In their opinion, it is free and non-returnable financial aid, granted by the state, for the implementation of specific tasks of local governments (7%) or an annual statement of planned revenues and expenses (23%). It should be emphasized that every sixth respondent (15%) was unable to define the discussed term. Although participatory budgeting has been present in the city since 2013 and its authorities have been promoting its subsequent editions, every second participant could not define this form of social participation correctly.

Table 1. What is participatory budgeting in your opinion (N = 210)

1	An annual statement of planned revenues and expenses	23%
2	A decision-making process in which residents co-decide about a part of their city's budget	55%
3	Free and non-returnable financial aid granted by the state for the implementation of specific tasks of local governments	7%
4	I don't know, I can't define	15%

The authorities of Dabrowa Gornicza prepared a participatory budgeting website dedicated to the inhabitants. It contains all relevant information concerning each edition of participatory budgeting. In addition, the residents can broaden their knowledge of participation thanks to the units functioning within the City Hall structure: the Department of Non-Governmental Organizations and Civic Activity, and the Center for Civic Activity. Are the residents of Dabrowa Gornicza interested in the idea of participatory budgeting in their city? Do they know how it functions? The responses obtained from the participants show that every third of them (31%) did not know/could not determine who decided about the participatory budgeting rules in their city. An equal number of respondents believed that the city authorities decided about such rules and based their actions on guidelines provided for in statutory acts passed by the Parliament and on the guidelines created themselves. In the opinion of every fourth respondent, the city authorities have created the participatory budget based on the statutory acts passed by the Parliament. There were also opinions that the city authorities developed those rules on their own, following the guidelines they have created themselves (16%).

Respondents' responses show that it was difficult for them to point out the persons responsible for preparing participatory budgeting rules and determining the legal basis on which they are based.

Table 2. Who in your opinion decides about the participatory budgeting rules in your city? (N = 210)

1	The city authorities on their own, following the guidelines they have created themselves	16%
2	The city authorities within the framework set by statutory acts passed by the Parliament	20%
3	The city authorities, following statutory guidelines and the guidelines, have created themselves	31%
4	I don't know, I can't define	31%
5	Others (who?)	2%

Every second respondent correctly defined the participatory budgeting. Then appeared a question about did they participate in its editions in Dabrowa Gornicza? The answers we received (Table 3) show that this form of social participation is not popular among 66% of the respondents who have not participated in any participatory budgeting edition. At the same time, more than one in ten respondents stated their participation in all editions (12%), and one in four in some of them. It is to presume that they have participated only in those projects they found important. Those who participated in participatory budgeting argued that:

- their opinion was significant and had an actual impact on the development of their city/district (59% of the respondents in this group),
- participatory budget voting allowed them to get involved in local affairs (31% of the respondents in this group),
- initiatives of such kind were effective and helped the city authorities make the right decisions (17% of the respondents in this group).

The reasons why some of the respondents have not taken part in participatory budgeting were:

- unawareness of the existence of such a process (46% of the respondents in this group),
- lack of time (22% of the respondents in this group), and
- lack of interest in such matters (17% of the respondents in this group).

The results of the survey indicate that, still, too few inhabitants of the city are involved in participatory budgeting. The ones who include mainly local activists or people who care about the development and the quality-of-life improvement in their local communities. The city authorities should try to activate the inhabitants in this respect.

Table 3. Have you taken part in each edition of participatory budgeting in the city? (N = 210)

1	I have not	66%
2	I have only taken part in some of the editions	22%
3	I have taken part in all the editions	12%

Table 4. Which three most important economic areas should participatory budgeting concern in your city? (N = 210)

1	green areas (e.g., parks, squares)	52%
2	road and communication infrastructure (e.g., bicycle paths, roads, pavements, parking spaces)	51%
3	sport and leisure (e.g., sports activities, sports fields, playgrounds)	33%
4	culture (e.g., art classes, concerts, festivals)	26%
5	ecology (e.g., smog sensors in public spaces)	22%
6	health (e.g., disease prevention, purchase of medical equipment)	21%
7	safety (e.g., video surveillance, lighting)	20%
8	education (e.g., support for school libraries, renovation of school buildings)	18%
9	public transport (e.g., higher frequency, renovation of stops)	15%
10	renovation of municipal buildings	8%
11	development of public Wi-Fi networks and public mobile applications	5%
12	computerization of public services and e-administration	4%
13	history (e.g., monuments, exhibitions, support for museums)	3%

***Note:** the respondents were allowed to choose up to 3 answers*

The projects, that the city of Dabrowa Gornicza implements as part of participatory budgeting, were initiated by the residents and they fall within various sectors of the economy. According to the respondents, participatory budgeting should cover mainly: green areas (52%), road and communication infrastructure (e.g., bicycle paths, roads, pavements, parking spaces) (51%), sport and leisure (e.g., sports activities, sports fields, playgrounds) (33%), ecology (e.g., smog sensors in public spaces) (22%), health (e.g., disease prevention, medical equipment) (21%), and safety (e.g., video surveillance, lighting) (20%). Table 4 presents the detailed information in this respect.

A significant element of social participation is public consultations. Even though, according to the declaration of Dabrowa Gornicza authorities, the city takes this form of contact with the inhabitants very seriously and keeps improving and extending it, the collected empirical data shows that more than every other respondent was unable to assess it (54%). It is assumed that these people are not interested in what is happening in their immediate surroundings and do not participate in open discussions, meetings, workshops, and other forms of public consultation. That group may also include those who felt that no such meetings were held (6%). Simultaneously, every fourth respondent stated that the city authorities did initiate a dialogue with the residents and took their opinion into account. Every sixth respondent declared that the meetings with the residents were only formal and had no impact. As can be inferred from the responses of Dabrowa Gornicza residents, only 25% of them positively assessed the city's public consultations as part of participatory budgeting.

Table 5. How do you evaluate the process of public consultation (open discussions, working meetings, and a dialogue between the authorities and the residents) regarding the city's participatory budgeting? (N = 210)

1	The city authorities initiate a dialogue with the residents and take their opinions into account	25%
2	Meetings with the residents are only formal and have no impact	16%
3	Meetings with the residents are not held	6%
4	I don’t know/hard to say	54%

The city's participatory budgeting is improved every edition. The authorities try to consider the changes proposed by the residents. As the information in Table 6 shows, the process of civic participation still requires many modifications. The respondents think that the authorities of Dabrowa Gornicza need to:

- intensify the information and promotion activities related to participatory budgeting,
- strengthen cooperation with the residents in the process of establishing the rules of participatory budgeting,
- simplify the project submission process,
- support project promoters in information and promotion activities regarding their projects, and
- facilitate voting.

Table 6 presents the detailed information in this respect.

Table 6. In your opinion, what should the city authorities do to change the functioning of participatory budgeting in the city? (N = 210)

1	intensify the information and promotion activities	37%
2	strengthen cooperation with the residents in the process of establishing participatory budgeting rules (e.g., through public consultations, and workshops)	30%
3	simplify the project submission process	26%
4	support project promoters in information and promotion activities of their projects	22%
5	facilitate voting	20%
6	extend the time for submitting projects	14%
7	extend the voting time	8%
8	other (please specify)	8%

***Note:** the respondents were allowed to choose up to 3 answers*

4 CONCLUSIONS

The participatory budgeting idea gives city residents a chance to have an impact on how local authorities use local funds. In addition, participatory budgeting makes it possible for city authorities to broaden their knowledge about the needs of city residents.

One of the goals of our project was to find out what the opinions of the residents of Dabrowa Gornicza on participatory budgeting are. Because the exploration was not fully representative, the analysis of the gathered data does not allow generalizations. We can, however, try to draw some conclusions.

Many of our respondents did not know what civic participation was and on which legal grounds it is based.

Still, too few of them actively participate in the budgeting process. It is local activists who are most often involved in participatory budgeting.

Most of the respondents stated that the city authorities insufficiently promoted this form of civic activity and that it was necessary to modify participatory budgeting-related promotional activities.

The preliminary and selective analysis of the research material allows us to conclude that Dabrowa Gornicza's participatory budgeting is not deliberative.

One should bear in mind that there are two parties to participatory budgeting: local authorities represented by their officials, decision-makers, and members of local government, as well as non-governmental organizations and citizens/residents. Local authorities should listen to and analyze the proposals of residents who co-decide about participatory budget funds. Budgeting should be based on a bilateral deliberation between these two actors of the civic participation process.

In Poland, participatory budgeting is one of the most popular initiatives, thanks to which city residents are involved in the city management process. It is also a lesson in civic activity. For local authorities, it is a lesson of deliberating and considering the opinions of the local community in the process of making decisions that are important to its members. At the same time, it is to remember that voluntarism is not the only reason why participatory budgeting is popular. The 2018 statutory changes imposed an obligation on independent cities to implement participatory budgeting with voting.

Therefore, the authorities of Dabrowa Gornicza decided to parallelly conduct two types of budgeting - the hitherto functioning participatory one and the civic one carried out by the aforementioned Act and with the use of voting.

Projects submitted as part of civic budgeting (the statutory one) are verified by the city hall and then selected in citywide voting. Projects submitted as part of the traditional Dabrowa Gornicza participatory budgeting (implemented in 35 districts) are developed at Resident Forums during workshops organized for the residents of individual neighborhood units. Consultation desks are organized in separate neighborhood units, where the residents can obtain information, ask questions, and exchange opinions. There are consultants in each community whose role is to support the need identification process and help develop solutions.

5 A SEED FOR DISCUSSION

Deliberation is, first, a public pre-decision communication process focused on seeking appropriate arguments for specific assessments and solutions to the discussed public problems. One of the tools used by communicating parties is persuasion, and the goal is to achieve a consensus with mutual respect for emotions, subjective knowledge, and group interests. Deliberation does not shun emotions, but it does not mean they should be vented here. Four basic features characterize it:

1. a persuasive way of selecting arguments.
2. orientation towards achieving a consensus, considering the interests of social actors.
3. public and transparent nature of the discourse.
4. open access (limited under justified conditions with the reasons given and appropriate appeal procedures).

Voting, like several other solutions, may be helpful in deliberation. At the same time, the deliberation cannot be reduced only to the voting (majority or proportional) accompanied by different methods of persuading one to make a specific choice from a list of options. Deliberation builds social commitment (enhances participation), develops multilateral communication, and leads to individual, group, and organizational learning. Thanks to them, it is possible to develop jointly and implement solutions (co-decision, co-governance). Reducing deliberation to voting is therefore not a solution but a mistake. This mistake denies the essence of deliberation, distorts its meaning, and makes it difficult, if not impossible, to root its ideas in cultural reference models, without the bottom-up shaping of which it is impossible to expect top-down changes to succeed. Achievements of the respected supporters of the top-down public policy implementation model confirmed that. Deliberative budgeting is essentially a systemic 'product', fundamentally different from budgeting conducted using voting. Deliberation understood this way is fueled by advanced participation. However, it is not easy to develop perfect participation as it requires time, willingness, patience, tolerance, and a genuine orientation towards public problems. Hence, like in Poland, deliberative solutions are usually used with less advanced forms of participation, extensive in their characteristics and changing phenomena and processes. It can be categorized, understood, and practiced in various ways (Cornwall, 2009, pp. 299-300). We can feel, understand and practice participation more or less instinctively - that is the case when it is continually being suggested to us by binding patterns of behavior (adequately strong in a given culture). We can feel, understand, and practice it superficially, casually, or only 'officially', and much of it depends on the specific context. Simplified, participation can be understood, among others:

- as the essence of democracy (often reduced to procedurally secured voting),
- as an action of citizens who are aware of their rights and obligations,
- as joint and mutual learning, deepening, an exchange of opinions, arguments, persuasion aimed at deepening the knowledge about the discussed problems and their better understanding,
- as (self) organizing and agreeing on local decisions that guarantee the highest possible scope of self-sufficiency understood in an individualized way, closer to the neo-liberal credo of “do it yourself and for yourself”, or closer to the collective logic of self-sufficiency created by bottom-up community participation aimed at multiplying local resources and well-being,
- as “everything that happens” in public relations - the motives of these relations may be different and intertwined as they often are the law and its interpretation, as well as actions and their determinants, which may

guide relations towards consensual cooperation or pluralized competition,

- as 'bottom-upness' which affects public institutions by concretizing the meaning of grassroots democracy, expanding its scope, and at the same time, weakening centralism (although not necessarily authoritarianism, which can take various forms of bottom-up populist leadership),
- as a mobilization practice aimed at committed contestation, resistance, being an expression of the aspirations for self-determination and autonomy,
- as a form of association, a form of institutionalized collective action, an organizational tendency created by binding patterns of behavior that may also manifest negative tendencies, as a tendency to close the syndicate or defend the bastion of 'what is ours'.

The above approaches to participation show that there is no simple and universal recipe for participation itself, which does not contain deliberation, but there is no deliberation without it.

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Received for publication: 07.01.2022
Revision received: 10.01.2022
Accepted for publication: 26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Sroka, J., & Pawlica, B. (2022, 07 15). Participatory budgeting in Dabrowa Gornicza - A research report. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 199-206. doi:10.12709/mest.10.10.02.19

Style – **Chicago** *Sixteenth Edition:*

Sroka, Jacek, and Beata Pawlica. "Participatory budgeting in Dabrowa Gornicza - A research report." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 199-206.

Style – **GOST** *Name Sort:*

Sroka Jacek and Pawlica Beata Participatory budgeting in Dabrowa Gornicza - A research report [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 199-206.

Style – **Harvard** *Anglia:*

Sroka, J. & Pawlica, B., 2022. Participatory budgeting in Dabrowa Gornicza - A research report. *MEST Journal,* 15 07, 10(2), pp. 199-206.

Style – **ISO 690** *Numerical Reference:*

Participatory budgeting in Dabrowa Gornicza - A research report. **Sroka, Jacek and Pawlica, Beata.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 199-206.

MEST Journal
DOI 10.12709/mest.10.10.02.20

EFFICIENT WASTE MANAGEMENT: ECONOMIC ASPECTS

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JEL Category: **Q01, Q32, Q57**

Abstract

At present, waste reduction or elimination has become a serious environmental concern for most countries and a priority for companies. Waste is not only an environmental problem but also an economic loss. A prerequisite for flourishing economic activity is the efficient management of waste and other resources. The recovery of waste resources has become an industrial reality due to technological innovations in the era of raw materials shortage. Sustainable materials management goes further than ecological waste management and focuses on the efficient use of available materials. The article aims to research the waste management process, shed light on the place of waste management in promoting the circular economy, and outline positive experiences in this area by highlighting the potential benefits and economic costs of applying these practices. That could serve as an incentive to accelerate efficient waste management processes in the Republic of Moldova. Waste management benefits the environment but also increases the number of companies and jobs. The presented article discusses waste management issues and shows some current issues related to them. The paper the authors wrote within the frame of the state project 20.80009.0807.22. - Developing a mechanism for the circular economy creation in the Republic of Moldova.

Keywords: *circular economy, waste disposal, developing countries, economic transition, sustainable development.*

1 INTRODUCTION

With the development of technology, consumption habits and product diversity have also changed. Mankind, which earlier produced only to satisfy its own needs, has switched to mass production whose scope exceeds the essential human needs. Mass production gave rise to the concept of the linear economy. The linear economy covers the processes of obtaining raw materials, their transformation into final goods, their consumption, and their transformation into waste. A linear economy is an approach to neoclassical economics that aims to support economic growth (Ozsoy, 2018). Until the 1970s, the views of economists, not pessimistic like Malthus, but optimistic like Smith, dominated economic policies, so natural resources were used excessively (Zweig, 1979). The fact is that the linear economy approach is growth-oriented. So it has caused many environmental problems in the coming periods. Environmental issues that we can see in global warming, climate change, etc., generate a series of challenges. In addition, the

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excessive use of limited natural resources can cause many problems in the future. For these reasons, the linear economy approach has begun to be questioned.

The amount of waste strongly depends on the living standard and economic growth. The studies in the field show that the volume of waste generated from our daily activity increases with consumption, which in turn increases with economic growth.

In economic theory, economic growth is a category that describes quantitative changes. This is a process of increasing national wealth over time and refers to the measurable sphere of the economy. Because the productive capacity of an economy is difficult to measure, GDP growth is most often used to measure economic growth. The shortcomings of this approach to economic growth became much more visible when it was necessary to move from a linear to a circular economy model, so new indicators are needed now to reflect quantitative aspects of population well-being.

2 WASTE PREVENTION IN THE WASTE MANAGEMENT HIERARCHY

Waste management is a significant area of activities undertaken to protect the natural environment. The waste affects the condition and functioning of the basic components of the environment, such as water, soil, Earth's surface, and the atmosphere. It is impossible to obtain a high-quality environment for human living without adequate and rational management in this regard.

According to the principles of sustainable development, the European Union has developed a waste management hierarchy to ensure a balance between the economy and the environment. The waste management hierarchy set out in the so-called Waste Framework Directive 2008/98/EC of 19 November 2008 consists of five action blocks, with priority given to those at the top of the list. Those from the end of the list are taken into account only as a last resort when there is no other option (Figure 1).

The recommended actions according to the adopted management hierarchy are (Directive 2008/98/EC):

- prevention;
- preparing for reuse;
- recycling;
- rother recovery, e.g., energy recovery; and
- disposal.

Fig. 1 Waste management hierarchy
Source: (EC, 2015)

Each EU Member State has been obliged to implement the provisions of the Framework Directive in its legal system. Even in the Republic of Moldova, which is not yet an EU member state but has aspirations to become one, this hierarchy is provided by the legislation in that area (Law of the Republic of Moldova, 2016).

Waste prevention, the first in the waste management hierarchy and the most fundamental, tried to be implemented both at the level of a person and a business entity but is the most complicated to implement. The study of the specialized literature allowed us to identify the main factors that influence the adoption of a preventive strategy at different levels:

- individual attitude towards the environment.
- regulation,
- collaboration with stakeholders,
- certification of environmental management systems,
- company characteristics.

We can analyze an *individual's attitude* regarding involvement in the waste prevention process in terms of *Planned Behavior Theory* (Ajzen,1991). By this theory, the individual's intention depends on three factors:

- *attitude towards the environment.* People with ecological attitudes toward the environment will adopt an ecological behavior, such as waste reduction and recycling. They will influence by their behavior and the activities of the organizations in which they work or interact (Stern, 2000).

- *subjective norm.* It refers to the social pressure that the individual feels in the sense of engaging in that behavior. These pressures may come from stakeholders such as customers, suppliers, shareholders, employees, and municipalities… They may affect the behavior of managers because they have significant power over the company stakeholders and can act against companies that do not comply with their environmental requirements (Ozsoy, 2018).
- *perceived behavioral control.* It refers to the perception of ease or difficulty in performing that behavior, a perception based on previous experiences and anticipation of possible obstacles (the intention to perform a behavior increases when perceived behavioral control is high (Cordano & Frieze, 2000).

The regulation is a component of state policy in environmental protection and it includes various environmental taxes, technological standards, various permits, etc., which forces companies to reallocate their resources to reduce pollution and get involved in the prevention process. Thus, from a business perspective, regulations impose additional costs, which affect their competitiveness. They have to invest in new technologies and innovations to minimize environmental taxes. For example, it has been shown that firm and well-designed regulations can favor innovation. Such legislation improves ecological performance but also partially or fully covers imposed costs. Pollution is often a waste of resources, and reducing pollution would improve productivity. (Porter, & Van Der Linde, 1995).

The research on the relationship between environmental regulations (often measured by pollution costs) and innovation (generally measured by research and/or the number of patents) shows a positive but sometimes weak or non-existent relationship between these two variables (Ambec et al., 2013). However, the studies show that regulatory pressures lead companies to adopt a preventive strategy.

The collaboration with stakeholders is identified as a separate factor influencing various companies to get involved in adopting environmental innovations. It includes collaborations with customers and suppliers. The last one plays a key role in making companies` decisions in favor of the environment in the opinion of several researchers. It is emphasized that companies that make environmental innovations are more efficient in terms of resources and energy if they work more closely with stakeholders (Rennings, 2000). Stakeholder participation in companies' environmental decisions increases the quality of these decisions (Reed, 2008). Thus, the companies that work more closely with stakeholders are encouraged to adopt a preventive strategy.

The certification of environmental management systems. Companies that adopt an environmental management system can apply for certification through international accreditations. ISO 14001 has become a standard in environmental management systems around the world. Many empirical studies try to measure the impact of adopting an environmental management system on the environmental performance of companies, but the results are not conclusive. Several authors note the positive impact of accreditation on the environmental performance of companies (Arimura, Hibiki, & Katayama, 2008), while others do not find any significant impact (Barla, 2007). However, the impact on the environment we can only observe in the long term, and obtaining accreditation transforms the company and encourages it to aim to implement more environmental actions (EEA, 2021). For example, the accreditations require companies to keep environmental accounts, write an environmental policy and designate a person explicitly responsible for this strategy. This leads to a transformation of knowledge and relationships between actors. The effects on environmental innovations can be significant, as they solve the problem of lack of information about the possibilities and ways of innovation in a specific company (Horbach, Rammer, & Rennings, 2012). Thus, the companies that obtain environmental accreditations can be encouraged to adopt a preventive strategy.

The companies' characteristics are identified in the literature as a significant factor in the decision to adopt the waste prevention strategy, important being the internal structural characteristics of the company, such as size, group membership, or sector of activity. The large companies with more available resources would have fewer constraints to adopting an environmental innovation compared to small companies. At the same time, belonging to a group can encourage the adoption of a preventive strategy. Indeed, the company can benefit from the financing of the parent company, which allows it to overcome the financial difficulties of implementing such a strategy (Galliano & Nadel, 2013).

The business field is a classic control variable in environmental innovation studies in general (Galliano & Nadel, 2013) and pollution prevention in particular (Papagiannakis, & Lioukas, 2012). On the one hand, the regulations are different depending on the field. Some fields are subject to very strict regulations regarding waste management, such as the chemical field, and the companies working in these areas tend to develop new technologies to reduce pollution at the source.

The company's age can influence the adoption of a preventive strategy (Khanna, Delta, & Harrington, 2009). The old business may be more resistant to change. On the other hand, a young company can take advantage of the latest technological innovations from the outset, making it easier to adopt prevention.

The waste management hierarchy implementation must, above all, lead to stopping the constant trend of increasing the amount of waste that accompanies economic growth. Economic growth is the goal of every country. It proves greater economic activity of society, which usually creates a higher income for each citizen and improvement of its basic needs. In turn, the higher amount of waste generated indicates a waste of limited resources, excessive consumption, and a burden on the ecological and economic system, reducing the quality of individual components of the natural environment, thus adversely affecting the standard of living and health of people.

3 CIRCULAR ECONOMY AND WASTE MANAGEMENT

The circular economy is a system that aims to eliminate environmental problems caused by the linear economy and achieve environmentally friendly economic growth. The circular economy was developed inspired by the fact that every object in nature is the source of another phenomenon. For the first time, the concept was mentioned in Kenneth Boulding's book The Coming Spaceship Economy. However, the concept took its original form in the study of Pearce and Turner (1990) (Winas et al., 2017). It is a new paradigm, an economic cycle in which everything that enters a product or process from the design phase is designed to fall into two categories: either a biodegradable component or a component with 100% recycling potential.

The implications of such a definition are huge. However, at the level of humanity, we need enormous changes to succeed in reversing some of the trends identified by economists and sociologists. On the one hand, the circular economy appears as an economic system that aims to facilitate sustainable development by applying it at the micro and macro levels to prevent the depletion of material and energy resources (Prieto-Sandoval, Jaca, & Ormazabal, 2018). The circular economy can be defined as a system that reduces environmental damage by reducing waste generation, preventing excessive consumption of limited global resources, and targeting sustainable development.

The 3R concept describes the circular economy. It consists of the initials the Reduce, Reuse, and Recycle used in defining the essential principles of the circular economy:

- Reduce – refers to the reduction of waste generated by production and consumption activities. We can say that the biggest goal of the circular economy is to reduce the amount of waste. Here we found the first stage of waste management in the previously analyzed waste hierarchy.
- Reuse – refers to the use of waste whose life cycle can be prolonged by repair (especially electronic waste) or its subsequent use as parts in the manufacture of other products.
- Recycling – refers to the use of waste that has ended its economic life and can be used as raw materials in the production of another product.

In some studies, the concept of 3R has been expanded and transformed into 6R. In addition to those 3Rs, there are three more related to redesign, remanufacturing, and recovery (Jayal, et al., 2010).

One of the main goals of the circular economy is to keep waste generated as a result of production and consumption at the lowest level. For this reason, waste management in the circular economy is extremely important.

One of the biggest problems in the world is what to do with waste generated as a result of production and consumption. For example, in the EU, the total generation of waste from all economic activities is around 2.2 billion tons per year since 2004 (over 2.3 billion in 2018) or 5.0-5.2 tons per capita (except for 2008), with a citizen producing almost half a ton of municipal waste on average (EC, 2020).

We can use as an example European Union countries to establish a ratio between GDP and recycling in the context of the circular economy. They produce billions of tons of municipal waste and 1.67 billion tons of industrial waste annually. (OCDE, 2020) As can be seen from these figures, it is unlikely that the world will be able to cope with this level of waste. The concept of recycling is an important alternative for solving the waste problem.

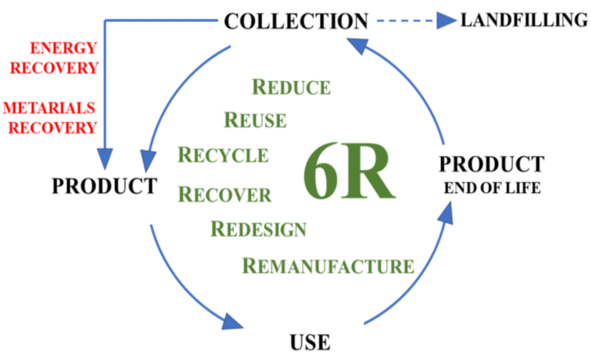

Fig. 2. The basic concept of circular economy
Source: (Nakajima et al., 2010)

For example, by recycling 1000 mobile phones, we can separate and include in the reproduction 250 mg of silver, 24 mg of gold, 9 mg of palladium, and 9 g of copper (Ciftlik et al., 2009). In short, recycling is one of the indispensable factors of the circular economy.

Recycling is a resource recovery practice. It involves the collection and use of waste. Materials of the used products can be reprocessed into new products. The recycling material can be collected separately from general waste using dedicated waste bins and collection vehicles, a procedure called side collection. In some communities, the owner of the waste must separate the materials into several different baskets (for example, paper, plastics, metals) before collection. In other communities, people place all waste in a single collection bin, and sorting performs in the central. The last method is known as, "single flow recycling" (Wilson, Velis, & Cheeseman, 2006).

The purpose of recycling is to use resources most efficiently so that the waste generated by the production process is transformed into input by reintroducing them into the economy and preventing them from causing environmental problems. In addition, recycling also saves energy. For example, only 5-10% of the energy required in the initial extraction process is required for aluminum recycling (Nakajima et al., 2010). Shortly, recycling is a method that contributes both to the support and development of the economy and to the protection of the environment.

Recycling first appeared to eliminate the shortage of raw materials during the Second World War. The recycling campaigns were launched in almost all countries involved in the war and continued in countries with limited natural resources after the war. For example, in Japan, 98 percent of metal and 72 percent of plastic bottles are recycled, while about 90 percent of the materials that make up electronic devices they recover to use in making new gadgets. Looking at the world in general, we can say that recycling is not widespread enough.

Of course, there are different opinions in academic circles regarding the circular economy system, for example, Allwood (2014) and Zink and Geyer (2017) are less convinced of the possibilities of successfully implementing the principles of the circular economy, the main arguments taking into account the following aspects:

- in the event of increasing world demand for raw materials, it will be very difficult in a circular economic system to meet this demand, as this demand can only be met by extracting new raw materials.
- continuous technological development may lead to a situation where an old technology product cannot be used as a raw material or component of a high-tech product.
- the complete recycling of some products in the current conditions of technology development is impossible, respectively the generation of waste is impossible to be eliminated.

- the use of fossil fuels for the energy supply of the circular economic system will also create waste and contradict the main idea of this system. Therefore, the circular economic system should use renewable energy sources.
- declining demand for raw materials in a circular economy may lead to a decline in economic growth. There is no certainty whether this situation will be accepted in today's world, where the perception of the economy focused on economic growth remains dominant.
- not all waste can be recycled, so a 1:1 conversion is excluded.
- the rebound effect, which is mainly observed in the energy market, can also occur in recycling, so even in the amount of the raw material recovered through recycling, even if it increases, more will always be needed.
- according to the principles of the circular economy, technologically obsolete mobile phones, electronic devices, and automobiles are to be used as spare parts or raw materials in the production of electronic devices and automobiles equipped with new technology. But, in real life, they are still widely exported from developed countries to developing countries.
- some recycled raw materials could hardly compete with their primary alternatives in terms of quality, price, and target markets.

The benefits of the circular economy implementation in terms of efficient waste management outweigh the risks and costs.

3 WASTE MANAGEMENT BETWEEN REALITIES AND ECONOMIC PERSPECTIVES

Every time a product is thrown away and turned into waste, its treatment entails a series of side effects. They affect the environment and the economy and society in general. Waste management is a complex process that cannot ignore any of these effects. It is impossible to study and manage them individually without considering all complex factors: environmental, economic, and social. Poor, inadequate, incomplete, disorganized, and/or inefficient waste management has disastrous results in all the above areas.

Poor waste management pollutes the oceans, blocks rivers, causes floods, creates conditions for the multiplication of pathogens responsible for the transmission of infectious diseases, and contributes to increasing the population's health problems. The uncontrolled waste treatment ultimately affects economic growth through various channels, such as reluctance of investors, lack of tourism, and diminishing economic benefits in the affected areas (WB, 2021).

Improper waste management has the greatest impact on the population of economically weaker countries, which are also the most vulnerable. People in poor areas have a minor impact on government policies, and waste is often disposed of, formally or informally, in addition to their areas of residence (WB, 2021). Although waste management is crucial for the development of sustainable cities, it is also an expensive service. It is estimated that municipalities in low-income countries spend 20% of their budget on waste management. In more than 90% of cases, management involves methods such as incineration and free storage on open land. In middle-income countries, waste management absorbs 10% of municipal budgets, while in high-income countries only 4% (WB, 2021).

The implementation of the "polluter pays" principle, generally accepted by most countries, including the Republic of Moldova, can reduce the cost of management through savings caused by discouraging companies to pollute the environment. The latest views on the economic aspects of waste management refer to the circular economy associated with sustainable development, as it creates a model of economic feedback. The linear economic model that is established about consumption, presupposes the existence of an end to the use of products. Instead of that, the concept of the "circular economy" includes the reuse, repair, renewal, and recycling of existing materials and products, to protect natural resources and the economy of raw materials (MEMO, 2005).

At the same time, experience shows that waste management can create jobs and provide an opportunity for entrepreneurship. In Europe, recycling has had high growth rates since 2005, and an estimated turnover of over EUR 100 billion while providing about 1.2 to 1.5% of jobs. Also, in the same period, it was shown that the most environmentally friendly ways of waste management gave the most encouraging results in terms of employment: at a time when waste storage provided 10 jobs, incineration provided 20-40 places, and recycling has created 240 new jobs (MEMO, 2005). Of course, the economic benefits of recycling are visible in the long run and are linked to all aspects of waste management: recycling means less use of raw materials, reduced transport costs, etc. However, the costs of waste management are high and remain an unresolved issue.

The European Union promoted the circular economy model in the context of good practice for businesses and individuals covering all stages of the product life, from its design that could ensure, by choosing its materials, its reuse in the future. At the same time, it brings a change of culture in consumption in general, but especially in the issue of waste, changes the way of receiving the same concept of discarded material and transforms it from a “problem, into a useful resource” (Hollins et al., 2017).

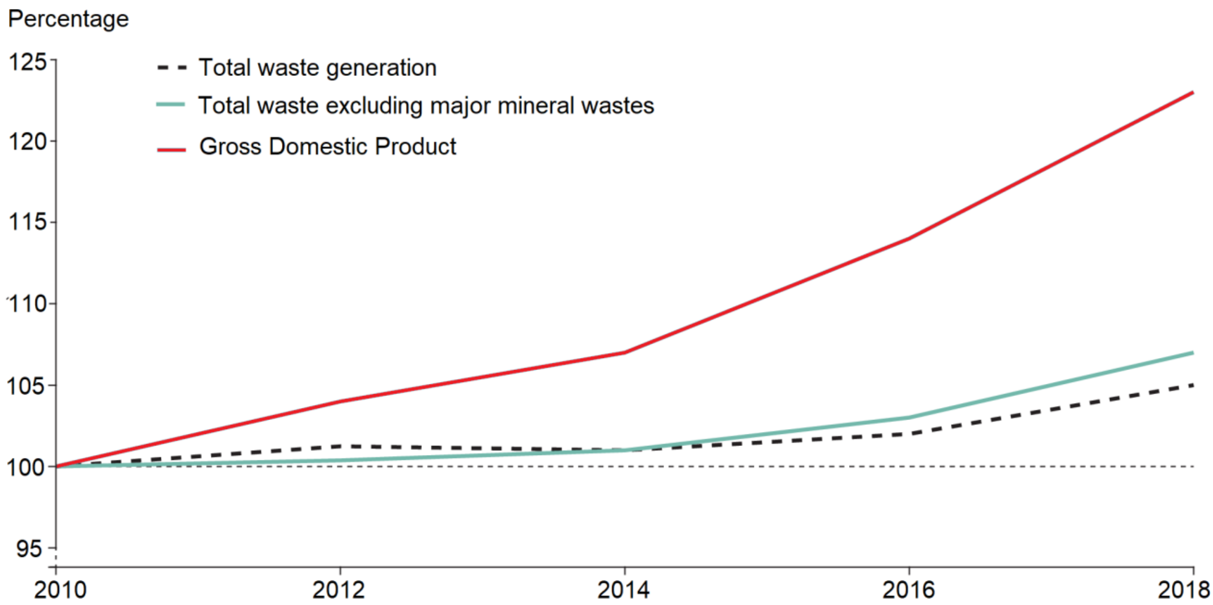

Fig. 3 Waste generation and decoupling, EU-27

Source: (EEA, 2021)

The latest data show that from 2010 to 2018, total waste generation has increased by 5% (114 million tons) in the EU-27, which endangers the policy goal of reducing waste generation. These developments are considered to be mainly due to economic growth. A positive is the fact that the amount of waste generated has increased to a lesser extent than the economy. It indicates the relative decoupling of waste generation from economic growth. Changes in waste management have also contributed to these results. Almost one-half of the increase can be explained by secondary waste, from operations such as waste sorting (EEA, 2021).

What is now required in EU policies is to identify the parameters in waste management with those of the circular economy, as the development of the circular economy requires high-quality secondary raw materials, which can re-enter the production process. In this regard, the field of waste management should be linked directly to the creation of new business models that aim not only at the prevention described in the previous chapter (non-waste generation) but also at the conversion of waste into resources.

In any case, the increased demand for products and the low availability of resources, make the transition to a circular economy somewhat inevitable. The proposed objectives of the EU circular economy package will be easier to achieve for countries with more advanced waste management procedures.

The factors preventing the establishment of the circular economy model are lack of modern infrastructure, high dependence on landfills with low or non-existent recycling rates, administrative and institutional deficiencies, lack of political will and domestic legislation, and lack of attention to waste management outside urban centers (neglect of good practices) and insufficient segregation of municipal waste at source.

4 CONCLUSIONS

The issues presented in the article allow us to draw the following conclusions. By implementing the provisions of the Waste Framework Directive, the EU has proposed specific directions of conduct in waste management, which must contribute to more efficient use of natural resources and improve the quality of life of society.

The first benefits of this behavior are already visible and demonstrate, albeit with slow steps, the existence of several economic, social and environmental benefits. However, in the EU countries and the Republic of Moldova, although measures to improve waste management are being taken, changes in their implementation are slow.

The main causes that would be valid for our country would be:

- the lack of a coordinated system of separate waste collection that demotivates citizens to do so, irrational behavior at the level of municipalities that minimize costs for waste management,
- lack of motivation to carry out a reliable and selective waste collection.

To streamline this process, in addition to a legal and regulatory framework that would specify the tasks and obligations of waste management institutions, it is necessary to specify:

- the financial or other contributions borne by the government;
- starting conditions and evaluation procedures; and
- the existence of adequately trained staff, both financial and technical.

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Received for publication:	07.01.2022
Revision received:	10.01.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Timofei, O. (2022, 07 15). Efficient waste management: Economic aspects. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 207-216. doi:10.12709/mest.10.10.02.20

Style – **Chicago** *Sixteenth Edition:*

Timofei, Olga. "Efficient waste management: Economic aspects." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 207-216.

Style – **GOST** *Name Sort:*

Timofei Olga Efficient waste management: Economic aspects [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 207-216.

Style – **Harvard** *Anglia:*

Timofei, O., 2022. Efficient waste management: Economic aspects. *MEST Journal,* 15 07, 10(2), pp. 207-216.

Style – **ISO 690** *Numerical Reference:*

Efficient waste management: Economic aspects. **Timofei, Olga.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 207-216.

MEST Journal
doi: 10.12709/mest.10.10.02.21

STRATEGIC MANAGEMENT IN ENSURING ECONOMIC SECURITY IN THE DIGITAL ECONOMY AND THE VUCA WORLD

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JEL Category: **G21, G22, G23**

Abstract

The importance of strategic management and strategy development for determining the benchmarks of functioning and development of the economic security system is substantiated. This article describes the role of strategic management in ensuring the economic security of the business entity. The peculiarities of the organization of security-oriented company strategic management in the conditions of the expansion of the digital economy, Industry 4.0, as well as the peculiarities of functioning in the VUCA World have been determined. The paper proposes the use and formalization of the main characteristics of the strategy of security-oriented digital development and the strategy of personnel potential development with a focus on economic security. The proposals are based on the strategy of security-oriented digital development to lay the need for business transition to the digital plane, and digitalization of business processes with awareness and anticipation of all the risks that will accompany such transformations. To protect companies from reputational risks and with the awareness that the organization of effective risk management is impossible without the participation of persons, specialists, experts, etc., a paper proposed a strategy for human resources with a focus on economic security. The algorithm of its implementation involves the determination of the skills and competencies that staff will need in a few years in the context of continuing instability and uncertainty in the company environment and taking measures for their formation and development.

Keywords: *corporate security, business performance management, business strategy, risk, top management.*

1 INTRODUCTION

The economic environment in which modern businesses operate is constantly changing and transforming following the needs of the time. Such trends in the modern world, such as volatility,

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uncertainty, complexity, and ambiguity have formed the concept of the VUCA World, which is a complex character of modern life in economic, social, and other manifestations, which we can now observe. For the business sector, these features are even more inherent and tangible. And since all four of these signs of the world in which companies currently operate have negative content, it is necessary to talk about the feasibility of top management to take measures to ensure their economic security. Additional risk factors that can also have negative consequences on the performance of economic structures are the automation and digitalization of business processes. Industry 4.0 radically changes the algorithms of many classic productions, trade, and financial investment operations, and makes their effectiveness dependent on automatic start-up, uninterrupted power supply, and Internet, assigns staff, formerly the center of economic activity, mediation, assistance in the digital economic space. Managers involved in strategic planning processes are needed more and more specific knowledge and skills to anticipate future changes in technique, technology, and customer preferences. Any change is always a risk factor, so for strategic management of the enterprise generally, and for its economic security particularly, it becomes a difficult but very important management task. Now the realization of this fact has come to the scientific community and has become a catalyst for the emergence of numerous studies on the issue of economic security management (Zachosova, N., Babina, N., & Zanora, V., 2018). The focus of a few scientific pieces of research was the issues of strategic management of financial security of banks (Vysotska, I., Savina, S., Mazur, K., Nahirna, M., & Dorosh I., 2021) and of economic entities of other economic activities (Kolenda, N., Matviichuk, N., Cherchyk, L., Nakonechna, G., & Amit, K., 2020 (as well as strategic guidelines for the economic security of industrial enterprises, weighted by the interests of their stakeholders, current challenges and risks (Kutsenko, D.M., 2019). Some scholars suggest instead of allocating strategic management of economic security in a separate management area, carrying out strategic management of the enterprise from the standpoint of economic security (Derevyanko, B.V., Rozhenko, O.V., Khailova, T.V., Hrudnytskyi, V.M., & Podskrebko, O.S., 2021). Interesting in the context of this study is the approach to strategic risk management and determining its impact on the economic security of business structures (Lavrentieva, L., & Anisimova, O., 2018). It is also worthy to note that there are methodologically correct assumptions about the need to develop a mechanism for strategic management of the enterprise's economic security. (Vdovychenko, L. Yu., & Volosiuk, M. V., 2020). Threats to normal and continuous business operations caused by the COVID-19 pandemic reflect in professional publications on strategic security management. (Suglobov, A.E., Kuzmina, T.I., Bessonova, E.A., Bank, S.V., & Nabiyeva, A.R., 2021) In the context of the digital economy, an important managerial aspect is the ability to analyze information resources and be able to use them correctly to ensure the economic security of the enterprise (Vasylishyn, S., Ulyanchenko, O., Bochulia, T. Herasymenko, Y., Gorokh, O., 2021), both in the tactical and strategic dimensions.

Thus, we can state the fact that there is diverse research on the specifics of economic security management of economic entities, including strategic security-oriented management. However, the task of formalizing specific strategies for managing the economic security of economic entities developed considering the conditions of business within the digital economy in the VUCA World remains relevant.

2 THE ROLE OF STRATEGIC MANAGEMENT IN ENSURING THE ECONOMIC SECURITY OF THE BUSINESS ENTITY

In foreign countries, management experts have long recognized the need for strategic management. In Ukraine, not every business entity has a general strategy of functioning and development, not to mention specific strategies in the areas of economic activity – personnel strategy, financial strategy, innovation strategy, economic security strategy, etc.

The lack of strategic management or its low level of efficiency in Ukrainian enterprises is explained by the following circumstances:

– it is difficult to predict the conditions of enterprise development in the long run, given the instability of the economic and political situation in the country.

- there is a lack of resources needed for the organization and implementation of strategic management – owners and top management of domestic enterprises prefer to use limited resources for current needs, rather than directing them to develop documents and create reserves to prevent events that may not occur;
- there is a lack of specialists in the staff of enterprises with the appropriate qualifications to develop realistic strategies with goals in line with the SMART concept;
- there is a lack of mandatory requirements for strategic management of the enterprise. The strategy is not one of the documents required by government agencies when registering or auditing the business entity, and what is not mandatory may be neglected by business representatives for resource savings;
- there is a lack of a culture of strategic management, that is, a lack of awareness of its importance at the level of top management or the level of staff, and underdeveloped strategic management practices, which would form effective scientific, methodological, and applied tools for implementing this area of management.

However, the importance of strategic management, in managing financial and economic security, cannot be denied. The task of forecasting and preventing the impact of threats and risks on the state of corporate resources of enterprises and the course of their business processes, which is one of the priorities for integrated economic security systems, provided there are strategic guidelines for long-term business. The strategy gives managers clues as to where to look for potential and existing risks. Strategic management allows for foresight and forecast of the effects of certain factors that exist in the environment of the enterprise and prepares staff for the need to take measures to counteract their negative impact. Having a strategy allows you to clearly understand what resources are not enough for further development and what it threatens the future. Most modern strategies have a separate section on risks in their structure, which makes it possible to use strategic documents as part of information and analytical support of the economic security system. Having clearly defined business goals for several years to come allows financial and economic security professionals to develop response plans in case such goals need to be transformed, adjusted, or require more resources than originally expected. Goal setting has a positive effect on the state of economic security, as it reduces the level of unpredictability of certain events and minimizes the resources that have to be spent on rapid response to the threat. The existence of a strategy allows you to measure and balance the costs that are necessary to achieve the long-term desired performance of the entity with losses and losses that may arise during the efforts to obtain them.

Strategic management assumes that the company is focused on a long stay in the market, has a competitive advantage, and is ready to fight for consumers and customers. This position corresponds to the general purpose of the economic security system – to ensure the ability of the business entity to continue its activities until the goal of creation. Although the presence of modern business structures in VUCA World, in a situation of uncertainty and ambiguity, does not contribute to effective strategic management due to difficulties in predicting trends in the external and internal environment of companies, institutions, and organizations, it has a long-term plan of action and response to possible events and for doing business (even when it is necessary continuously adapt it), it is better than chaotic adaptation to new challenges and business circumstances. Such an adjustment affects the economic security of the company destructively. It diverts resources from the key business processes.

2.1 Security-oriented digital development strategy

For the ideas and developments of the theoretical and methodological plane to be applicable in practice, a rational step within this study will be developing the basics of several specific strategies for economic structures. That will help maintain market position, potential, and security during the spread of the digital economy. Given the accelerated development of digitalization of business processes of economic entities and the emergence of risks of information corruption in the digital space, data theft and financial assets of companies, distortion of information, paralysis due to cyber attacks, phishing, vishing, etc., we believe that in the management arsenal of the company should be a strategy of security-oriented digital development. That we can explain by several significant assumptions:

- any business structure needs to adapt to work in the digital environment, and its management – to be ready for a partial, and in the long run – for a full transition to business process management through the use of digital technologies; it is advisable to make every effort to ensure that this process is as safe as possible for corporate resources and business processes of the enterprise;
- the amount of information that the company must take into account in its activities, and management – to find, analyze, evaluate and apply for management decisions – is rapidly growing; for its processing and storage it is necessary to start actively using special software products; their integration into the functional subsystems of the company's economic security system – first of all, information-analytical and technical-technological – is a factor of additional risks that need to be identified in advance and, if possible, prevented;
- the staff of the enterprise may not be ready for total digitalization, which will cause errors in the performance of professional functions and tasks; therefore, the top management of companies needs to plan measures to promote the digital literacy of employees and at the same time to develop a personnel security policy that would include a component of intellectual security in the context of digitalization;
- stable operation of the enterprise, without qualitative changes, technological transformations, and adjustment of the general vision of business following the needs of customers, partners, and other categories of stakeholders and maintaining its market position in VUCA World is impossible; therefore, management needs to develop a strategic vision of enterprise development – capacity building: information, personnel, technical and technological, material – and not so much in absolute terms, but more in terms of improving its quality characteristics.

The strategy of security-oriented digital development in its content should specify a set of measures that must be taken to achieve the ambitious goal – the qualitative transformation of business processes to meet business practices to the demands of the digital economy. Also, in its documentary form, part of such a strategy should outline the strategy implementation of available resources, the resources needed to perform all defined tasks, and company-specific risks at the beginning of the most valuable strategic goals, as well as risks that may arise during strategic goals realization, and in case of unsuccessful or wrong strategic decisions. Traditionally, the results of strategy completion are planned in three scenarios: optimistic – when all goals are achieved and plans are fulfilled or exceeded; realistic, which allows small deviations in the achievement of targets, and pessimistic, which demonstrates the result of the failure of the strategy for most pre-formalized expectations. In the preparatory phase of the strategy, management should assess the technical and technological equipment of the enterprise, determine where can involve digital content in the algorithms and protocols of business processes or how to optimize this process so it becomes automatic or be performed in the digital space. The introduction or improvement of digital document management is a critical component of this strategy. The secretary's collection of signatures and endorsement of documents in paper form is a rudiment in a modern enterprise whose management staff knows the basics of time management has no right to keep.

The second crucial stage is the maximum level of customer involvement in the process of formalizing the order, however, in a way convenient for him. All applications, intentions to purchase a product or receive a service, the client fills in personally, in digital form, ideally – in a special system, application, or software product, which has a field for prompt entry of all necessary data or expressions of wishes. The task of the company's staff is to check, clarify, fulfill the order or transfer it to the executors. Communication and mediation are the key competencies that a modern worker must have. However, in addition to digital development, the proposed strategy also aims to ensure economic security in this process. Thus, a significant element is an awareness and active counteraction to the risks of digitalization. First of all, it saves the company's human resources, as technological re-equipment and renewal of business processes in the direction of their full automation often lead to the dismissal of some employees who were involved in performing functions that have become automatic. Any dismissal of staff is a risk to the company's reputation, claims to its social responsibility in business, and so on. However, since staff optimization will be inevitable in the context of security-oriented digital development, top management of companies must take measures to minimize reputational risk. That can be achieved through:

- an active outreach through HR and social networks,
- diversification of business activities to create new jobs for staff transfer,
- organization of training in new skills and abilities,
- retraining of employees to work in new conditions,
- finding optimal options for people who will lose their positions as compensation payments, assistance in finding a new job, recommendations, inclusion in the personnel reserve, remote part-time employment, etc.

Within the framework of the proposed strategy of company management, it is advisable to resort to the practice of compiling risk catalogs, developing risk maps, and ranking them. Such actions will identify minor risks that may be noticeable at the tactical level, but strategic planning does not require much attention and resource costs. Risk management should become a crucial component of the strategic management of the entity and one of the vectors of managing its economic security.

2.2 The strategy of personnel potential development with a focus on economic security

Given that the role of personnel in the context of total digitalization of business is changing significantly, and Industry 4.0 requires automation of most business processes, which also transforms the role of the employee in the enterprise, we consider it appropriate to propose for modern business structures to ensure economic security. Because the threat and risk assessment depend on the expert's opinions of top-management and financial and economic security management professionals, the process of economic security management, at the present state of security-oriented methodological framework and approaches to the formation of economic security system, can not be automated. Thus, it is advisable to consistently and dynamically take measures for the formation and development of human resources adapted to the needs of the enterprise, which seeks to achieve its strategic goals in the digital space. The characteristics of the proposed strategy will be:

- using of all available resources to organize staff work in a remote format with taking into account personnel risks, violation of deadlines, reduced discipline, inefficient distribution of working time, neglect of safety rules, etc.
- formation of a culture of online employment in compliance with the rules of information security and cybersecurity (to implement this task it is necessary to make changes to the personnel policy of the company).
- execution of part of business processes in the outline of project management with the involvement of remote teams.
- promotion of lifelong learning for all categories of workers, and creating and constantly updating the personnel reserve.
- cooperation with higher education institutions and participation of top management of companies in the development of educational and professional programs in the role of stakeholders, potential employers, and practice leaders.

One of the objectives of the proposed strategy is delegating some of the functions to its employees to ensure the entity's economic security. Working in the digital space implies that the responsibility for the business process security lies partly on the employee because he works over the Internet with all the accompanying risks and threats, and uses personal gadgets to perform professional tasks. While working, he supports or destroys the company's reputation on social networks since he is its representative. The basis of the personnel potential development strategy, with a focus on economic security, is the training and retention of employees who understand that their actions and/or inaction – are a threat to the company, its corporate resources, business processes, and ultimately – to the possibility to achieve strategic goals. Such a strategy cannot use a rigid authoritarian style of governance, preference should be given to a partnership, dialogue, and communication. The peculiarity of the strategy is that the focus of top management, in the long run, is not on the total automation of business processes, without human participation in them, but on the moderate involvement of staff that passed specific training and has a high level of skills, hard and soft, as well as the ability to adapt to new challenges and circumstances. When hiring new employees, HR managers need to pay attention to diagnosing candidates' ability for effective self-management and time management. In the digital economy, the ability to self-organize and speed of decision-making help to fight for customers, gain a competitive advantage and prevent losses. They are urgent tasks in the process of ensuring the company's economic security. Therefore, within the framework of the proposed strategy, management staff must successfully and balanced combine automation with personalization, and provide opportunities to counter risks, dangers, and threats by using high-quality human resources.

3 FEATURES OF STRATEGIC MANAGEMENT OF ECONOMIC SECURITY IN THE CONDITION OF DIGITAL ECONOMY AND VUCA WORLD

Instability, uncertainty, complexity, and ambiguity as characteristics of the economic environment in which enterprises operate, complicate the tasks of strategic management of their economic security and highlight certain features of this process:

- there is a need to:
  - increase the frequency of review of strategic guidelines for the operation of the enterprise and
  - ensure its economic security, given the variability of the economic situation.
- there is a need to automate some of the processes of economic security management, translating them into digital space.
- there is a need to redistribute the budget for economic security in favor of counteracting significant strategic risks and leaving the minimum amount of funding for rapid response to current threats.
- it becomes noticeable to increase the role of planning and forecasting and to minimize the control function, which should ideally be automated.
- communication of those responsible for the state of economic security becomes important, which should take place constantly with the use of all available techniques and tools.
- there is a need to develop alternative management solutions both to maintain the level of economic security and in other areas of economic activity of enterprises, given the uncertainty and ambiguity of events that may occur. In the conditions of the VUCA World, the protocols of reactions to certain events should not remain static. A preference should be given to the development of flexible algorithms for the implementation of management decisions.
- the strategy of economic security management should provide for the continuous development and training of the staff without taking a course to increase staff.
- the possibility of remote management of economic security and full-fledged work of those responsible for its state in the online form, should be provided.

4 CONCLUSIONS

In conditions of economic activity characterized by volatility, uncertainty, complexity, and ambiguity, the lack of strategic vision of enterprise development can mean a fatal loss of competitive advantage due to:

- inefficient allocation of resources,
- neglecting existing and potential risks and their likely consequences for their and involved assets,
- ignoring the need for the long-term vision of customer needs and establishing mechanisms for timely response to them to

maximize their satisfaction in the shortest possible time, etc.

Currently, business structures face one of the biggest challenges – a need for the complete transformation of business processes to ensure the possibility of a full cycle of their implementation in the digital space. The digital economy is no longer a myth or an assumption, it is a reality for which a large number of enterprises in Ukraine are not ready precisely because of the lack of strategic vision of their prospects and neglect of the need for effective strategic management. Modern top management needs to understand that prompt response to risks and threats, which were noticed only because their negative impact on the performance of the entity has become noticeable and obvious, does not provide the long-term benefits needed to win the competition. Moreover, such a short-sighted management approach leads to significantly higher costs than those that would cost to implement and establish effective strategic management.

To provide the enterprise's economic security strategic management plays a significant role as it outlines the long-term goals of its operation and allows you to predict what dangers and threats to management staff will have to deal with on the way to achieve them. The strategy indicates which components of a comprehensive economic security system will need the most attention and focus on key resources. In the context of the spread of Industry 4.0 and VUCA World, these components are undoubtedly the technical-technological, information-analytical, and intellectual-personnel security. It is on their stabilization and development and aimed at our two proposed strategies of enterprises – the strategy for security-oriented digital development and the strategy for personnel-potential development with a focus on the economic security of the business entity.

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Received for publication: 25.01.2022
Revision received: 06.02.2022
Accepted for publication: 26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Zachosova, N., & Koval, O. (2022, 07 15). Strategic management in ensuring economic security in the digital economy and the VUCA world. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 217-224. doi:10.12709/mest.10.10.02.21

Style – **Chicago** *Sixteenth Edition:*

Zachosova, Nataliia, and Oleksii Koval. " Strategic management in ensuring economic security in the digital economy and the VUCA world." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 217-224.

Style – **GOST** *Name Sort:*

Zachosova Nataliia and Koval Oleksii Strategic management in ensuring economic security in the digital economy and the VUCA world [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 217-224.

Style – **Harvard** *Anglia:*

Zachosova, N. & Koval, O., 2022. Strategic management in ensuring economic security in the digital economy and the VUCA world. *MEST Journal,* 15 07, 10(2), pp. 217-224.

Style – **ISO 690** *Numerical Reference:*

Strategic management in ensuring economic security in the digital economy and the VUCA world. **Zachosova, Nataliia and Koval, Oleksii.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 217-224.

MEST Journal
doi: 10.12709/mest.10.10.02.22

THE ISSUE OF UNIFORM APPLICATION OF PROVISIONS ON MEDICAL DEVICES IN THE EU ON - CASE POLAND

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JEL Category: **K23, K33, L11**

Abstract

The import and introduction of medical devices to the common market of the European Union constitutes a significant part of the community's trade exchange with the world. In this context, the harmonization of regulations relating to medical devices has become one of the key elements of the trade, medical, and customs policy of the European Union. This article briefly outlines the evolution of the Community regulations on medical devices and indicates some problems that are important from the point of view of members of the economic market, which may arise at the stage of application of regulations on medical devices by state administration bodies, as well as the related legal and business consequences. The analysis focuses on the two legal acts which are of key importance from the point of view of qualifying devices as medical Directive 93/42/EEC on medical devices (MDD), applicable from 1 January 1995 until 25 May 2021, Regulation (EU) 2017/745 on medical devices (MDR), fully applicable from 26 May 2021. Similarly, the role of public administration bodies in applying EU law is analyzed, and the related dangers to the principles on which the EU legal system rests are indicated. The issues raised constitute the basis for de lege ferenda conclusions, which focus on the possibility of unifying the practice of applying the law in the individual Member States through specific institutional solutions and thus eliminating potential particularisms.

Keywords: *Medical devices, European Union, MDD, MDR, harmonization, administration.*

1 INTRODUCTION

The European Union is one of the biggest single (Hallak, 2020) markets in the world, which was aimed not only to create free trade but is the base of one of the principles of the EU. One of its aims was to create certain structural changes in the European Union. (Allen, Gasiorek, & Smith, 1998) That is why the Union works for open world trade.

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The European Union is the second importer of goods in the world. The level of imports to the European Union in 2020 alone amounted to 5,125,673 USD (ITC, 2022A). In 2019, total imports of medical products amounted to 128 billion EUR (6.6% of EU merchandise imports). In 2020 Europe had a positive medical devices trade balance of 8.7 billion EUR: this represented a 27.5% decrease compared to 2019 (12 billion EUR). Europe's main trading partners for medical devices are the United States, China, Japan, and Mexico. (ITC, 2022B) The establishment of a common or single market has been crucial for European integration since its inception in 1957. This was enshrined in the Treaty of Rome (Art. 2) as the main policy goal of the European Economic Community (EEC) but the process to achieve it has proved very complex and ineffective. The common EU market for medical devices embraces 28 member states of the EU but also Norway, Iceland, Liechtenstein, Switzerland, and Turkey. (Kumar, 2017) It is estimated that in 2021 there were over 500,000 medical and in vitro diagnostic devices on the market.

The European Union's approach to the harmonization of medical products which can be traded in a single market has evolved. Initially, the general approach was to lay down very detailed rules setting out many technical requirements in meticulous detail. However, rules laid down in such detail involve significant disadvantages: they are difficult to put into effect and are likely to prove incapable of keeping pace with technological developments. Consequently, from the mid-1980s, the legislature decided to take a different approach to technical harmonization. The advent of the "new approach", as the new strategy was described, took the form of a resolution adopted by the Council on 7 May 1985. (EC, Council Resolution of 7 May 1985 on a new approach to technical harmonization and standards, 1985) That document sets out the two essential elements of the new approach:

a) legislative harmonization covering only the essential requirements and
b) the harmonized (technical) standards playing a central role.

Under the 'new approach', the harmonization of legislation is confined to the 'essential requirements' of products, which are set out in detail in a series of sectoral directives. The fact that a particular product bears the CE marking is a sign that it satisfies those essential requirements. In general, responsibility for attesting compliance with the essential requirements lies with the manufacturer. Products that meet the "harmonized standards" are presumed to conform to the essential requirements. The harmonized standards are technical standards that are drawn up, at the national and European Union level, by the bodies responsible for industrial standardization. Compliance with the harmonized standards is not mandatory but strongly encouraged by the legislature, specifically using the presumption of conformity. A manufacturer can demonstrate that the essential requirements have been met without adhering to the harmonized standards; in most cases, however, this is an unnecessary complication. In practice, products are usually manufactured following the harmonized standards.

2 EVOLUTION OF MEDICAL DEVICES REGULATIONS

The EU legislative framework on medical devices consists of three current Directives (EC, Directives, 1990, 1993, 1998) and two new Regulations (EC, Overview, 2021):

- Directive 90/385/EEC on active implantable medical devices (EU Directive, Council Directive of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices (90/385/EEC), 1990) (AIMDD), applicable from 1 January 1993 until 25 May 2021.
- Directive 93/42/EEC on medical devices (MDD) (EU Directive, 1993), applicable from 1 January 1995 until 25 May 2021. Directive 98/79/EC on in vitro diagnostic medical devices (IVDMDD) (Directive 98/79/EC, 1998), applicable from 7 June 2000 until 25 May 2022.
- Regulation (EU) 2017/745 on medical devices (MDR) (Regulation 2017/745, 2017), fully applicable from 26 May 2021.
- Regulation (EU) 2017/746 on in vitro diagnostic medical devices (IVDR) (Regulation 2017/746, 2017), fully applicable from 26 May 2022.

Directive 93/42/EEC on medical devices (MDD) (Directive 93/42/EEC, 1993), applicable from 1 January 1995 was first to provide exhaustive definition of the medical device, The following definition of 'medical device' is set out in Article 1(2)(a) of Directive 93/42: 'any instrument, apparatus, appliance, software, material or other article, whether used alone or in combination, including the software intended by its manufacturer to be used specifically for diagnostic and/or therapeutic purposes and necessary for its proper application, intended by the manufacturer to be used for human beings for the purpose of: diagnosis, prevention, monitoring, treatment or alleviation of disease, diagnosis, monitoring, treatment, alleviation of or compensation for an injury or handicap, investigation, replacement or modification of the anatomy or of a physiological process, control of conception and which does not achieve its principal intended action in or on the human body by pharmacological, immunological or metabolic means, but which may be assisted in its function by such means ...'[1] It is worth noting that the above definition made the intention of the producer to use a certain device for the medical purpose a fundamental element of classification. Article 2 of Directive 93/42, entitled 'Placing on the market and putting into service', makes it clear that products covered by the definition under Article 1(2)(a) may be placed on the market only if they comply with the requirements laid down in that directive. According to Article 3 of Directive 93/42, this means, in essence, that the products must meet the "essential requirements" set out in Annex I. Article 5 of Directive 93/42, entitled "Reference to standards", lays down in the following terms the principle of the presumption of compliance in respect of products which meet the harmonized standards: 'The Member States shall presume compliance with the essential requirements referred to in Article 3 in respect of devices which conform with the relevant national standards adopted according to the harmonized standards the references of which have been published in the Official Journal of the European Communities; ...' Lastly, Article 17 of Directive 93/42 provides that all products which meet the essential requirements must bear the CE marking of conformity.

Beginning with its very title, Directive 93/42 refers to 'medical' devices. This is a clear indication of the background against which the legislature drafted the rules: the idea was to define a reference framework capable of adequately protecting persons who, whether actively or passively, come into contact with the products in a medical setting. Accordingly, it does not appear to be consistent with that basic idea, which informs the directive throughout, to bring within the scope of the directive products which are intended never to be used in a medical context. That is the position with a device like 'ActiveTwo': it is not used by the medical profession (or, at least, not by doctors in connection with the diagnosis and treatment of illness), and it is never used on patients but volunteers (participants in clinical trials). Directive 93/42 accorded a crucial role to the manufacturer's intended use of the product and that element must be always taken into account in interpreting the provisions of this Directive.

Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices amended Directive 2001/83/EC, Regulation (EC) No 178/2002, and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC. Given regulation is intended to lay down rules concerning the placing on the market, making available on the market or putting into service of medical devices for human use and accessories for such devices in the Union, it applies also to clinical investigations concerning such medical devices and accessories conducted in the Union. The New Regulations has a hard deadline for certifications and manufacturers cannot launch their product without certification, hence manufacturers must meet the new regulations within the given time frame. The change in regulation brings a disturbance to the medical device industry. The manufacturers must make strategic decisions to streamline their innovation pipeline and R&D processes in response to the increased cost of compliance and longer product certification time, so it is essential to conduct the SWOT analysis to evaluate the effect of new regulations. (Padmasri, Majety, Katru, Prakash Veluchuri, & Kumar Reddy Juturi, 2021, p. 1) An element of clarification is needed here, however. Even if the information provided by the manufacturer is the key factor in determining whether a product is intended to be used for a medical purpose, any product that, by its very nature, is intended to be used solely for a purpose of a medical nature will have to be regarded as a medical device, even if the manufacturer does not describe it as such. In any event, that proviso,

[1] Article 1(2)(a) of Directive 93/42.

which is designed to prevent abuse, ought not to be needed in most cases, since – including for obvious reasons of professional liability – the consistent practice of medical structures is to purchase only products which have been certified under the directive.

Where market surveillance authorities conclude that a product may not be placed on the market since it does not comply with the Union law applicable to it, they shall take measures to prohibit the placing of the product on the market and shall require the authorities designated under Article 25(1) not to release it for free circulation. Market surveillance authorities shall immediately enter that information into the information and communication system referred to in Article 34. (Regulation 2019/1020, 2019, p. Article 28 [2]) The MDR regulation has put the responsibility for Union harmonization legislation on the Member States, making their market surveillance authorities responsible for ensuring that the legislation fully complies with the regulation itself. The Member States were therefore obliged to establish systematic approaches to ensure the effectiveness of market surveillance and other enforcement activities. (Regulation 2019/1020, 2019, p. 9) According to the above-mentioned provisions the Act of 18 March 2011 on the Office for Registration of Medicinal Products, Medical Devices, and Biocidal Products came into force. According to the art.2 ust.1 pkt.5 of the given Act the President of Registration of Products of the Office, Medical Devices and Biocidal Products, hereinafter referred to as the 'Office of the Office', is an organ of governmental administration in matters related to i.a. medical devices within the scope of Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223 / 2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (Official Journal EU L 117 of 05.05.2017, p. 1), hereinafter referred to as 'Regulation 2017/745'. (Act, 2011) Manufacturers' declaration of conformity of their devices with European rules and regulations and affixing of the CE mark (Communauté europeénne) (art. 10 and 20 MDR). CE marked products can then be placed on the EU / EEA market (MDR Articles 2 and 10). The affixing of the CE marking to a product is only legal after a conformity assessment has been carried out (Art. 20 MDR). Depending on the class of the equipment, a Notified Body must be involved in this process (Introduction [60] and MDR Art. 52-53). For some highly critical or novel products, additional testing by so-called 'expert teams' (Introduction [56] and Article 106 of the MDR) is mandatory.

3 THE ROLE OF MEMBER STATES ADMINISTRATION BODIES IN THE CLASSIFICATION OF EQUIPMENT INTRODUCED INTO THE EUROPEAN UNION MARKET

Regulation (EU) No 952/2013 of the European Parliament and of the Council of 9 October 2013 laying down the Union Customs Code The completion of the internal market, the reduction of barriers to international trade and investment, and the reinforced need to ensure security and safety at the external borders of the Union have transformed the role of customs authorities giving them a leading role within the supply chain and, in their monitoring and management of international trade, making them a catalyst to the competitiveness of countries and companies. The customs legislation should therefore reflect the new economic reality and the new role and mission of customs authorities. The importance of public administration bodies in ensuring the effectiveness of EU law in a Member State is usually marginalized in the science of law. (Poltorak, 2014) (Luczak, 2012) (Krawiec, 2009) Their role in the application of Community law, especially in the context of customs trading and the qualification of devices introduced into the territory of the European Union is primary and fundamental from the point of view of members of the economic trade. The EU model for the application of EU law, under which the public administration of the Member States performs the function of administration in a double role, i.e., also as the local EU administration. (Koszowski, 2014)

By assigning the above-mentioned powers to the administrative authorities of the Member States, the EU legislator assumed that thanks to the harmonization of customs and medical legislation, it will be possible to uniformly apply Community law, inter alia, in the area under consideration relating to medical devices. A consequence of the functioning of public administration bodies of an

EU Member State in such a system is a change in the pattern of conduct, conditioned by the principle of effectiveness, which, in the light of the CJEU jurisprudence, is the basic mechanism for ensuring the effectiveness of EU law. It is indicated that at present this principle is included in the primary EU law – in the first place in Art. 197 paragraph 1 TFEU (EU, 2004), according to which 'the effective implementation of Union law by the Member States, which is essential for the proper functioning of the Union, is regarded as a matter of common interest.'' (Sadl, 2015)

The principle of effectiveness, which, in the opinion of the CJEU, expresses the basic model of the relationship between EU law and the law of the Member States, and is combined with the principle of sincere cooperation (Article 4 (3) TEU.) (EU, 2004, p. item 864), it is not a mechanism specific to the EU. Its presence is also indicated in international public law. (Mayr, 2012) (Szpak, 2008) It is difficult to assess the nature of the principle of effectiveness. Among other things, it is indicated that this is an 'idea' above the general principles of EU law (Adamczak-Retecka, 2007) or the 'meta-principle' of the interpretation of EU law: '[...] a guideline that is not in itself a method of interpretation'. (Mayr, 2012, p. 16) The principle of effectiveness as a 'meta-principle' is implemented by 'means', and 'mechanisms', which are sometimes called 'principles for the application of EU law'. This concept is sometimes understood differently. For example, M. Niedzwiedz proposes a broad approach to it, pointing out that the principles of applying EU law in the national legal order define the limits of the interference of EU law in the process of applying this law in the national legal order (the principle of institutional autonomy, the principle of procedural autonomy, general principles of EU law, fundamental rights as guaranteed in the EU Charter of Fundamental Rights) (Niedzwiedz, 2014).

On the other hand, a narrower understanding of the concept of 'principles for applying EU law' relates directly to the problem of the conflict of norms and includes the following principles: the principle of primacy of EU law over the national law of a Member State and the principle of direct application of EU law, the principle of direct effect, an effective interpretation (compatible, pro-EU) principle of the liability of a Member State for breach of EU law. (Majkowska-Szulc, 2007, pp. 25–28)

Effective interpretation and the principle of the direct effect of EU law pay attention to the pragmatic dimension of the principle of effectiveness, as they aim to maximize the chances of an individual to obtain real legal protection under EU law against the authorities of a Member State at the earliest possible stage of the process of applying EU law in that country.[2] Due to the legal nature of the directive as a source of EU law, this need was particularly intense in the context of the issue of its transposition into the national order. The obligation to make an effective interpretation rest with all authorities of the Member State applying the law, irrespective of the initiative of the individual concerned. For this reason, from the point of view of an entity wishing to obtain benefits resulting from EU law, the mechanism reflected in the principle of direct effect is more attractive mainly because it entrusts the interested party with an independent initiative to seek legal protection of its interests. In this situation, meeting the requirements of the so-called 'Test of direct effect' by this entity is bound by the authority applying the law, obliging it to determine the legal situation of this individual entity based on the indicated norm of EU law.

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[2] See judgment of the Court of 5 February 1963 in case 26/62 NV Algemene Transporten Expeditie Onderneming van Gend & Loos against Nederlandse administratie der belastingen, ECLI: ECLI:EU:C:1963:1; judgment of the Court of 4 December 1974 in case 41/74 Yvonne van Duyn against Home Office, ECLI: ECLI:EU:C:1974:133; judgment of the Court of 5 April 1979 in case 148/78 Criminal proceedings against Tullio Ratti, ECLI: ECLI:EU:C:1979:110; judgment of the Court of 19 January 1982 in case 8/81 Ursula Becker against Finanzamt Münster-Innenstadt, ECLI: ECLI:EU:C:1982:7; the judgment of the Tribunal of 10 April 1984 in case 14/83 Sabine von Colson and Elisabeth Kamann against Land Nordrhein-Westfalen, ECLI: ECLI:EU:C:1984:153; judgment of the Court of 22 June 1989 in case 103/88 Fratelli Costanzo SpA against Comune di Milano, ECLI: ECLI:EU:C:1989:256.

4 PRACTICAL PROBLEMS OF THE APPLICATION OF COMMUNITY LAW IN THE FIELD OF EQUIPMENT QUALIFICATION

Article 1 (2) 2 of Regulation 765/2008[3] states that the EU market surveillance framework will ensure "[...] high requirements for the protection of public interests such as general health and safety, health and safety at work, consumer protection, environmental protection, and public safety". This target must be met for all products available on the EU market, irrespective of whether they are produced in the EU or a third country. This regulation therefore also creates a framework for the control of products from third countries. The most effective way to prevent dangerous placing on the market[4]or non-conforming imported products are subject to appropriate checks before release for free circulation. This requires the involvement of the customs authorities, which are the only services with a complete picture of trade flows across the EU's external border. In addition, there is a need for uniform enforcement of EU rules on safety and compliance checks. This goal can be achieved through systematic cooperation between market surveillance authorities[5] and customs authorities. This cooperation will provide equal protection for EU citizens as goods, once released for free circulation, can move freely within the single market. To facilitate the implementation of Regulation (EC) No 765/2008, the Commission, together with the Member States, has drawn up guidelines for the use of customs and to develop cooperation between customs and market surveillance authorities. It should be emphasized, however, that these guidelines are not legally binding but serve to provide general recommendations and best practices.

The guidelines mainly deal with the situation where customs are "authorities responsible for external border controls" and must cooperate with national market surveillance authorities. This requires the development of a common approach to customs controls about product safety requirements and the achievement of good and close administrative cooperation and effective communication between customs and market surveillance authorities.

Attempts at non-normative shaping of the practice of customs authorities undertaken by the European Commission and the Member States may objectively have only a partial effect and may not result in the unification of the activities of authorities in different countries and even offices within the same Member State. At this point, one should focus on one of the basic customs procedures, which is the release of goods for free circulation. Under this procedure, the customs authority is entitled to ask one of the national control authorities for an opinion on the matter, also on the medical device. Referring to the above to the import of medical devices, it should be emphasized that when a manufacturer declares a medical product in a specific class, the cooperation of organs, due to the need to seek specialist knowledge, is even necessary. It is so surprising and worrying the phenomenon of increasingly wider questioning by customs authorities of the non-medical nature of devices [sic!], Which is most often the result of the safeguarding approach of the authorities, but also the treatment of some devices based on analogy. This phenomenon is best illustrated by the example of hyperbaric chambers increasingly imported to the customs territory of the European Union, which, depending on the intended use (intended by the manufacturer of the device), may be of a medical as well as non-medical (commercial) nature. Unfortunately, however, these are not isolated cases when the authorities, contrary to the manufacturer's declaration of conformity stating the non-medical purpose of the device and supporting documentation, try to assign this type of device a medical value and condition the approval of the device on the market by supplementing the deficiencies in formal declarations in terms of medical care and presenting relevant documentation. Such an action has no basis on the basis. of

[3] See Journal of Laws 2008, p. 30.

[4] See art. 2 lit. b) Directive 95/2001.

[5] List of national market surveillance authorities communicated to the Commission by the Member States under Art. 17 of Regulation (EC) No 765/2008 is available at the following link: http://ec.europa.eu/enterprise/policies/single-market-goods/regulatory-policies-common-rules-for- products / index_en.htm

Community law and has found its bright expression, among others, in the Opinion of the Department of Supervision and Clinical Research of Medical Devices of the Office for Registration of Medical Devices and Biocidal Products of November 3, 2021, No. DNB.070.683.2021.1.KP, on the compliance of the product with the essential requirements. This opinion, referring to the device (non-medical hyperbaric chamber) imported from Turkey to Poland, qualified the device as a medical device, contrary to the declarations of the manufacturer and importer, and therefore indicated that it did not meet the essential requirements for such devices. Such qualification of the device poses a serious procedural and financial problem for the importer, because due to the formally non-binding nature of the opinion (although cases of the customs authority acting against such an opinion are extremely rare), the only remedy in the hands of the importer is to request the authority to correct its opinion. based on the submitted evidence and explanations by the importer, it should be emphasized that in this case there are no deadlines binding the supervisory authority to respond to such a request or any regulations obliging it to respond to such a request. In the case of the above-mentioned opinion, following two requests from the importer, the supervisory authority issued a new opinion on December 13, 2021, in which it stated that the device is not a medical device, and therefore the authority itself is not competent to meet the essential requirements for the device. the soil of non-medical directives indicated by the manufacturer in the declaration of conformity namely: 2006/42/EC of 17 May 2006 Machinery Safety Directive.

Due to the protracted nature of the described state of suspension, i.e., two months, the agreement for exclusive distribution in the European Union did not come into effect, and the contract fell to a Spanish company, which did not experience similar problems with similar documentation and qualifications of the manufacturer.

5 CONCLUSIONS

The development of European law over the last decades can be described as the constant approximation of national law toward the European model. (Kowalik-Banczyk, 2013, pp. 283–307) The principle of organizational and procedural autonomy gives the Member States freedom to define the rules and procedures for implementing European law. In addition, European legislation does not provide for regulations the subject of which would be to define the principles of the functioning of the national administration. Consequently, the Member States have wide independence in determining the mechanisms and rules for the application of European law, which may pose a risk of inconsistency and weakened effectiveness. (Wrobel, 2005) Despite the definition by the European Commission and the OECD of the general principles of the functioning of the national administration and the definition of the EPA as an area of constant convergence between the administrative law systems of the Member States, which indicated the need to approximate national solutions not only in the area of law-making but also at the level of its application, it has become clear that the goal of ensuring the uniformity and full effectiveness of EU law will not be achieved solely by harmonizing or unifying the provisions of substantive law. The implementation of solutions allowing for the elimination of national particularisms at the level of implementation and application of EU law is a necessity. (Torma, 2011)

When assessing the current MDR regulation in the context of the above-mentioned practical problems related to the uneven application of EU law in the field of qualifying devices as medical, it seems reasonable to formulate de lege ferenda conclusions relating to securing members of the economic trade (both the importer and the exporter) of the sensitive goods at the time of customs clearance, i.e., the correct classification of the goods in terms of its medical condition. The responsibility of the authorities accountable for admitting imported equipment to the market in the European Union in many cases generates an overly cautious attitude in terms of the interpretation and application of the law. Consequently, not only is the principle of uniform application of the law eroded in practice, but also the right to good administration. In the author's opinion, the solution to the described problems may be entrusting classification competencies to a central regulatory body similar in nature to EMA. Leaving the rules for the organization of national administrations and the procedures for applying

European law to the exclusive competence of the Member States may lead to the escalation of dangerous precedents. Creating closer networks and systems of links between national administrative authorities and European institutions, one element of which would be the proposed central regulatory authority, could very likely positively affect the uniform application of law within the single market and thus strengthen the principle of legal certainty, which is fundamental to trade business with third countries.

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Received for publication:	03.04.2022
Revision received:	11.04.2022
Accepted for publication:	26.06.2022

How to cite this article?

Style – **APA** *Sixth Edition:*

Zylka, B. (2022, 07 15). The issue of uniform application of provisions on medical devices in the EU on - Case Poland. (Z. Cekerevac, Ed.) *MEST Journal, 10*(2), 225-234. doi:10.12709/mest.10.10.02.22

Style – **Chicago** *Sixteenth Edition:*

Zylka, Bartlomiej. "The issue of uniform application of provisions on medical devices in the EU on - Case Poland." Edited by Zoran Cekerevac. *MEST Journal* (MESTE) 10, no. 2 (07 2022): 225-234.

Style – **GOST** *Name Sort:*

Zylka Bartlomiej The issue of uniform application of provisions on medical devices in the EU on - Case Poland [Journal] // MEST Journal / ed. Cekerevac Zoran. - Belgrade – Toronto : MESTE, 07 15, 2022. - 2 : Vol. 10. - pp. 225-234.

Style – **Harvard** *Anglia:*

Zylka, B., 2022. The issue of uniform application of provisions on medical devices in the EU on - Case Poland. *MEST Journal,* 15 07, 10(2), pp. 225-234.

Style – **ISO 690** *Numerical Reference:*

The issue of uniform application of provisions on medical devices in the EU on - Case Poland. **Zylka, Bartlomiej.** [ed.] Zoran Cekerevac. 2, Belgrade – Toronto : MESTE, 07 15, 2022, MEST Journal, Vol. 10, pp. 225-234.

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ISSN 2334-7058 (Online)
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