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ACHIEVING SENSING AGILITY THROUGH THE INTEGRATION OF COMPETITOR AND MARKET INTELLIGENCE

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Abstract

This study aims to determine the impact of the integration between market and competitor intelligence on achieving sensing agility in 30 Enterprises within the food industry in the towns of Annaba, Skikda, and El-Tarf (Algeria). This was conducted using a triangulation approach that combines qualitative data analysis from a guided interview protocol with four executives (analyzed using NVivo v14), and quantitative survey data analysis collected from 120 executives (analyzed using SPSS v25). The study reached a few findings, the most important of which is that there is no significant effect of competitor intelligence on achieving sensing agility in the presence of market intelligence for the Enterprises under study. Based on this result, the study recommends that food industry Enterprises gather comprehensive information about competitors and changes in the competitive environment from multiple sources, considering that information is the foundational element that determines the success or failure of both competitor intelligence and market intelligence processes.

Keywords: *Market Intelligence, Competitor Intelligence, Sensing Agility, Business Strategy, Competitive Analysis.*

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1 INTRODUCTION

In the modern world, information has become a foundational pillar for achieving success and competitive superiority, especially in the era of

globalization, increased openness to the external world, advancements in communication technologies, and the expansion of internet networks that have diminished distances and facilitated customer access to virtually any product. In this context, enterprises that possess more accurate and comprehensive information about markets, competitors, technologies, resources, and other components of the business environment are in a better position to seize emerging opportunities and mitigate potential threats.

As a result, enterprises have increasingly adopted methods and tools that enable systematic and ethical intelligence gathering regarding their environment, particularly its competitive aspects. This process requires accurately identifying reliable sources to obtain relevant information and effectively analyzing all elements shaping the competitive landscape.

Among the most prominent of these tools are market intelligence and competitor intelligence, which allow enterprises to be aware of changes in their competitive business landscape. These tools provide valuable insights into evolving customer needs and shifts in the competitive structure, thereby enabling enterprises to recognize, understand, and respond swiftly to emerging opportunities and threats.

Algerian enterprises are no exception to these global trends. They face similar challenges and disruptions, which may pose risks or create new growth opportunities, largely influenced by their competitive environments. In this regard, Enterprises operating in the Algerian food industry cannot afford to remain detached from the changes around them. They must develop a high degree of *sensing agility* to detect and respond to environmental changes that may create opportunities or threats. Achieving this level of agility necessitates effectively deploying both market intelligence and competitor intelligence.

Attaining this level of agility requires the strategic application of both market and competitor intelligence. Accordingly, this study examines how integrating these intelligence frameworks enhances sensing agility within a sample of food industry enterprises in Annaba, Skikda, and El-Tarf.

2 LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Enterprises today operate in an environment that is volatile, uncertain, and ambiguous, due to several factors, chief among them continuous technological advancements, the ever-evolving behaviors of customers, and the emergence of new competitors. These dynamics increase the risk of losing market share if enterprises are not fully aware of what is happening in their surroundings. As a result, enterprises have turned to methods and practices that provide them with accurate and reliable information regarding all aspects of their business environment, particularly about competitors and customers, to utilize such information in shaping their strategic and operational plans, making informed decisions, and executing actions swiftly.

2.1 Practices for Understanding Competitors and the Market

2.1.1 Competitor Intelligence

Enterprise is facing increasing challenges due to intense competition from rival enterprises, which, as pointed out by Mirkhan, Alsamarai, and Abdullah (2017, p. 102), are those entities that offer the same or similar products or services, whether currently or in the future, as well as those offering substitutes. This makes it essential to monitor these entities using competitor intelligence and focus on competitors, their capabilities, current activities, plans, intentions, and more.

Deschamps and Nayak (1995) emphasized that competitor intelligence involves tracking all changes in competitor structure, including the emergence of new product alternatives and new entrants into the industry, as well as analyzing the strategies and services of current and potential competitors (Tahmasebifard, 2018). Additionally, Zajac and Bazerman (1991) indicated that competitor intelligence centers around analyzing competitive behavior and direct rivalry, where the organization identifies a competitor as an adversary, monitors its actions, and takes reactive measures, either offensively or defensively, based on anticipated responses. These expectations are derived from available information regarding the competitor's objectives (understanding them helps

in predicting reactions to competitive moves), assumptions (which provide insight into future activities), and capabilities (knowledge of which reflects their strengths and weaknesses).

This leads to the conclusion that competitor intelligence assists the organization in understanding its position relative to key competitors in the competitive environment. In other words, it offers a clear understanding of the organization's strengths and weaknesses and those of its competitors, enabling the firm to identify a unique, untapped position that can lead to superior performance. Moreover, such intelligence empowers the organization to differentiate the value it offers to customers compared to that of its rivals, owing to the extensive knowledge it holds about them.

Based on the above, competitor intelligence can be defined as the ongoing process of gathering, analyzing, and disseminating information about competitors to provide a comprehensive understanding of their structure, culture, behavior, capabilities, and potential future strategies.

2.1.2 Market Intelligence

A limited understanding of the market's needs and requirements poses a significant risk to an organization's success. To mitigate this, organizations must leverage intelligence practices, particularly market intelligence, to gain deeper insights and make informed decisions. Deschamps and Nayak defined market intelligence as "a collection of information that outlines the organization's roadmap for current and future customer needs, preferences, new markets, retail opportunities, and major shifts in marketing and distribution" (Tahmasebifard, 2018). Additionally, Maltz and Kohil defined it as "a set of actions designed to obtain information about changes in the market environment to successfully implement the organization's marketing activities" (Jasim, Sulaiman, Zakuan, 2020). This implies that market intelligence enhances the organization's understanding of the market landscape, contributing to its success and competitive advantage. It has been noted that generating and disseminating market information creates a competitive edge, adds value for customers, and leads to improvements in sales, profitability growth, market share, success in new product launches, customer satisfaction, and return on investment, especially compared to enterprise that do not adopt market intelligence (Narver & Slater, 1990). McGrath and Romeri further argued that it allows for the reduction of marketing expenses, which significantly contributes to the organization's overall profit and performance.

Ciappei and Simoni stated that market intelligence supports marketing processes by providing accurate and reliable information on the changing needs and desires of current and potential customers. In the same context, Zhou, Brown, and Dev emphasized that market intelligence enables an organization to anticipate and quickly respond to its customers' evolving needs, as well as to offer an attractive marketing mix. Additionally, Waren, Souder, and Berkowitz noted that market intelligence is the most crucial element in achieving success in new product development, as it addresses customer needs (Tahmasebifard, 2018). In this regard, Narver and Slater mentioned that relying on knowledge derived from customer needs and preferences, market trends, and shifts in consumption patterns enables the enterprise to create products that cater to the target market's needs, leading to superior market performance (Narver & Slater, 1990).

From the above, the objectives of market intelligence can be summarized in the following points:

- A deep understanding of customer behavior, needs, and preferences.
- Creating value for customers.
- Identifying new opportunities and sources of competitive advantage.
- Developing effective marketing and business strategies.
- Enhancing the organization's performance and increasing its competitiveness in the market.

Thus, it can be concluded that competitive intelligence is continuously collecting, analyzing, and disseminating information about competitors, providing a comprehensive understanding of their structure, culture, behavior, capabilities, and potential plans. On the other hand, market intelligence involves the collection and analysis of various customer-related information, which is then used to make decisions that effectively address their needs.

2.2 Definition of Sensing Agility

Sensing refers to an organization's ability to perceive changes and developments in the external environment (Tsilionis & Wautelet, 2022). Similarly, it has been noted that sensing reflects the extent to which an organization can detect rapid shifts in its external environment, as well as swiftly changing customer needs (Chi, Ravichandran, & Andrevski, 2010). Within this context, strategic sensitivity is considered an integral part of the sensing process. It denotes the organization's ability to identify and comprehend changes occurring both internally and externally (Al-Fatlawi, Al-Karaawi, & Al-Rafei, 2019), Moreover, it also refers to the organization's awareness of its strategic direction and its understanding of the pathway through which it can realize its vision, mission, and strategic objectives, primarily by recognizing timely opportunities and responding more swiftly than competitors (Al-Tameemi & Abd-Alghafur, 2020).

Strategic sensitivity involves an open strategic process that enhances an organization's responsiveness to diverse viewpoints and modes of thinking. It therefore relies on active collaboration with internal and external stakeholders, including suppliers, customers, and even competitors, when identifying and shaping strategy. High strategic vigilance enhances an organization's ability to frame and reformulate strategic questions in a novel and comprehensive manner. Achieving this requires expanding the diversity of thought within the organization by guiding cognitive processes toward a broader conceptual horizon. Additionally, fostering high-quality internal dialogue strengthens the organization's ability to convert individual insights and perspectives into a shared strategic vision. As a result, collective decision-making becomes more aligned and effective. (Alyasiry, Al-Hasnawi, & Al-Shammari, 2020)

Accordingly, the components of strategic sensitivity elevate sensing agility by enabling the early and rapid detection of new opportunities, faster than competitors, and by facilitating proactive action. This includes the creation of hypotheses about future impacts, events, and observable market trends, and testing these hypotheses to pave new paths for products, services, and business models (Geiger, 2020). Ultimately, sensing empowers the generation of a combination of novel ideas, enabling the organization to develop innovative products that create value for both it and its customers (Ahammad, Basu, Munjal, Clegg, & Shoham, 2021).

2.3 Sensing Agility Via Competitor and Market Intelligence

Sensing agility reflects an organization's ability to perceive and detect opportunities and threats arising from changes and developments in its surrounding environment (Al-Raei, 2023). To sense such opportunities and threats effectively, the organization must have timely access to relevant information regarding all environmental changes, whether related to competitors, the market, technology, potential business relationships, and beyond.

This was emphasized in the study by Rimvydas and Justina (2020, p. 19), which defined sensing as involving the vast amount of information collection from various sources regarding environmental changes, followed by its analysis and transformation into actionable insights. This suggests that competitive and market intelligence is crucial in enabling sensing agility.

Numerous studies have highlighted this relationship, including two key contributions. The first is by Stenberg and Vu-Thi (2017, p. 09), who indicated that competitive intelligence, as a subset of competitive strategy, is a foundational element for achieving sensing agility regarding opportunities and threats. Competitive intelligence involves gathering all relevant information about competitors, such as their strategies, behaviors, capabilities, investments, products, services, customer base, targeted market segments, objectives, research activities, and the current and potential structure of direct competition. This information is then analyzed and disseminated to senior managers and executives, providing them with a clear understanding of their strategic position regarding key competitors. It also helps strengthen and identify weaknesses within the organization and its rivals, thus enabling the firm to sense current and emerging opportunities and threats effectively.

The second study, by Tahmasebifard (2018, p. 04), demonstrated that market intelligence allows data collection on customer needs, preferences, and shifts in consumption patterns. Analyzing and disseminating this information facilitates the proactive formulation of assumptions regarding current and future market trends and enables the organization to respond swiftly. As such, the insights provided by market intelligence regarding customer-related and market-related changes empower the organization to achieve agility in sensing potential opportunities and threats and to respond to them proactively.

Based on this understanding, the following general hypothesis is proposed:

H_1: The integration of competitive intelligence and market intelligence significantly influences the achievement of sensing agility.

This general hypothesis leads to the following two sub-hypotheses:

H_2: Competitive intelligence influences achieving sensing agility.

H_3: Market intelligence influences achieving sensing agility.

3 STUDY PROCEDURES

3.1 Research Methodology and Sample

This study employed a descriptive and analytical methodology to explore the perceptions and evaluations of executives from a sample of food industry enterprises located in the Algerian towns of Annaba, Skikda, and El-Tarf (see Table 1). The study aimed to assess the impact of competitive intelligence and market intelligence integration on achieving sensing agility. To gather the necessary data, both structured interviews and a questionnaire were utilized.

A structured interview guide consisting of seven questions was developed to investigate this relationship. The interviews were conducted with a purposive sample of four professionals (practitioners) from food industry Enterprises in Annaba and Skikda. These individuals were selected based on their in-depth knowledge and familiarity with competitive intelligence, market intelligence, and sensing agility, regardless of their specific job titles. Each of the four interviewees participated in two separate interviews between January and March 2024: the first to capture their initial responses, and the second to verify the reliability and consistency of their answers (see Table 2).

The questionnaire statements were adapted from validated scales used in previous studies on the research variables, with necessary modifications to suit the context of this study. Additionally, expert opinions were consulted to enhance its validity. The questionnaire employed a five-point Likert scale, with options ranging from "Strongly Agree (5)" to "Strongly Disagree (1)".

Once finalized, the questionnaire was distributed—often accompanied by an interview—to all senior-level executives at the selected Enterprises. This target group was chosen due to their comprehensive awareness of the organization's strategic activities, aligning with the study's focus on competitive intelligence, market intelligence, and sensing agility. Their position allowed them to respond more objectively and accurately than employees in lower-level roles.

However, during the distribution period (from January 30 to April 28, 2024), five Enterprises requested to limit the number of questionnaires distributed within their institutions due to work pressure. These were: Shehrazad Enterprise, Edough Enterprise, Seybouse Enterprise, Midou Pasta Enterprise, and Seybouse Lipid Products Enterprise (LaBelle).

As a result, 261 questionnaires were distributed. Among them, 102 were not returned, primarily due to employees being on leave or declining to respond due to workload. The results revealed that 39 out of 159 returned questionnaires were excluded from analysis due to incomplete or invalid responses, and 120 valid questionnaires were taken for statistical analysis (see Table 3).

Cronbach's Alpha coefficient was calculated to ensure the reliability of the questionnaire. A value of ≥ 0.70 is generally considered statistically acceptable. The results showed that all items met this criterion, with the overall reliability coefficient reaching 0.929, indicating high internal consistency. Tables 1-3 present these findings in detail.

Table 1. Number of Executives in the Sample from Food Industry Enterprises in the Towns of Annaba, Skikda, and El-Tarf

Nu.	Enterprise Name	Towns	Sector of Activity	Enterprise Size	Number of Executives
01	Radtaco Enterprise	Annaba	Pasta Production	Micro	03
02	Mahboubah Enterprise	Annaba		Medium	12
03	Midou Pasta Enterprise	Annaba		Small	06
04	DICOPA Enterprise	Annaba	Coffee	Medium	07
05	Qasr Al-Qahwa Enterprise	Skikda		Small	06
06	Amor Benamor Canning	Skikda	Canned Fruits and Vegetables	Medium	13
07	Lalla El-Atra Canning Enterprise	Annaba		Medium	07
08	Souamaa El Bahdja Canning	Annaba		Medium	07
09	Rashrash Abdelrazak Food Canning (CARA)	El-Tarf		Medium	13
10	Green Grill Manufacturing	Skikda		Medium	08
11	Boukraine Canning Enterprise	Skikda		Medium	11
12	SIPA Canning Enterprise	Annaba		Medium	13
13	Cap de Fer Enterprise	Annaba	Canned Fish	Medium	13
14	Bushra Soft Drinks Enterprise	Annaba	Soft Drinks	Small	05
15	Global Soft Drinks Enterprise	Annaba		Medium	15
16	Yousra Enterprise	Annaba		Micro	03
17	Al-Yaqout Enterprise	Annaba	Flour Milling	Medium	12
18	Seybouse Enterprise	Annaba		Medium	25
19	Blue Coast Enterprise	El-Tarf		Small	10
20	Baladi Enterprise	Annaba		Small	12
21	Russicada Enterprise	Skikda		Small	05
22	Sahli Dairy Enterprise	Annaba	Milk Bags & Cans	Small	10
23	EL-MAIDA Milk Enterprise	Annaba		Small	10
24	Afia Milk Enterprise	Annaba		Medium	08
25	Edough Enterprise	Annaba		Medium	33
26	Shehrazad Enterprise	Annaba	Biscuits & Confectionery	Medium	12
27	Saba' Sanabel Biscuit Enterprise	Annaba		Small	03
28	Quedubon Enterprise	Annaba		Micro	02
29	Al-Hilaliyat Enterprise	Annaba		Micro	02
30	Seybouse Lipid Products (LaBelle)	Annaba	Oil	Medium	11

Source: Prepared by the researchers based on data from the Enterprises under study

Table 2. Interview Information Sheet with Executives from Enterprises under Study

Enterprise	Position	Years of Experience	First Interview		Second Interview	
			Date	Duration	Date	Duration
Global Soft Drinks Enterprise	Commercial Manager	21 years	22/01/2024	1.5 h	26/02/2024	1 h
Green Grill Manufacturing	Commercial Manager	32 years	03/03/2024	1.5 h	11/03/2024	1 h
Qasr Al-Qahwa Enterprise	Commercial Manager	20 years	29/01/2024	1 h	31/01/2024	45 min
EL-MAIDA Milk Enterprise	HR Manager	12 years	22/01/2024	45 min	26/02/2024	45 min

Source: Prepared by the researchers based on the results of the field study

Table 3. Distribution of the Study Sample's Executives by Town

Towns / N° of Quest.	Annaba	Skikda	El-Tarf	Total
Total number of executives	231	43	23	297
Distributed questionnaires	195	43	23	261
Unreturned questionnaires	80	10	12	102
Returned questionnaires	115	33	11	159
Excluded questionnaires	39	/	/	39
Valid questionnaires	**76**	**33**	**11**	**120**

Source: Prepared by the researchers based on the field study results

To analyze the study results and test its hypotheses, the researchers relied on several statistical indicators in NVivo v14 and SPSS v25 software. These indicators include arithmetic means, standard deviations, and Pearson correlation coefficient to determine the nature of relationships, as well as simple and multiple regression coefficients to assess the significant impact of the independent variables on the dependent variable.

3.2 Results Analysis

3.2.1 Interview Results Analysis

Using NVivo v14 software, the researchers analyzed the interviews with four executives from the selected Enterprises. This analysis yielded linguistic, thematic, and cognitive mapping approaches.

The linguistic approach revealed a degree of similarity in the responses of the practitioners (interviewees), as measured by the Pearson correlation coefficient. The results indicated that all four Enterprises rely solely on sales consultants as a source of customer-related information. When it comes to gathering information on current and potential competitors, the Enterprises depend on both customers and sales consultants, except for EL-MAIDA Milk, which does not collect information on competitors.

The practitioners' responses revealed that most enterprises do not actively gather information regarding potential alliances between competitors, nor do they consider forming partnerships with stronger competitors or acquiring weaker ones.

Regarding the analysis and dissemination of collected data, practitioners (1 and 2) confirmed that their respective institutions engage in such processes. However, Qasr Al-Qahwa limits its efforts to analyze competitor product information available on the market and communicate this to decision-makers.

In terms of utilizing the analyzed information to anticipate market changes (related to customers and competitors) and make prompt, adaptive decisions, three of four practitioners confirmed that their institutions effectively leveraged this information.

Table 4 presents the textual similarity coefficients.

Table 4. Pearson Correlation Coefficients for Textual Similarity

Source A (Practitioner)	Source B (Practitioner)	Pearson Correlation Coefficient
Qasr Al-Qahwa (Practitioner 3)	Green Grill Manufacturing (Practitioner 2)	0.70
Green Grill Manufacturing (Practitioner 2)	Global Soft Drinks (Practitioner 1)	0.67
EL-MAIDA Milk (Practitioner 4)	Global Soft Drinks (Practitioner 1)	0.61
Qasr Al-Qahwa (Practitioner 3)	EL-MAIDA Milk (Practitioner 4)	0.60
Qasr Al-Qahwa (Practitioner 3)	Global Soft Drinks (Practitioner 1)	0.60
Green Grill Manufacturing (Practitioner 2)	EL-MAIDA Milk (Practitioner 4)	0.58

Source: Prepared by authors based on the outputs of NVivo v14

As for the objective approach, it determined the coverage rate to identify the question that received the most attention from each respondent (practitioner) and its content. Table 5 illustrates this.

Table 5. Coverage Rate of Interview Questions

Theme (Question)	Coverage Rate (%)				Overall Ranking by Coverage Rate
	Practitioner 1	Practitioner 2	Practitioner 3	Practitioner 4	
Information Gathering	42.96%	39.14%	25.54%	13.84%	1
Information Analysis and Dissemination	7.24%	8.20%	15.24%	5.57%	3
Organizational Adaptability Speed	5.75%	10.67%	12.25%	17.42%	2
Relevance of Analyzed Information to Market Change Detection	10.15%	6.78%	9.40%	8.86%	4
Relevance of Analyzed Information to Decision-Making Agility	9.89%	12.56%	14.72%	11.40%	—
Relevance of Analyzed Information to Operational Agility	11.66%	7.74%	4.46%	3.19%	—
Opinion on the Importance of Information Provided within the Organization	11.35%	13.17%	16.33%	37.78%	—

Source: Prepared by the authors based on the outputs of NVivo v14

It is observed from the table above that:

- *Practitioner 1's response* (from Global Soft Drinks Enterprise) recorded the highest coverage rate (42.96%) for the first question. The practitioner emphasized that the enterprise collects information daily about its customers (both wholesalers and end consumers) and weekly about competitors' activities. The information is gathered by sales consultants operating in all regions where the enterprise distributes its products. Sources include customers, enterprise employees, national trade fairs such as the Algerian Production Fair, and international exhibitions, particularly in Dubai, United Arab Emirates. This information is then communicated to the enterprise's commercial manager via mobile phone, email, or social media platforms, including WhatsApp, Viber, Telegram, and Facebook.
- *Practitioner 4's response* (from El Maida Milk Enterprise) came in third place with a coverage rate of 17.42% for the third question. He detailed that the enterprise's adaptability to market changes is very weak, stating that at times, the enterprise is unable to promote or distribute its products effectively due to the lack of marketing specialists who could help in formulating and implementing a clear marketing strategy. Furthermore, the enterprise's limited financial resources hinder its ability to carry out promotional campaigns for its products.
- *Practitioner 3's response* (from Qasr Al-Qahwa Enterprise) ranked third with a coverage rate of 15.24% for the second question. He elaborated that the enterprise analyzes data related to pricing, competitor product composition, and customer preferences, conducted solely by the commercial manager based on his expertise. However, the enterprise does not analyze external environmental changes, such as technological shifts. The results of these analyses, particularly on competitors' products and customer preferences, are compiled into reports that are then sent directly to decision-makers via email or handed over in person.
- *Practitioner 4's response* (from Global Soft Drinks Enterprise) also ranked fourth with a coverage rate of 10.15% for the fourth

question. In his response, he explained that the enterprise's collected and analyzed data on customers and competitors enabled it to detect potential threats such as changes in customer demand for its products and marketing campaigns conducted by competitors.

Meanwhile, the knowledge mapping approach, which uses illustrative diagrams, links the study's key concepts (competitive intelligence, market intelligence, and sensing agility) with various ideas presented in the four interviews. This approach helps structure mental perceptions and provides a clearer framework for answering interview questions. Figure 1 illustrates this.

Fig 1. Knowledge Map of the Relationship between Competitive Intelligence, Market Intelligence, and Sensing Agility

Source: Authors based on outputs from NVivo v14

It was observed, through the interconnection of statements in the previous figure, that the information collected and analyzed by the Enterprises under study contributed to enabling them to sense changes in customer preferences and requirements (Global Soft Drinks Enterprise), identify an opportunity through customer complaints about constant coffee consumption (Qasr Al-Qahwa Enterprise), and detect threats such as the entry of a new competitor's product (Green Grill Manufacturing Enterprise), or changes in competitors' product pricing and quality (Qasr Al-Qahwa Enterprise and Green Grill Manufacturing Enterprise), as well as successful marketing campaigns carried out by competitors (Global Soft Drinks Enterprise).

As a result of this sensing capability, the Enterprises were able to make quick decisions to exploit opportunities and avoid threats, which in turn led to a rapid adaptation to market changes, as reflected in the following actions:

- Launching a product in a new format tailored to customer preferences (Global Soft Drinks Enterprise).
- Offering a high-quality product (Green Grill Manufacturing Enterprise).
- Introducing a low-caffeine coffee product (Qasr Al-Qahwa Enterprise);
- Developing new pricing schedules in response to changes in competitors' prices (Green Grill Manufacturing Enterprise); and
- Executing more extensive and successful marketing campaigns than competitors, thanks to discounts and prizes (Global Soft Drinks Enterprise).

3.2.2 Questionnaire Results Analysis

This section presents the analysis of the findings by calculating the arithmetic means and standard deviations of the respondents' views on competitive intelligence, market intelligence, and sensing agility. Table 6 summarizes the results.

Table 6. Arithmetic Means and Standard Deviations of Respondents' Opinions on Competitive Intelligence, Market Intelligence, and Sensing Agility

Study Variables	Mean	Standard Deviation	Coefficient of Variation (%)	Overall Tendency
Competitive Intelligence	3.46	0.88	25.43%	High
Market Intelligence	3.77	0.73	19.36%	High
Sensing Agility	3.68	0.58	15.76%	High

Source: Prepared by the researchers based on outputs from SPSS v25

The data presented in the above table indicates that the interviewees' responses (representatives of the institutions under study) demonstrated a strong inclination toward competitiveness and market intelligence. This is evidenced by the mean scores of 3.46 and 3.77, respectively, along with standard deviations of 0.88 and 0.73. The relatively low level of dispersion suggests a high degree of consensus among respondents. These results indicate that the institutions under study actively engage in competitive intelligence practices. They continuously gather information on existing and potential competitors, including how competitors market their products, customer perceptions of those products, key suppliers, targeted geographic areas, and other relevant factors.

This collected information is then analyzed by the commercial officer, drawing upon their expertise in the field. The analysis results are subsequently made available to the decision-maker, either verbally or through reports, particularly when immediate decision-making is required. Otherwise, the information may be stored for future use. However, in the case of competitor-related intelligence, the analyzed data is often communicated directly to the decision-maker without being stored. According to interview findings, storing such information may pose a greater threat than opportunity, hence the preference for immediate action.

Regarding market intelligence, the institutions under study also demonstrate a high level of engagement. They continuously collect information related to customer needs, preferences, buying behavior, and satisfaction levels. Customer satisfaction is typically assessed through repeated and increasing product orders, as reported during interviews. Like competitive intelligence, this information is analyzed by the commercial officer using their professional expertise and then communicated to the decision-maker, either orally or in written reports. Storage of this data occurs only occasionally, primarily when deemed necessary for future use. Given that the customer is the core reason for the institution's existence and sustainability in the market, any information concerning them must be analyzed promptly, and the findings made immediately available to decision makers. This, too, was emphasized in the interview findings.

Regarding sensing agility, the general trend in respondents' answers also reflected a high level of agreement, with a mean score of 3.68 and a standard deviation of 0.58. The institutions under study exhibit the capability and responsiveness to detect changes in customer preferences, recognizing customers as fundamental to their market presence and longevity. Therefore, sensing any change in customer preferences is deemed essential. On the other hand, the institutions appear to place less emphasis on detecting potential strategic alliances formed by competitors. This lack of attention is attributed to a limited awareness of the significance that such coalitions can have in shaping future strategic directions.

3.3 Hypothesis Testing

Multiple regression analysis was employed to test the general hypothesis, which posited that: There is a statistically significant impact of the integration between competitive intelligence and market intelligence on achieving sensing agility at a significance level of $\alpha \leq 0.05$. This analysis was conducted after verifying the adequacy of the multiple regression model, both in terms of econometric and statistical validity. Econometric validation was established by ensuring the following conditions were met:

- *Absence of autocorrelation in residuals:* This was verified using the Durbin-Watson statistic,

which should fall within the acceptable range of [1.77, 2.23]. This interval was determined from the Durbin-Watson table for a sample size of n = 120 and a significance level of 0.05. The lower limit value was $d_1 = 1.69$ and the upper limit value was $d_2 = 1.77$, thus indicating a non-autocorrelation zone of $[d_2, 4 - d_2]$.

- *Absence of multicollinearity among the independent variables*: This was assessed using the Variance Inflation Factor (VIF) and Tolerance statistics. A VIF value exceeding 10 and a Tolerance value of < 0.05 indicate a multicollinearity problem in the regression model.
- *Normality of the residuals*: This was tested using either the Kolmogorov-Smirnov or the Shapiro-Wilk test. The residuals are normally distributed if the significance value of the test is ≥ 0.05.

The results of these diagnostic tests are summarized in Table 7.

Table 7. Model Diagnostic Tests

Dimension	Variance Inflation Factor (VIF)	Tolerance	Durbin-Watson Statistic	Shapiro-Wilk Statistic
Market Intelligence	1.705	0.586	1.731	/
Competitive Intelligence	1.538	0.650		
Residual Series	/	/	/	Sig = 0.000

Source: Prepared by the researchers based on SPSS v25 outputs

Based on Table 7, it is evident that all Variance Inflation Factor (VIF) values were below 10, and all tolerance values exceeded 0.05, indicating the absence of multicollinearity among the independent variables. Moreover, the Durbin-Watson statistics, which equals 1.731, falls within the acceptable range, confirming the assumption of no autocorrelation in the residuals.

Although the Shapiro-Wilk test suggests that the residuals do not follow a normal distribution, most statisticians agree that residuals tend to approximate normality when the sample size exceeds 30 observations and the deviation from normality is not substantial. Therefore, it can be reasonably assumed that the residuals are normally distributed, and the failure to meet the Shapiro-Wilk criteria does not significantly affect the results. This assumption is further supported by Figure 2.

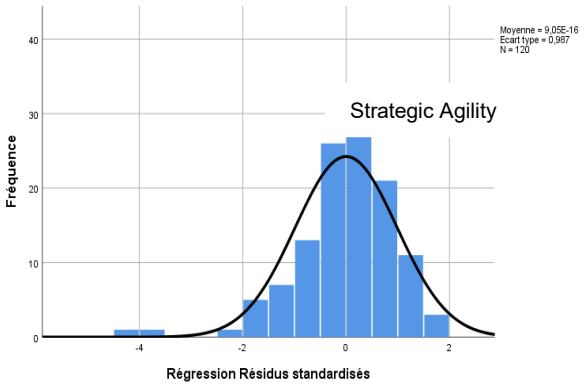

Fig 2. Normal distribution of residuals
Source: Outputs generated using SPSS v25

Statistically, the validity of each parameter in the model was tested using Fisher's F-test, where the calculated F-value must be greater than the critical value from the F-distribution table, or the significance level (Sig.) must be less than or equal to 0.05. The results of this test are presented in Table 8.

Table 8. Statistical Validity Test of the Model

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F-value	Sig.
Regression	8.224	3	2.741	18.590	0.000
Residual	17.105	116	0.147	-	-
Total	25.328	119	-	-	-

Source: Prepared by the researchers based on SPSS v25 outputs

The results presented in Table 8 confirm the statistical validity of the multiple regression model. This is supported by the F-value, which exceeds the critical value, and the significance level (Sig.) of 0.000, which is less than 0.05. This indicates that at least one independent variable has a statistically significant effect on the dependent variable, meaning that at least one parameter

satisfies the significance criterion. The regression results will clarify which specific parameter(s) meet this condition.

After confirming the validity of the multiple regression model, it is now possible to test the effect of the interaction between Competitive Intelligence (X_1) and Market Intelligence (X_2) on achieving Sensing Agility as the dependent variable (Y). The following table presents the results of the multiple regression analysis:

Table 9. Results of Multiple Regression Analysis

Study Variables	Standard Error	B Coefficient	t-value	Sig. (t)	Correlation Coefficient (R)	Coefficient of Determination (R^2)
Constant	0.327	2.442	7.467	0.000	0.312	0.097
Competitive Intelligence	0.077	0.053	0.684	0.496		
Market Intelligence	0.097	0.246	2.532	0.013		

Source: Prepared by the researchers based on SPSS v25 outputs

The results in the table above indicate a weak correlation between Competitive Intelligence, Market Intelligence, and Sensing Agility, with a correlation coefficient (R) of 0.312. The coefficient of determination (R^2) shows that only 9.7% of the variance in Sensing Agility is explained by changes in Competitive Intelligence and Market Intelligence. The remaining 90.3% is attributable to other variables not included in the model.

Moreover, the T-test results show that the significance level of the T-value for Market Intelligence and the constant term is below the accepted threshold of < 0.05, indicating a statistically significant effect. However, the t-value for Competitive Intelligence has a significance level of > 0.05, suggesting that it does not have a statistically significant effect on Sensing Agility in the presence of Market Intelligence.

Accordingly, the main hypothesis (H_1), which posits a significant effect of the Competitive Intelligence and Market Intelligence integration on achieving Sensing Agility in the institutions of interest, is rejected.

Two sub-hypotheses were tested using simple linear regression. Tables 10 and 11 present the validity of the models and the results of the respective tests.

Table 10. Model Validity Test for the Two Sub-Hypotheses

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F-Value	Significance Level (Sig)
Sub-Hypothesis 1 (H_2)					
Regression	2.638	1	2.638	5.926	0.016
Residuals	52.529	118	0.445		
Total	55.167	119	/	/	/
Sub-Hypothesis 2 (H_3)					
Regression	5.168	1	5.168	12.196	0.001
Residuals	49.999	118	0.424		
Total	55.167	119	/	/	/

Source: Prepared by the researchers based on SPSS v25 outputs

From the above table, it is evident that the calculated F-values exceed their corresponding critical values. This is further supported by the significance values (Sig), which are less than the threshold of 0.05. These results confirm the validity of the model for testing both sub-hypotheses, which state: *"There is a statistically significant effect of both competitor intelligence and market intelligence on achieving sensing agility at a significance level of ($\alpha \leq 0.05$)".*
Table 11 presents the results of the simple linear regression analysis.

Table 11. Simple Linear Regression Results for the Two Sub-Hypotheses

Study Variables	Standard Error	B Coefficient	T-value	T-Significance	Correlation Coefficient (R)	Coefficient of Determination (R^2)
Sub-Hypothesis 1 (H_2)						
Constant	0.446	2.517	5.646	0.000	0.219	0.048
Competitor Intelligence	0.122	0.298	2.434	0.016		
Sub-Hypothesis 2 (H_3)						
Constant	0.346	2.683	7.748	0.000	0.306	0.094
Market Intelligence	0.095	0.332	3.492	0.001		

Source: Prepared by the researchers based on SPSS $_{v25}$ outputs

Based on Table 11, we can conclude:

- *Regarding Sub-Hypothesis 1 (H_2)*: There is a weak correlation between competitor intelligence and sensing agility, with a correlation coefficient of 0.219. Furthermore, 4.8% of the variation in sensing agility is explained by changes in competitor intelligence, while the remaining 95.2% is attributed to other variables not included in the model. The t-test significance level was less than the adopted threshold of 0.05, indicating a weak but statistically significant effect of competitor intelligence on sensing agility.
- *Regarding Sub-Hypothesis 2 (H_3):* Similarly, there is a weak correlation between market intelligence and sensing agility, with a correlation coefficient of 0.306. Approximately 9.4% of the variation in sensing agility is explained by market intelligence, while the remaining 90.6% is attributed to other excluded variables. The t-value significance was also below the 0.05 threshold, indicating a weak but statistically significant effect of market intelligence on sensing agility.

Based on the above findings, the following sub-hypotheses, tested using simple linear regression, are accepted:

- *Sub-Hypothesis 1 (H_2): There is a statistically significant effect of competitor intelligence on achieving sensing agility in the enterprise under study at a significance level of ($\alpha \leq 0.05$).*
- *Sub-Hypothesis 2 (H_3): There is a statistically significant effect of market intelligence on achieving sensing agility in the enterprise under study at a level of significance of ($\alpha \leq 0.05$).*

On the other hand, the main hypothesis (H_1), that there is a statistically significant effect of the integration between competitor intelligence and market intelligence on achieving sensing agility in the enterprise under study at a significance level of ($\alpha \leq 0.05$), was rejected based on the results of the multiple regression analysis. The analysis revealed that competitor intelligence had no statistically significant effect on sensing agility when market intelligence was also included in the model.

This result can be explained by two main reasons:

- *From a statistical perspective*, the effect of competitor intelligence on sensing agility was weak, as shown by the low coefficient of determination (R^2) in the sub-hypothesis tests. Therefore, when its effect was assessed in the presence of market intelligence, it was not statistically significant. Generally, the weaker the effect, the higher the significance level (Sig).
- *From the interview* findings, the enterprise under study implements competitor intelligence in a broad but incomplete manner. While they collect, analyze, and disseminate data related to competitors' pricing and product composition, they tend to neglect other important aspects of competitor behavior. As a result, competitor intelligence did not have a significant effect on sensing agility when market intelligence was considered. On the contrary, market intelligence (collection, analysis, and

dissemination) was applied more rigorously, as the enterprise perceived customers as the cornerstone of their existence and sustainability. This drives them to gather and analyze all relevant customer information and use it effectively and promptly, hence the significant impact of market intelligence on sensing agility.

4 CONCLUSIONS

This study addressed two key types of competitive intelligence, competitor and market intelligence, and sensing agility, which has emerged as a crucial component in modern business management. Sensing agility is increasingly recognized as essential for organizational survival and sustainability in a constantly evolving environment.

The study began by analyzing competitor intelligence and market intelligence, both of which provide Enterprises with valuable insights into their competitive environment. Sensing agility, in essence, refers to an organization's ability to quickly perceive and respond to current or potential changes in its business environment. The research further explored the contribution of competitors and market intelligence in achieving sensing agility, using a sample of food industry Enterprises in the towns of Annaba, Skikda, and El-Tarf.

The findings revealed that most enterprises studied did not fully grasp the importance of collecting information on potential strategic alliances formed by competitors. The interview results indicate the primary focus was on short-term goals and immediate profit. The information gathering was largely centered on aspects of customers and competitors that directly impacted on current profitability, highlighting a general lack of awareness regarding the long-term benefits of strategic alliances.

This oversight may stem from the fact that the decision-makers in these Enterprises are still in the early stages of developing long-term strategic thinking and have not yet adopted modern managerial perspectives or forward-looking strategies.

Nevertheless, through their practice, albeit incomplete, of the intelligence process (collection, analysis, and dissemination), these Enterprises were able to detect opportunities and threats arising from customer and competitor dynamics, enabling them to make quick decisions and adapt to environmental changes in a timely and reactive manner.

However, the information sources used by these enterprises were limited, relying primarily on customers, sales consultants, and trade fairs. The analysis process was largely based on the analyst's experience, without employing modern analytical tools and techniques that could enhance the value of insights. Regarding dissemination, information was shared exclusively through reports sent to decision-makers.

Based on the above, the study recommends the following:

- Enterprise under study must become aware of the concept and importance of strategic alliances with or among competitors and allocate financial and human resources to analyze and evaluate the potential opportunities and threats associated with such alliances.
- They should diversify their sources of information, including internal sources such as information systems and board members, and external sources like reports from industrial and trade associations.
- It is essential that Enterprises gather comprehensive information about competitors and changes in the competitive environment from multiple sources, as information forms the foundation of effective competitor and market intelligence.
- Enterprise should develop a clear strategy for collecting, analyzing, and utilizing information in making strategic decisions.
- These Enterprises should also invest in information technologies, such as artificial intelligence tools, to support advanced data analysis. This would significantly enhance the quality and speed of strategic decision-making.

To conclude, this study highlights the critical role of competitor and market intelligence in fostering sensing agility within enterprises operating in dynamic and competitive environments. While the current practices among the studied Enterprises reveal gaps in strategic thinking and intelligence

application, the findings underscore the transformative potential of structured intelligence processes. By adopting modern analytical tools, expanding information sources, and embracing a long-term strategic mindset, enterprises can enhance their responsiveness, strengthen their competitive positioning, and ensure sustainable growth in an ever-changing market landscape.

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