Study of the Relationship betweenIntellectual Capital and Economic Performance of Saidal Complex Using VAICmodel for the period(2010-2020)

دراسة علاقة رأس المال الفكري والأداء الاقتصادي لمجمع صيدال باستخدام نموذج معامل القيمة المضافة خلال الفترة 2010–2020

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Abstract:
This study aims to investigate the impact of the efficiency of the components of intellectual capital of the Sidal complex on its economic performance during the period (2010-2020).Through the role played by intellectual capital with its various elements in the continuity and success of enterprises.As it distinguishes enterprises in providing information that improves the quality of accounting information provided by investors, current and prospective creditors and other stakeholders to make sound decisions. The analytical descriptive approach was used with a case study of an institution quoted on the Algiers Stock Exchange, by examining the correlation and regression relationship between the efficiency of intellectual capital and the average economic performance. The study reached a set of results, the most important of which are: we found a weak inverse correlation of working capital efficiency over average economic performance, and a strong inverse correlation between structural capital efficiency and average economic performance in the Saidal complex. There is a very poor correlation between human capital and average economic performance.

Keywords: *Intellectual Capital, Economic Performance, Intellectual Capital Efficiency, Structural Capital, Saidal Complex.*

ملخص:
تهدف هذه الدراسة إلى البحث في إشكالية تأثير كفاءة مكونات رأس المال الفكري لمجمع صيدال على أدائه الاقتصادي، للفترة الممتدة بين (2010–2020). من خلال الدور الذي يلعبه رأس المال الفكري بعناصره المختلفة في استمرارية ونجاح المنشآت، في الوقت الحاضر.فهو يساعد الشركات في توفير وتحسين جودة المعلومات المحاسبية المقدمة من المستثمرين والدائنين الحاليين والمرتقبين، وأصحاب المصالح الأخرى لاتخاذ القرارات السليمة. تم استخدام المنهج الوصفي التحليلي مع دراسة حالة لمؤسسة مسعرة في بورصة الجزائر، من خلال دراسة علاقة الارتباط والانحدار بين كفاءة رأس المال الفكري ومتوسط الأداء الاقتصادي. وتوصلت الدراسة إلى مجموعة من النتائج أهمها: وجود ارتباط عكسي ضعيف لكفاءة رأس المال العامل على متوسط الأداء الاقتصادي، وارتباط عكسي قوي بين كفاءة رأس المال الهيكلي ومتوسط الأداء الاقتصادي في مجمع صيدال. وارتباط جد ضعيف بين رأس المال البشري ومتوسط الأداء الاقتصادي.

الكلمات المفتاحية: رأس المال الفكري، أداء اقتصادي، كفاءة رأس المال الفكري، رأس المال الهيكلي، مجمع صيدال.

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1. INTRODUCTION

In light of the openness and knowledge development resulting from globalization and the information and communication technology revolution, institutions must undergo a series of transformations and changes, as these institutions work in a competitive environment, which prompted them to form a clear vision to improve their performance and services, develop strategies to ensure their survival, development and advancement and reassess their financial and knowledge assets.

In the competitive economy and the information age, intellectual capital has become the real capital of organizations as the main pillar in the process of innovation, and thus is able to turn knowledge into value and then into a competitive advantage, which means that the center of gravity in the generation of value has moved from the exploitation of material resources to the exploitation of intellectual assets(intangible).

Interest in intellectual capital has led to attempts to measure it, as despite the great importance it occupies, and despite its high contribution to increasing the market value of the company, we still see a clear lack in the creation of methods and means of measurement applicable and generalization, compared to what is the case in the measurement of other physical assets, as intellectual capital as an intangible asset can change its value from one organization to another, and from one measurement case to another.

Organizations have recognized that knowledge assets are the key to building and that they give them intrinsic value, that knowledge has become a highly valued and considered strategic asset, and that knowledge must be maintained and it can be managed and used to generate new knowledge in order to create added value and achieve competitive advantage. Hence, the importance of the knowledge resource of intellectual capital.

Our study was based on the value added coefficient model(VAIC) to measure the impact of intellectual capital on the economic performance of the company listed on the Algerian Stock Exchange Saidal complex.

Based on the above, we raise the following problem: **Does the efficiency of the intellectual capital components of the Saidal complex have an impact on its economic performance during the period (2010-2020)?**

Thus, the study questions are asked as follows:

- What are the types of entries in the classification of components of intellectual capital?
- What are the approaches to measuring intellectual capital?
- How does the efficiency of intellectual capital affect the economic performance of the Saidal complex?

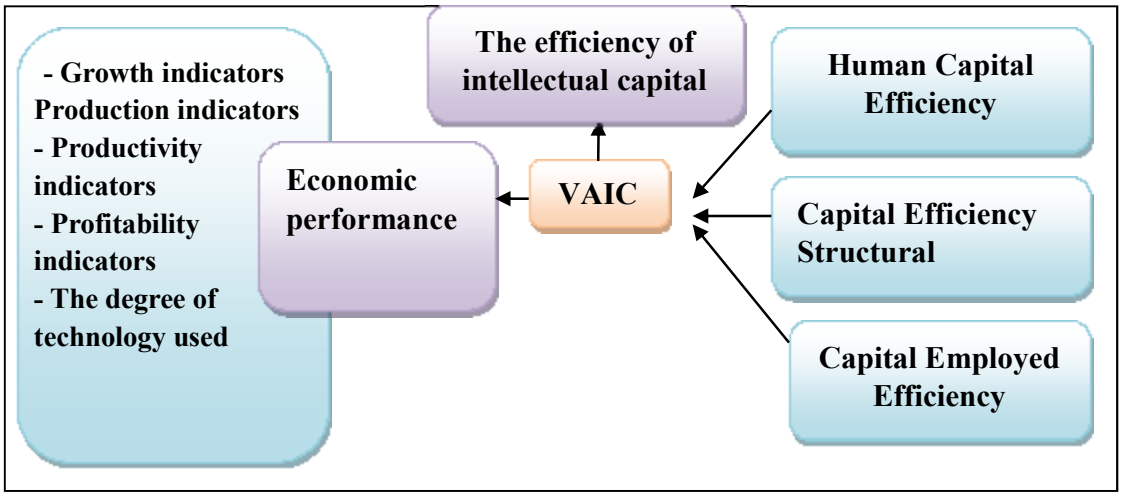
The research is based on the following hypothesis: (There is a statistically significant effect of the components of intellectual capital on the economic performance of the Saidal complex during the period (2010-2020).

This research aims to identify the availability of intellectual capital and the extent of interest on it in Saidal complex company, and identify its impact on the economic performance in this

company and then achieve added value and competitive advantage by trying to explain the relationship between the efficiency of intellectual capital in its various dimensions and the economic performance of the company.

The study framework adopted in the research paper can be illustrated by the following figure1:

Figure (1): Study model



***The source**: Authors' elaboration*

2. BACKGROUND AND LITERATURE REVIEW

Intellectual capital is one of the concepts that attracted the attention of many experts, researchers and writers at the turn of the twentieth century, and expanded to include all organizations of all types and affiliations, as one of the indicators of excellence and leadership in these organizations in general. However, there was disagreement about the term for several reasons, most notably the relative novelty of the subject, and the differing views and interests of researchers in its study.

2.1 The concept of intellectual capital :

The concept of intellectual capital is one of the modern concepts that have emerged with the advent of knowledge economy and its management. It becomes as one of the precious assets that achieve the survival, continuity and competitiveness of enterprises and that it is an asset that can not be easily imitated, (Lev, 2001, p. 07). Is the source of the abnormal value resulting from innovation(discovery) or designs unique organizational or human resources practice often interact intangible assets with physical and financial assets, and create value for businesses and economic growth.(Banerjee, 2012, p. 1272)sees that intellectual capital is a cognitive asset found in persons (employees), instruments(patents) or structure(customer relationship or supply chain), either (Leif Edvinsson) between that "it is the possession of knowledge, applied experience, organizational technology, customer relations and professional skills, which provide a competitive advantage in the market"(Edvinsson, 1997). And from the point of view of (Brennan & Connell, 2000, p. 1), it also

consists of assets related to employee knowledge and experience, customer confidence in the company and their products, trademarks and privileges, information systems, administrative procedures, patents, and the efficiency of the company's business processes Financial Reporting Standard (FRS10) goodwill and intangible assets: it is a non-cash identifiable source with no material substance, from which future economic benefits are expected to flow to the enterprise, and the asset is identifiable when it is separable or when it arises from contractual or legal rights(Brennan & Connell, 2000, p. 3).

Intellectual capital has also been defined as expenditures on advertising(marketing), training, start-up, R & D activities, human resource expenditures, organizational structure, and values that come from trademarks, copyrights, covenants of non-competition, franchises, future interests, licenses, operating rights, rights and patents (Choong, 2008, p. 616).

2.2.Importance of intellectual capital:

The importance of intellectual capital shows that it represents in itself a competitive advantage of the enterprise, especially since organizations compete on the basis of the knowledge, information and skills that they possess, it is thus regarded as the most valuable asset of the present century, and it is an imperative question imposed by nature (Baker.J.Ronald, 2007, p. 99).

As for (karlsveiy)[2],the intellectual assets and their management represent the true source of the foundation's survival and growth(karl-erik, 1998, p. 21), while (Teece.2000) sees that intellectual capital is the main driver of innovation and competitive advantage in today's knowledge-based economy, and at the same time the two researchers conducted a study on a range of Australian institutions, and concluded that the focus on intellectual capital contributes to: the quality of information provided to shareholders, the increase of information to support and decision-making, (Truls, Westnes, & westnes, 2003, p. 289).Intellectual capital is the basic weapon of the organization for organizations in today's world, because strong, hidden intellectual assets ensure the survival of the organization, because organizations face daily rapid changes that require advanced knowledge and skills to match technical and intellectual capabilities to adapt to these changes.

2.3. The components of intellectual capital:

The literature differed in the precise definition of classifications of intellectual capital, and intellectual capital can be classified into four classifications represented by:

Classification duo of intellectual capital according to this classification classified Robinson and Steiner (1996) intellectual capital that consists of the two components of human capital such as knowledge, capabilities and decision-making, and problem-solving skills, and learn any patents, licenses, copyrights and trademarks, trade secrets. Capital restructuring such as procedures, programs and systems applied within the enterprise(Robinson & Kleiner, 1996).

Tripartite typology of intellectual capital: according to this classification, intellectual capital was divided into three components including (Bountis .1999) as follows: human capital: it is clear from this term that it is related to human resources, where it includes the mastery of labor, human energies and mental forces, as well as the secrets of work and knowledge that can be converted into value. Structural capital: includes policies, procedures, programs and systems, and includes everything related to company's infrastructure, which is divided into physical structure and

[2] *A foundation manager, he published a book entitled (The Know Company-How).*

converted buildings and computers as well as the intangible structure and the history and culture of the company. And finally, relational capital that represents value of the relationships that the organization establishes with customers by increasing customer satisfaction, loyalty, and retention, by paying attention to their suggestions, listening to their complaints and finding the necessary solutions as quickly as possible(Bueno, Salmador, & Rodriguez, 2004).

Quadratic classification of intellectual capital : According to this classification, intellectual capital has been divided into four components, among the pioneers of this classification (Brooking, 1996, pp. 13-16) market assets: all intangible assets that give external power to the enterprise, such as customers, brands and distribution outlets, include human assets: the human resources that operate within the enterprise and their expertise, knowledge and capabilities. Intellectual property rights: are represented in Trademarks, Patents and design invention rights. Infrastructure assets: semi-structural assets that enable an enterprise to perform its functions such as the organizational culture of the enterprise, customer databases, communication systems and Information Technology.

From the foregoing, most studies agreed that intellectual capital was not a one-dimensional construction but was assessed at different levels, with three main components: human capital, which includes (knowledge, skills, individual and collective experience, and problem-solving abilities that remain in the organization) (Jardon & Cobas, 2021, p. 13), structural capital comprises (solidifying code knowledge, experience stored in databases, procedures, organizational culture) , and client capital (knowledge available through networks of internal and external relations of the organization)(Hsu & Wang, 2010, pp. 3-5).

2.4- Measuring intellectual capital:

The researcher (Ungerer, 2004, p. 135) pointed out that there are two approaches to measuring intellectual capital:

The quantitative approach: that measures intellectual capital by quantitative indicators aimed at producing, providing records, and reports on the intellectual capital of the organization and can benefit shareholders on the same basis as the prevailing financial reports...Etc.

The qualitative approach: that measures intellectual capital with qualitative indicators and aims to match the key indicators of intellectual capital reflected in the organization's environment. These measurements reflect the position of the organization at a certain point in time and are aimed at internal management more than external shareholders, among which we have the Balanced Scorecard curriculum, the fluidity of knowledge of the components of intellectual capital, the Scandia Navigator, the intellectual capital index...Etc.

We adopt in this paper a model “the coefficient of Value Added of Intellectual Capital” to measure the intellectual capital (VAIC). Inspired by the work of (Inte Pulic) at the University (Graz) Austrian participation(Zagreb), which cater measure the efficiency of intellectual capital is called the coefficient of the added value of the assets, intellectual, and his study on a random sample of 30 companies, to find the relationship between the efficiency of value creation of resources and market value-added businesses, and scale coefficient value added Intellectual on the idea that the performance of the enterprise in the construction value(kowalska, 2020, pp. 4-5).Depending on both its tangible and intangible assets i.e. physical capital and the intellectual capital involved (human, structural), its measurement shows how much value is created from the investment of a monetary unit of an enterprise's resources. The model has been used in many studies to explain the

relationship between intellectual capital and economic performance of institutions, and has been adopted in many regional and international analyses, as well as in academic studies(Savanadze & kowalewska, 2015, pp. 38-39).

VAIC= CEE+HCE+SCE

VAIC : Value added coefficient

CEE : Capital Employed Efficiency

HCE : Human capital efficiency

SCE : Structural capital efficiency

2.5. Economic performance:

Economic performance is the translation of the company's activity and its ability to achieve the goals set and detect imbalances quickly at the start, and follow up the implementation of the objectives of the economic unit for the purpose of ensuring the efficient allocation and use of productive resources in the best way.

Among the indicators adopted in this research paper are income growth rate, sales growth rate, production development ratio, fixed capital productivity, wage productivity, total factor productivity, worker productivity growth rate, profit margin, total profit evolution, degree of technology used.

3. THE EMPIRICAL STUDY

Among other studies that try to explore the effect of intellectual capital on economic performance, we chose Saidal Complex to examine the existence of the relationship between variables studies by using Eviews software.

To do the study of the relationship between the study variables, ask us to choose the coefficient of value added to measure intellectual capital, and choose Average Economic performance indicators To measure economic performance. By calculating a set of partial ratios based on the financial statements of Saidal complex during the period 2010-2020 published on the site of the Algiers Stock Exchange. The study was carried out to study the relationship of total and partial correlation between the variables of the study, Then study the relationship of multiple regression and ensure that the study model is free of measurement errors .

3.1. The Variables of the study

The selected variables are divided into two kinds, independent variables, and dependent variables, as is shown in table 1.

Table (1): View of study variables

Dependent variable: Average Economic performance indicators (AEPI):		
Growth indicators:	**Income growth rate (**IGR**)=** Current year net income / last year net income	**Sales growth rate (**SGR**)=** Current year sales / last year sales
Production indicators:	**Production Development Rate (**PDR**)** = Current year realized production value/ last year realized production value	
Productivity indicators:	**Wage productivity**= Value added / number of employees in the enterprise	**Fixed capital productivity (FCP)**= Production value or (added value) / the value of machines and equipment
Profitability indicators:	**Profit Margin**(PM)=Net operations(profit – tax)/ sales value	**Evolution of gross profit (**EGP**)=** Current year earnings / last year earnings
The degree of technology used(DTU)**:**	Fixed assets used machines and equipment/ total salaries and wages	
Independent Variable: The efficiency of intellectual capital (EIC):		
Human capital efficiency(HCE)= Value added / human capital	**structural Capital efficiency (SCE)=** Value added / structural capital	**Capital Employed Efficiency(CEE)=** Value added/Employed Capital

Source: *Prepared by authors*

3.2. Descriptive analysis

The table 2 summarize the descriptive statistic of both dependent and independent variables.

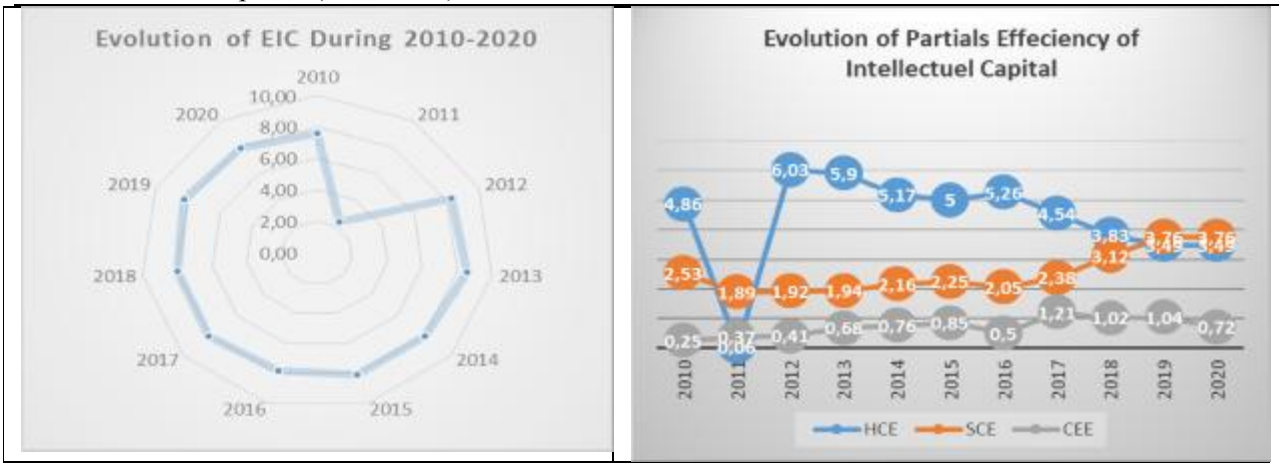
Table (2): Descriptive statistics of variables

	AEPI	**EIC**	**HCE**	**SCE**	**CEE**
Mean	1.071727	7.563638	4.330000	2.523638	0.710000
Median	8.088576	1.091400	4.860000	2.247688	0.720000
Maximum	1.435300	8.518941	6.030000	3.763148	1.210000
Minimum	0.798200	2.323398	0.060000	1.893398	0.250000
Std. Dev.	0.219514	1.755274	1.661126	0.705617	0.306496

Source: *Prepared by authors based on Eviews outputs*

Table 2 summarizes the descriptive statistics of estimated variables. According to the coefficient of variation (CV) values, efficiency of intellectual capital, as the independent variable, was stable around an average of 1.07% during the period of 2010-2020. Followed by a decline in 2011, and returned to rise from 2012, achieving stability until 2020. This stability is generally due to the difference observed in the growth of the components of intellectual capital efficiency, where the efficiency of human capital fell sharply in 2012, to rise again in 2012 to reach its highest value. A slower decline was achieved during 2012-2020. While the efficiency of structural capital experienced stabilization of the CSPI during the 2010-2020 study period. Working capital efficiency declined slightly in 2012, improving at an average rate during 2012-2020, reaching its highest value at the end of 2020.

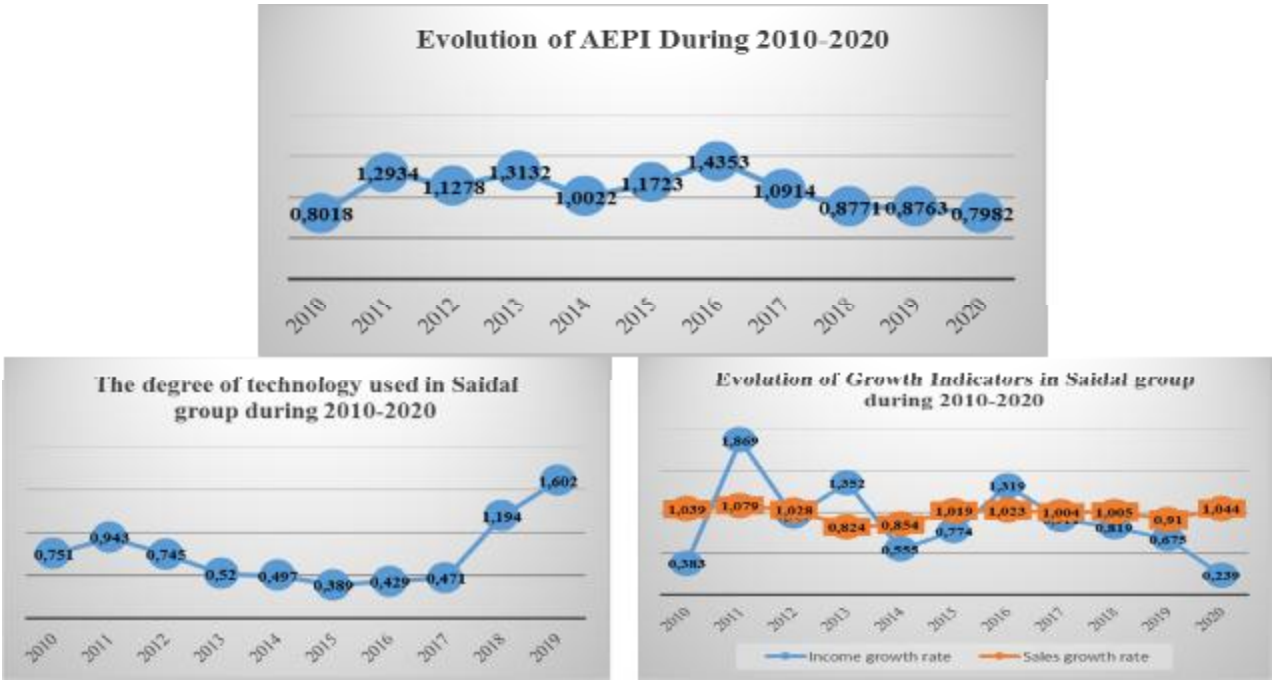
Figure (2): Evolution of independent variables from 2010-2020

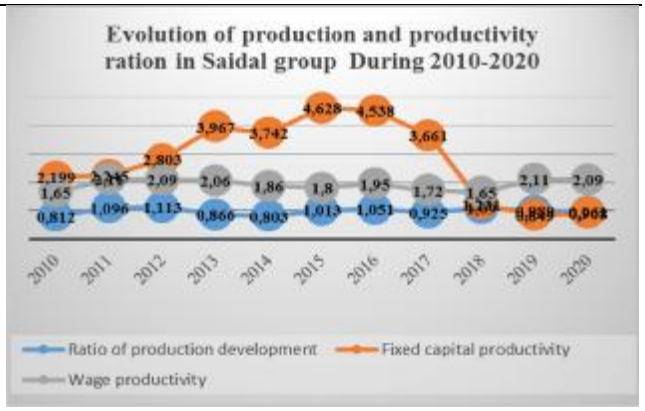


Source: *established by authors based on Excel outputs*

The dependent variable shows instability during the period 2010-2017, and subsequently stabilizes during 2018-2020, this is due to changes in the indicators from which it is calculated. We note that the development of growth indicators has changed according to changes in the rate of growth of income, which achieved its highest value in 2011, compared to the lowest value achieved in 2020. While the sales growth rate stabilized during each study period. The technology dependence index at Saidal complex also saw a good start where it achieved a positive percentage from 2010 to 2011. But it did not continue to achieve decreasing growth until 2015 where it achieved the lowest level, and then witnessed significant growth to achieve the highest rate of use of technology in 2020.

Figure (3): Evolution of dependents variables from 2010-2020





Source: *Established by authors based on Excel outputs*

The production and productivity ratios of Saidal complex witnessed variable growth rates during the study period, where both the indicator of the development of production and the development of wages during 2010-2020, with the achievement of the fixed capital productivity rate of the bell form through increased growth for the period 2010-2015, and then decreased in the period 2016-2019, to witness relative stability in the last two years. Profitability rates fluctuated significantly during the period 2010-2017, followed by a deterioration in the profitability of the complex until 2020, with relative stability of net profit.

4.Results and discussion*:*

We test for the existence of correlation between variables, the results are presented in table 03.

4 .1. Covariance Analysis:

Table (03): Correlations between Average Economic performance and Intellectual Capital Efficiency

Covariance Analysis: Ordinary
Date: 12/13/21 Time: 23:45
Sample: 2010 2020
Included observations: 11

Probability	Correlation AEPI	EIC	CEE	SCE	HCE
HCE					1.000000

SCE				1.000000	-0.221137
				-----	0.5135
CEE			1.000000	0.455564	0.050243
			-----	0.1591	0.8834
EIC		1.000000	0.405298	0.272270	0.866239
		-----	0.2162	0.4180	0.0006
AEPI	1.000000	-0.291142	-0.235937	-0.768502	0.062336
	-----	0.3851	0.4849	0.0057	0.8555

Source:*Prepared by authors based on Eviews outputs*

From the correlation result, AEPI has a weak negative correlation of -0.291 with EIC. This implies that an increase in efficiency of intellectual capital will lead to only a less than proportionate decrease in Average Economic performance Saidal complex, but since the computed correlation coefficient is less than the critical value at 0.05 level of significance, there is no significant relationship between them.

As a result of the correlation, we find a weak inverse correlation of working capital efficiency over average economic performance, and a strong inverse correlation between structural capital efficiency and average economic performance in the Saidal complex. There is a very poor correlation between human capital and average economic performance.

In order to ascertain the effect of partial efficiencies of intellectual capital, the following attempts to determine the best version of the regression model to explain the relationship between intellectual capital and economic performance.

4.2. Estimation of the optimal regression model:

The correlations between the variables were determined, we estimated their coefficients, and the results are as follows:

Table (04): Correlations between AE

Dependent Variable: AEPI

Method: Least Squares
Date: 12/13/21 Time: 23:59
Sample: 2010 2020
Included observations: 11

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	1.753911	0.258336	6.789273	0.0003
CEE	0.122316	0.189050	0.647007	0.5383
SCE	-0.272930	0.084095	-3.245489	0.0141
HCE	-0.018534	0.031840	-0.582096	0.5788
R-squared	0.625185	Mean dependent var		1.071727
Adjusted R-squared	0.464550	S.D. dependent var		0.219514
S.E. of regression	0.160628	Akaike info criterion		-0.544164
Sums quared resid	0.180609	Schwarz criterion		-0.399475
Log likelihood	6.992904	Hannan-Quinn criter.		-0.635371
F-statistic	6.179203	Durbin-Watson stat		2.227227
Prob(F-statistic)	0.023844			

Source: *Prepared by authors based on Eviews outputs*

The results of the estimate obtained show a statistically significant relationship between the efficiency of structural capital and the average economic performance of the Saidal complex during the period 2010-2020, where the change in the efficiency of structural capital in one unit sees a

decrease of 27.29% in the average economic performance. With an adverse effect of human capital efficiency on average economic performance of 1.85%. The positive impact of working capital efficiency on average economic performance. With no statistical significance for these last two at the level of significance 0.05, so we tried to estimate a formula for the model that explains the relationship between the variables so the following equation was the best estimated model:

AEPI= 1.67507109797 - 0.239076962802*SCE
(0.0000) (0.0057)

The probability value (0.0057) is less than 0.05, which means the validity of the model is estimated. This model has an explanatory power defined by the corrected determination factor R square, that was more than 59%. This means that components of intellectual capital effect 59% of the average economic performance of the Saidal complex. A percentage that reflects an acceptable quality of compromise for the proposed model.

4.3Diagnostic tests:

The results of diagnostic tests, normality test, serial correlation and heteroskedasticity are reported in the lower part of Table05 :

Table (05): The diagnostic tests

	Model (1)
Normality (Breusch-Godfrey LM)	$\chi^2(2) = 0.096$ (0.953)
Serial correlation LM test	$\chi^2(2) = 0.634$ (0.612)
Heteroscedasticity (ARCH-test)	$\chi^2(1) = 1.1259$ (0.3196)

Source:*Prepared by authors based on Eviews outputs*

The diagnostic test statistics do not suggest the presence of any serial correlation and heteroscedasticity. The estimated model also passes the diagnostic tests of normality and functional form.

5.Discussion of study results:

After presenting the statistical and standard results of the study, which validates the main hypothesis of: "the existence of the impact of the efficiency of intellectual capital on economic performance through its partial competencies". This can be traced back to saidal concern for intellectual capital through its core elements. This is reflected in the relative stability of the evolution of intellectual capital efficiency (see Picture 2) during the study period, with the decreasing stability of average economic performance.

The efficiency of structural capital was characterized by its moral impact on average economic performance, where the latter experienced positive growth during the study period, as a result of the focus of Saidal complex on the introduction of original products to the market. This led him to invest in the renewal of its fixed assets, especially those destined for the research and Development Center. But this affected the average performance of the Economist inversely, due to the huge costs incurred in this matter. When evaluating the patents registered by the research and Development Center at Saidal complex, there were 14 patents between 2007 and 2017, culminating in the launch of 10 new plant-based drugs that were produced and marketed. In addition to the completion of 3 new factories in the development program of Saidal complex. However, the amount of the budget spent on research and development does not exceed 1.5% of the turnover of the complex, and this expenditure remains limited compared to what other countries spend in the same field(www.saidalgroup.dz).

The efficiency of human capital has been characterized by its negative impact on average economic performance, despite the strategies developed for Human Resources Management. The most important axes of this development are the establishment of a new wage system, the launch and completion of joint training programs with other local or foreign directorates, the formation of specialized frameworks on the evaluation of human resources and put them to work for the coming years and the establishment of a program to manage competencies and work. This is in order to eliminate the internal weaknesses of the complex. Saidal complex has also adopted strategies to develop its human resources in order to achieve its objectives and address the competition in the pharmaceutical market in Algeria. among the strategies carried out by the complex are: planning, recruitment, selection, recruitment and training of human competencies in Saidal complex(www.saidalgroup.dz).

The efficiency of working capital was characterized by its negative impact on the average economic performance, as a reflection of the policy of the complex in the short term: its foreign policy, market share, external image and reputation, customer satisfaction, loyalty and degree of retention through attention to intensify and prepare marketing plans, conduct research and study of the market to know and diagnose all the developments in its field of activity, suppliers, marketing channels and their competencies, agreements concluded, contracts and licenses obtained, and quality standards. (www.saidalgroup.dz). The market share of Saidal complex does not meet the expectations of the directors or shareholders.

6.Conclusion:

Intellectual capital in the competitive economy and the era of Informatics is the real capital of organizations as the pillar that plays the main role in the process of innovation, and is the leader in the process of change and creativity, and, therefore, is able to transform knowledge into value and then a competitive advantage.

We find a weak inverse correlation of working capital efficiency over average economic performance, and a strong inverse correlation between structural capital efficiency and average economic performance in the Saidal complex. There is a very poor correlation between human

capital and average economic performance.

The results of the study were as follows :

- Measuring intellectual capital is not an easy process for a number of reasons, including that intellectual capital consists of a lot of different and varied factors that are intangible and therefore difficult to control and manage;
- There is no consensus on what metrics are available to calculate intellectual capital, nor is there a single measure of an organization's intellectual capital or its performance;
- The true value of an organization depends on all its intellectual capital, which is the stock of knowledge of working individuals, which can be converted into value;
- The intellectual capital is associated with intangible assets represented mainly by the element of knowledge, which is qualitative and non-quantitative which makes the process of measuring is difficult;
- Intellectual capital contributes to improving the economic performance of the company by activating its components, especially the human resource by training and qualification.

7.Bibliography List :

1. *Baker.J.Ronald. (2007). mind over matter: Why Intellectual Capital is the chief Source of wealth. New jersey: john wiley sonc.*
2. *Banerjee, s. (2012, 11). measurement and accounting for intellectual capital. 47 (11), pp. 1264-1386.*
3. *Brennan, n., & Connell, b. (2000). intellectual capital current issues and policy implications. (m. u. press, Ed.) journal of intellectual capital, 1 (3), 206- 240.. https://doi.org/10.1108/14691930010350792*
4. *Brooking, A. (1996). intellectual capital: core asset for the third millennium enterprise. London: An International thomson. Business Press.*
5. *Bueno, E., Salmador, M. P., & Rodriguez, O. (2004). The Role of Social Capital in Today's Economy: Empirical Evidence of New Model of Intellectual Capita. Journal of Intellectual Capital, 05 (04), pp. 556- 574https://doi.org/10.1108/14691930410567013*
6. *Edvinsson, l. (1997). developing intellectual capital at skandia. long range planning, 30 (3), 366–373.*
7. *Evans, J. M., Brown, A., & Baker, R. (2015). Intellectual capital in the healthcare sector:a systematic review and critique of the literature. BMC Health Services Research, 15 (556), pp. 1-14.*
8. *Hsu, L.-C., & Wang, C.-H. (2010). Clarifying the Effect of Intellectual Capital on Performance: The Mediating Role of Dynamic Capability. British Journal of Management,https://doi.org/10.1111/j.1467-8551.2010.00718.x*
9. *Jardon, c., & Cobas, x. (2021, may 3). Measuring intellectual capital with financial data. journal pone, 16 (5).https://doi.org/10.1371/journal.pone.0259568*
10. *karl-erik, s. (1998). intellectual capital: thinking ahead. australian accountant, 68 (5)https://doi.org/10.1111/j.1467-8551.2010.00718.x.*
11. *kowalska, M. k. (2020, march 26). intellectual capital: ISVA the alternative way of calculating creating value in agricultural entities -case of poland. journal sustainability, 12 (2645).*

12. *Lev, b. (2001). Intangibles management measurement and reporting. washington: brookings institution press.*

13. *Robinson, G., & Kleiner, B. H. (1996). 'How to measure an organization's intellectual capital. Managerial Auditing Journal, 11 (08), pp. 36-39https://doi.org/10.1108/02686909610131675.*

14. *Savanadze, s., & kowalewska, m. (2015). The measurement of intellectual capital by VAIC method-example of WIG20. journal of applied knowledge management, 3 (2).*

15. *Truls, E., Westnes, p., & westnes, s. f. (2003). Evaluating intellectual capital in the hotel industry. journal of intellectual capital, 04 (3), pp. 287-303https://doi.org/10.1108/14691930310487761.*

16. *Ungerer, m. (2004). developing core capabilities in a finanncial services firm: an intellectual capital perspective(phd thesis). faculty of economice and managment sciences at the rand afrikaans university(RAU) .*

17. *Saidal complex website: https://www.saidalgroup.dz*