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Economic Intelligence in Support of Diversification: what Effects Characterize the Pharmaceutical Industry?

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Abstract:

Nowadays, information has become a critical value-added resource for all companies that want to maintain their stability and sustainability for as long as possible, because the environment in which they evaluate is increasingly characterized by a constantly increasing and intensifying complexity and competitiveness. As a result, companies must explore innovative techniques for gathering relevant information; that facilitates their management while also enabling them to support and implement their strategic orientations.

The current study intends to investigate the relationships between two crucial concepts for contemporary companies: economic intelligence as a strategy for information acquisition and diversification as an approach to strategic planning. As an empirical field, we performed our research using industrial companies in the Algerian pharmaceutical sector.

The findings indicate the presence of effects between the adoption of diversification and economic intelligence practices.

Keywords: Economic intelligence, diversification, pharmaceutical industry sector**.**

(JEL) Classification : D83, L25, L65, M14, M15, I11.

1. Introduction:

Economic intelligence has established out a significant role inside businesses due to its methodical approach to gathering and creating knowledge that is critical to

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their operations, preserving their assets, and influencing their environment in their favor. Diversification, on the other hand, has become an unavoidable option in a hyper-complex and rapidly transforming environment in order to reduce risks and environmental limits on the one hand while increasing chances and possibilities on the other. The main objective of this research is to explore two essential concepts for any company wishing to maintain its durability while also playing a leading role in its environment: economic intelligence and diversification, using the pharmaceutical industry as a research field. To that purpose, this study is divided into three sections: the first contains a review of the literature, the second describes the research methodology, and the third summarizes the findings.

1.1. Research Problematic:

Through this research, we seek to determine the impact between economic intelligence practices and diversification. The fundamental question of our research is the following:

Is there a relationship between the use of economic intelligence and diversification?

To answer this question, we ask the following two secondary questions:

Q.1. Are there significant differences in economic intelligence practices compared to diversification?

Q.2. Are there significant effects between economic intelligence practices and diversification?

From the above, we can formulate the following hypotheses:

H.1. There are significant differences in economic intelligence practices in relation to diversification

H.2. There are significant effects between economic intelligence practices in relation to diversification.

1.2. Research methodology

We used the descriptive-analytical survey approach to conduct our empirical investigation, with a questionnaire as a data gathering instrument. Then, to ensure the transition from theoretical frameworks to empirical investigation, we used the hypothetico-deductive approach. We picked the pharmaceutical industry sector in Algeria, more specifically the companies ensuring a manufacturing function, as

the subject of study in order to investigate the presence of relationships and impacts between economic intelligence practices and diversification decisions within this sector. In terms of scales, all of our questions follow a five-point Likert scale, with 1=Not at all in agreement to 5=Strongly in agreement with a neutral point for the economic intelligence variable and 1=Very weak to 5=Very strong for the diversity variable.

1.3. Research variables

Our research is based on two main variables which are the recourse to economic intelligence; more precisely, it is its operation which includes the three components of watch, protection of the patrimony and influence, and, on the other hand, diversification which includes two sub-dimensions: diversification of markets and diversification of products.

1.4. Research model

1.4.1. Data collection

To gather our data, we choose to follow in the pattern of Y. S. Chen, Lin, and Chang (2009), G. Kim, Shin, Kim, and Lee (2011), Torres, Sidorova, and Jones (2018) and Ashrafi, Ravasan, Trkman, and Afshari (2019), who argue for the identification of key informants who are the most knowledgeable. The data gathering procedure was as follows:

- First, emails containing the survey questionnaire were sent, together with a note informing recipients of the objectives, content, deadline, and confidentiality of any information given.
- Second, one week later, a first reminder was given by sending additional e-mails to non-respondents to the original request.
- Third, the last contact was made one week after the first reminder, or two weeks after the first request, by sending additional e-mails asking responders to complete the questionnaire.

We sent about 820 e-mails between contact and reminders to a list having nearly 280 addresses and forming the Ministry of Pharmaceutical Industry's database. We received 41 responses, 33 of which were productive companies, accounting for 11.8% of the database.

Table (01): Questionnaire design

N°	Variables	Scale	References
1	*Economic intelligence*	Ordinal 1=Not at all agree 5=Strongly agree	(Hadjadj, 2020)
	Code	**Content**	
1.1.	*B.I.1*	**Monitoring:** the EI follows and monitors economic, socio-cultural, political, regulatory, legal and technological developments and trends.	
1.2.	*B.I.2*	**Protection:** the EI is able to put in place the measures and means necessary to protect companies' values.	
1.3.	*B.I.3*	**Influence:** EI changes the rules of the competitive game through new innovative modes or techniques in order to disorient the competitor.	
N°	**Variables**	**Scale**	**References**
2	*Diversification*	Ordinal 1=Very weak 5=Very strong	- (Gupta & George, 2016) - (Bag, Gupta, Kumar, & Sivarajah, 2021) - (Wamba et al., 2017) - (N. Wang, Liang, Zhong, Xue, & Xiao, 2012)
	Code	**Content**	
2.1.	*DIVER.1*	**Market diversification:** We entered new markets faster than our competitors.	
2.2.	*DIVER.2*	**Product diversification:** Our success rate for new products or services was higher than that of our competitors.	

Source: developed by the authors.

1.4.2. The nature of the variables collected

Our study was based, on the one hand, on nominal non-metric measures reflecting primarily the name and activity of the company, the respondent's gender and professional category, and, on the other hand, on ordinal non-metric measures based on five-point Likert scales representing the remaining questions.

Cronbach's alpha was used to assess the reliability of our research. This

coefficient was selected since it is the most commonly utilized in this sort of study (Huang, Savita, Dan-yi, & Omar, 2022). The dependability result is shown in Table 2.

Table (02): Cronbach's Coefficient

Summary of treatment of observations					Reliability statistics
		N	%	Number of items	Cronbach's Alpha
Observations	Valid	33	100,0	5	,807
	Excluded[a]	0	,0		
	Total	33	100,0		

a. Listwise suppression based on all variables in the procedure.

Source: Compiled by the authors based on SPSS v25 data.

2. Literature review:

2.1. Economic Intelligence

According to the DGIEEP (2010) in the *Manuel de Formation en Intelligence Economique en Algérie*, "Economic Intelligence (EI) is usually defined as the set of actions for monitoring the national and international environment in order to collect, process, analyse and disseminate all information useful to economic actors. It includes the protection (security) of the information thus produced and its use in influence and lobbying actions."

In today's business environment, economic intelligence has become a very important instrument for all companies. The role it plays extends beyond basic environmental monitoring to the planning for protecting of firms' assets and influencing of the entire environment in their favor.

Therefore, economic intelligence has three essential components (Gloaguen, 2014):

1) The mastery of strategic information, which includes:
   - Conquering new markets;
   - Detecting risks or opportunities;
   - Monitoring the competition;
   - Monitoring technological or regulatory developments.
2) Protection of the company's assets, which includes:
   - Protecting and enhancing its know-how;

- Securing its information system;
- Securing its technological and commercial partnerships.

3) Influence, which includes:
   - Making its needs known ;
   - Enhancing its image;
   - Working in a network.

Based on what has just been stated, we can conclude that economic intelligence provides managers with the appropriate knowledge at the right moment, allowing them to make the best decisions on the one hand, and to establish extremely important strategic advantages on the other.

2.2. Diversification

2.2.1. Definition

Diversification is a multidisciplinary concept that refers to the extension of a company's business lines or product portfolios (H. Kim, Hoskisson, & Wan, 2004) into other locations, product sectors and/or markets (Q. Wang, Shen, & Ngai, 2023; Xie, Wang, & Miao, 2021)

However, the reasons for using this strategy differ from one discipline to another: (Q. Wang et al., 2023)

- The managerial perspective affirms the use of diversification via operational synergy, which might generate prospective income steams mainly from economies of scale and scope (Hoberg & Phillips, 2010) (Rabier, 2017).
- The financial perspective justifies the use of diversification through financial synergy, which could generate more financial value through cash flow control, lower cost of capital, tax savings and a lower probability of bankruptcy (Rabier, 2017) (Hughes, Liu, & Liu, 2007) (Leland, 2007);
- The marketing perspective justifies the use of diversification via the firm's presence in the market, which might be enhanced in terms to the firms' market share and profitability (Morgan & Rego, 2009);
- The organizational perspective justifies the use of diversification by referring to the need of improving firm's performance by obtaining benefits such as cost reduction, economies of scale, complementarity and

convexity effects, workforce complementarity, and mitigating the impact of negative events or bad news.

2.2.2. Types of diversification

The literature, according to Q. Wang et al. (2023), identifies two major forms of diversification. The first, known as linked, entails entering new product markets that are tied to current markets. The second, known as unlinked, comprises of entering new product markets that are unrelated to present markets.

This categorization is still used in diversification studies, with minor variations depending on the subject topic. Lin and Kim (2020), who investigate housing and hotels, indicate the presence of three diversification options.

According to Lin and Kim (2020) companies generally adopt :

- Geographic diversification entails offering the same product/service in multiple geographic markets at the same time;
- Brand diversification entails offering several brands for the same customer segment or quality; and
- Sector diversification entails ensuring the company's presence in different quality segments by serving different types of customers.

Diversification, on the other hand, is divided into two categories by Xie et al. (2021):

- International diversification entails broadening the scope of activity to a larger global context.
- Commercial diversification entails entering new company sectors or product markets. This kind can be further subdivided into two types: related business diversification and unrelated business diversification, i.e. expansion inside or outside the same field of activity.

Despite their domain-specific emphasis, the classifications of Lin and Kim (2020) and Xie et al. (2021) approximate the fundamental categorization of diversification, which is product diversification and/or market diversification.

Based on what has already been stated, we have chosen the market/product combination diversification, which means the possibility of expanding into other markets and/or offering new products.

2.2.3 Importance of diversification

Diversification, according to Xie et al. (2021), enables organizations to take advantage of new benefits such as using varied resources from other sectors and increasing learning and innovation.

Sewando (2022) also concurs with and defends the diversification strategy, but not in terms of its acquisition capability. According to the author, it is not prudent for companies to invest all of their resources in highly correlated activities, and that the best option is to invest in two or more activities to reduce overall volatility to a level lower than the individual volatility of each activity taken separately, because negative events in a specific sector of activity are always likely to lead to negative performance for the entire company (Q. Wang et al., 2023). Therefore, according to the author, diversity enables companies not only to reduce the effect of risks, but also to protect against them. This perspective is supported by Q. Wang et al. (2023), who highlights that this capability does not extend to severe loss or crash risks, by citing J.-B. Kim, Li, and Zhang (2011) and C. Chen, Kim, and Yao (2017) who said that "the risk of (extreme) losses cannot be reduced by diversification".

2.2.4. The relationship between economic intelligence and diversification

The overlapping aims of these notions help explain the link between economic intelligence and diversification. Indeed, these two notions strive to provide companies with a degree of flexibility and agility, allowing them to mitigate the impact of negative occurrences on their survival.

In one hand, economic intelligence is a practice that has been made necessary by the constant change in the business environment and the explosive growth of technology. It encourages companies to focus on information acquisition so that they can use it as a resource to add value to their production and management processes (Benzidia, Makaoui, & Bentahar, 2021), and it primarily aims to increase knowledge acquisition capabilities (Yaqoob et al., 2016). Because of this information, companies will be able to adapt to the many changes in their environment, predict them, and even create them in order to influence them.

In the other hand, since some bad news is unlikely to have a significant impact on a company's overall operations when it is highly diversified, diversification also enables companies to mobilize the resources generated by unaffected activities to

support affected ones, thereby reducing the impact of environmental changes on the company's ability to survive (Q. Wang et al., 2023).

3. Second Subtitle (RESULTS AND DISCUSSION):

3.1. Descriptive statistics

The descriptive statistics are shown in the following table:

Table (03): companies' descriptive statistics

Variables	Items		Frequency	%	Valid percentage	Cumulative %
The nature of the business	Valid	Production	22	66,7	66,7	66,7
		Mixed	11	33,3	33,3	100,0
		Total	33	100,0	100,0	
	Missing	System	-	-		
	Total		33	100,0		
The turnover	Valid	< 05 billion DZD	18	54,5	62,1	62,1
		Between 05 & 10 billion DZD	5	15,2	17,2	79,3
		Between 11 & 15 billion DZD	1	3,0	3,4	82,8
		Between 16 & 20 billion DZD	1	3,0	3,4	86,2
		21 billion DZD <	4	12,1	13,8	100,0
		Total	29	87,9	100,0	
	Missing	System	4	12,1		
	Total		41	33	100,0	
The creation of the company	Valid	Between 1982 & 1991	1	3,0	3,6	3,6
		Between 1992 & 2001	5	15,2	17,9	21,4
		Between 2002 & 2011	13	39,4	46,4	67,9
		Between 2012 & 2021	9	27,3	32,1	100,0
		Total	28	84,8	100,0	
	Missing	System	5	15,2		
	Total		41	33	100,0	
The number of employees in the company	Valid	Very Small Company	2	6,1	6,3	6,3
		Small Company	12	36,4	37,5	43,8
		Medium Company	10	30,3	31,3	75,0
		Large Company	8	24,2	25,0	100,0

	Total	32	97,0	100,0	
	Missing System	1	3,0		
	Total	41	33	100,0	

Source: Compiled by the authors based on SPSS v25 data.

The descriptive statistics of the companies reveal some interesting characteristics; the first is related to their existence; we clearly see that the majority of them (66.7%) are new creations with a maximum existence of 10 to 20 years (27.3% for the 10 years and 39.4% for the 20 years). This same majority reflects the second remark, highlighting that 66.7% of these companies belong to the small and medium classes (36.4% for small and 30.3 for medium), which leads us to the third remark explaining and justifying the first two; that of the majority of these companies (54.5%) are not achieving a yearly sales turnover greater than 05 billion DZD.

Table (04): Respondants' descriptive statistics

Variables	Items		Frequency	%	Valid percentage	Cumulative %
Gender	Valid	Male	14	42,4	43,8	43,8
		Female	18	54,5	56,3	100,0
		Total	32	97,0	100,0	
	Missing	System	1	3,0		
	Total		41	33	100,0	
Work experiences	Valid	1 - 5 ans	5	15,2	15,2	15,2
		6 - 10 ans	12	36,4	36,4	51,5
		11 - 20 ans	12	36,4	36,4	87,9
		21 - 30 ans	1	3,0	3,0	90,9
		31 ans et plus	3	9,1	9,1	100,0
		Total	33	100,0	100,0	
	Missing	System	5	15,2	15,2	15,2
	Total		41	12	36,4	36,4
Socio-professional	Valid	Executives	1	3,0	3,0	3,0
		Managers	3	9,1	9,1	12,1

category	Senior managers	29	87,9	87,9	100,0
	Total	33	100,0	100,0	

Source: Compiled by the authors based on SPSS v25 data.

There is a slight gender difference (42.4 for men and 54.5 for women), but there is a high proportion of senior managers (87.9%) and experienced people, with 84.9% having more than 6 years of experience (72.8% have between 6 and 20 years of experience and 12.1% have more than 20 years).

3.2. Analysis of the existence of relationships (correlation analysis)

The correlation analysis allows us to analyze the presence of relationships between market diversification and economic intelligence practices in the pharmaceutical goods industry in Algeria.

This part is founded on the following hypothesis:

H.1. There are significant differences in economic intelligence practices compared to diversification.

To explain this impact, our hypothesis has been divided into two sub-hypotheses, each dealing with the link between a variable of diversification and those of economic intelligence practices.

H.1.1. There are significant differences in economic intelligence practices compared to market diversification.

H.1.2. There are significant differences in the practices of economic intelligence compared to the diversification of products.

To better clarify our hypotheses and provide exact responses, we established a second subdivision based on each of the actions that constitute the concept of economic intelligence, namely monitoring, protection, and influence. The following assumptions are provided by the second subdivision:

H.1.1.1. there are significant differences in the practice of intelligence compared to the diversification of markets.

H.1.1.2. There are significant differences in the practice of protection compared to market diversification.

H.1.1.3. There are significant differences in the practice of influencing compared to diversifying markets.

H.1.2.1. There are significant differences in the practice of monitoring compared to product diversification.

H.1.2.2. There are significant differences in the practice of protection compared to product diversification.

H.1.2.3. There are significant differences in the practice of influencing compared to product diversification.

The findings of the analysis are as follows:

Table (05): Correlation and descriptive statistics

Between economic intelligence practices and diversification

	Descriptive statistics			Correlations					
	Means	**Standard deviations**	**Mode**		DIVER.1	DIVER.2	P.I.E.1	P.I.E.2	P.I.E.3
DIVER.1	3,228	1,054	4	Pearson correlation	1				
				Sig. (two-tailed)					
DIVER.2	3,230	0,962	5	Pearson correlation	,819**	1			
				Sig. (two-tailed)	0				
P.I.E.1	3,875	1,215	3	Pearson correlation	,469**	,356*	1		
				Sig. (two-tailed)	0,006	0,042			
P.I.E.2	4,061	1,116	3	Pearson correlation	0,187	0,289	,533**	1	
				Sig. (two-tailed)	0,298	0,103	0,001		
P.I.E.3	3,515	1,253	3	Pearson correlation	0,299	0,251	,695**	,647**	1
				Sig. (two-tailed)	0,091	0,159	0	0	

**. The correlation is significant at the 0.01 level (two-tailed).

*. Correlation is significant at the 0.05 level (two-tailed).

Source: Compiled by the authors on the basis of SPSS V25 data

Table 4 reveals that there is a highly strong statistical association between market and product diversification in the Algerian pharmaceutical business (r=.819. p.01). This suggests that the culture of diversification in this industry exists in both forms, and that companies who embrace one form end up adopting the second type.

In terms of economic intelligence techniques, we discovered that only monitoring is strongly connected with diversification decisions. Intelligence does, in fact, have a statistically significant association with market diversification (r=,469. p<,01) as well as a statistically significant correlation with product diversification (r=,356. p<,05). We can confirm the hypotheses "**H.1.1.1.** There are significant differences in the practice of monitoring compared to market diversification" and "**H.1.2.1.** There are significant differences in the practice of monitoring compared to product diversification" based on these facts, thereby confirming the use of monitoring as an essential tool for diversification in Algerian pharmaceutical sector production companies.

However, our findings show that there are partially significant correlations between the practice of influence and market diversification (r=,299. p<,1) on the one hand, and the practice of protection and product diversification (r=,298. p=,103) on the other, allowing us to partially confirm the hypotheses "**H.1.1.3.** There are significant differences in the practice of influence compared to market diversification" and "**H.1.2.2.** There are significant differences in the practice of protection compared to product diversification."

3.3. Analysis of the existence of effects (regression analysis)

The regression analysis enhances the correlation analysis by allowing us to analyse the influence that may exist between the variables in our investigation. The regression analysis is carried out using SPSS V25's "stepwise" procedure, which consists of removing all variables that do not have statistically significant values justifying the presence of a substantial influence.

This section's main hypothesis is as follows:

H.2. There are significant effects between economic intelligence practices and diversification.

To explain this impact, our hypothesis is separated into two sub-hypotheses, each

dealing with the link between a variable of diversification and those of economic intelligence functioning.

H.2.1. There are significant effects between economic intelligence practices and market diversification.

H.2.2. There are significant effects between the practices of economic intelligence and the diversification of products.

To better clarify our hypotheses and provide more accurate responses, we have established a second subdivision based on each of the actions that constitute the concept of economic intelligence, namely monitoring, protection, and influence. The second subdivision provides us with the following hypotheses:

H.2.1.1. there are significant effects between the practice of intelligence and the diversification of markets.

H.2.1.2. There are significant effects between protection practice and market diversification.

H.2.1.3. There are significant effects between influencing and market diversification.

H.2.2.1. There are significant effects between monitoring and product diversification.

H.2.2.2. There are significant effects between the practice of protection and product diversification.

H.2.2.3. There are significant effects between influencing and product diversification.

The findings of the analysis reveal the following:

Table (06): Coefficients and significance of regressions

Between economic intelligence practices and market diversification						
Hypotheses	Regression model	Beta	t-value	Sig,	Excluded/Retained[a]	Results
H.2.1.1	***P.I.E.1—DIVER.1***	***,407***	***2,954***	***,006***	***Retained***	***Accepted***
H.2.1.2	P.I.E.2—DIVER.1	-,088[b]	-,463	,647	Excluded	Rejected
H.2.1.3	P.I.E.3—DIVER.1	-,052[b]	-,231	,819	Excluded	Rejected
R	0,220					
$F_{(1,31)}$	8,726			,006[b]		

Between economic intelligence practices and market diversification						
Hypotheses	Regression model	Beta	t-value	Sig,	Excluded/Retained[a]	Results
H.2.1.1	***P.I.E.1—DIVER.1***	***,282***	***2,120***	***,042***	***Retained***	***Accepted***
H.2.1.2	P.I.E.2—DIVER.1	,139[b]	,695	,492	Excluded	Rejected
H.2.1.3	P.I.E.3—DIVER.1	,007[b]	,030	,976	Excluded	Rejected
R	0,127					
$F_{(1,31)}$	4,493			,042[b]		

a. Method: Step by step (Criterion: Probability of F to introduce <= .050, Probability of F to eliminate >= .100).

b. Predictors: (Constant), P.I.E.1 [Tracks and monitors economic, socio-cultural, political, regulatory, legal and technological developments and trends].

Source: Compiled by the authors on the basis of SPSS V25 data

The dependent variables (market and product diversification) were regressed on the predictor variables (monitoring, protection, and influence), yielding the following results:

- Concerning market diversification:

The economic intelligence practices demonstrated a very significant regression with market diversification ($F_{(1,31)}$= 8,726. p<,01), and this by retaining only the practice of monitoring as a predictor, which displayed statistically very significant parameters allowing the acceptance of its hypothesis (B=,407. t= 2,954. p<,01) with an R-square =,220 indicating that this practice alone explains 22% of the variance of market diversification.

- Concerning product diversification:

Economic intelligence practices demonstrated a significant regression with product diversification ($F_{(1,31)}$= 4,493. p<,05), and this while retaining only the monitoring practice as a predictor, which displayed statistically significant parameters allowing acceptance of its hypothesis (B=,282. t= 2,120. p<,05) with an R-square =,127 indicating that this practice alone explains 12.7% of the variance in market diversification.

From the above, we can confirm the existence of statistically significant effects between monitoring practice and diversification choices (markets and/or products) by confirming the hypotheses "**H.2.1.1.** There are significant effects between

monitoring practice and market diversification" and "**H.2.2.1.** There are significant effects between monitoring practice and product diversification."

These findings are explained by the descriptive characteristics of the firms in our study (Table 3), which show similar associations in terms of age (the majority is between 10 and 20 years of existence), resources (the majority is under 05 billion DZD in terms of turnover), and size (the majority is between small and medium-sized firms).

4. Future research:

In order to enhance the findings of this study, we propose two research paths. The first could well determine the mechanisms by which economic intelligence practices would allow the success of diversification policies, as well as how such policies could encourage companies to adopt economic intelligence practices. The second approach is broadening the empirical field to include additional economic sectors, in order to improve our understanding of our economy on the one hand, and to encourage our companies to pursue diversification strategies while utilizing economic intelligence practices on the other.

5. Conclusion:

In order to better concretize their strategic orientations, firms must embrace new technologies that allow them to comprehend and control the constant changes that characterize their environment.

This study revealed the existence of a diversification culture in the pharmaceutical industry in two forms (market and product diversification). It has also emphasized the significance of monitoring among companies in this sector, while explaining these companies' leanings toward the practice of protection in the context of product diversification and the practice of influence during market diversification.

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