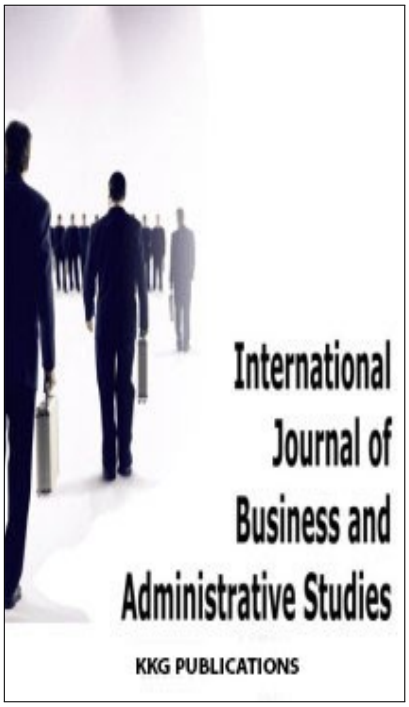

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PROPOSAL OF A NEW MODEL FOR THE ALGERIAN COMPANIES TO MEASURE THE EFFECT OF INTELLECTUAL CAPITAL ON ORGANIZATIONAL PERFORMANCE

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Abstract. Intellectual Capital (IC) is considered the principal provenance for gaining a competitive advantage in the knowledge economy. Many researchers and practitioners have tried to determine the several forms of the IC. They suggest several models measure intellectual capital in the cause to permit the companies to direct their hidden assets. This research aims to compute the IC in Algerian companies using two models to propose a new model compatible with the Algerian companies' organizational culture. This study tests the magnitude of the utilization of the IC in 14 companies through two models proposed by Sharbati, Jawad and Bontis, (2010), which divide IC into human capital, structural capital and relational capital and the model of Choudhury (2010), which separates IC into four forms: human capital, social capital and organizational capital. This study examines the effect of Intellectual Capital (IC) in Algerian Companies on Business Performance (BP). The data were collected from 307 employees using a questionnaire. These two models allow formalizing a new model using cluster analysis, which is tested in a new study using four companies. This study found in the two models that human capital has a weak relationship with the company's performance. This signifies that IC should be integrated into the preparation of the company's strategy. These results relate to the need to increase the managers' awareness of the significance of intellectual capital and its elements to raise the performance of Algerian companies. The new model proposed shows that there is an intermediate variable and moderate variable that interferes with the link between IC and customer satisfaction instead of the business performance.

INTRODUCTION

The economy world has completely changed through the reliance on the knowledge as the main key to achieve a competitive advantage, and the increasing dependence on labor and financial factors. At present, to be able to remain and continue to achieve a part in the market, it is useful that the company takes into consideration the intellectual assets especially human resources. The target of this research is to examine the effect of the intellectual capital on the business performance through its different components, and the proposition of measurement models to the Algerian companies. The Algerian companies have unawareness of the importance and the extent of their intellectual assets for the future sustainability, also the Algerian economy has completely changed.

The goal of this research is to examine the relationships between intellectual capital and business performance in the Algerian companies, especially with the beginning of increased interest in the Algerian economy on the local products instead of the reliance on the fuel with the collapse of its price.

What we cannot measure and cannot manage, it is important to determine the elements of the intellectual capital for the companies to be able to measure it. Researchers and practitioners propose different models to measure the intellectual capital that allows managing it, but the path of the thesis is to examine two models proposed by Sharbati et al. (2010) and a model of Choudhury, (2010) then propose a new model compatible with our culture with the increasing of the competition. This discussion is prepared to Directing attention of the managers, leaders and workers that the main key to achieve their goals efficiently and effectively is the Intellectual capital management.

LITERATURE REVIEW

Definition of IC

The term "intellectual capital" was first used by the economist John Kenneth Galbraith in 1969 (Bontis, 1996; Steenkamp, 2007). Stewart (1997) defines intellectual capital as the intellectual material knowledge, information, intellectual property and experience that can be put to use to create wealth. "Union Fenosa", a top Spanish firm, defines intellectual capital as "a

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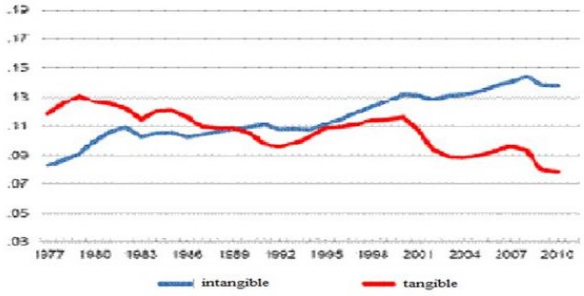
collection of intangible assets that promote the organizational capability for generating profits now and in the future" (De Pablos, 2003).

Various other definitions use concepts such as, ability, skill, expertise, and other forms of knowledge that are useful in organizations. A comprehensive definition of IC is offered by Brooking (1996). "IC is the term given to the combined intangible capital which enables the company to function". Petty and Guthrie (2000) observed that "IC is instrumental in the determination of enterprise value and national economic performance".

Marr (2004) defines intellectual capital (IC) as "the group of knowledge assets that are attributed to an organization and most significantly contribute to an improved competitive position of this organization by adding value to defined stakeholders".

The following figure displays the development hidden asset investment in the US nonfarm business sector, the findings show that the investment in the non-tangible assets increased over the period 1977-2010 from 8% to 14% more than the tangible assets, and this is convenient with the shifting from the industrial era to the knowledge era.

FIGURE 1
Trends in Intangible and Tangible Investment in US Business, 1977-2010, Unpublished Data from Corrado and Hulten (2012)



Components of IC

Bramhandkor, Erickson and Applebee, (2007) noted that the use of the elements of IC differs vastly between the sectors for example $10 billion used in the investment of hidden assets in the banking sector varied in the industry sector. So we can say that:

Human Capital

Knowledge that groups and people possess, such as the capacity to generate it, which is useful for the mission of the organization.

Structural Capital

Composed of knowledge and intangible assets derived from shared processes, which are owned by the organization. This capital remains even when people leave.

Organizational Capital

Contains all the tools, the methods of work, the organizational climate etc. Components that accelerate the flux of knowledge out of the company can be split up into innovation capital which is created from intellectual property, intellectual property, managerial secrets and process capital which is formed from the techniques used in the work, methods that rise the significance of the product or service produced (Huang & Hsueh, 2007). It gives the company effectiveness and efficiency in its activity.

Relational Capital

Relational Capital defined as knowledge incorporated in the organization and people as a consequence of the value derived from the relationship; with the representatives from the market and society in general.

Social Capital

Sandra, SanchezCnizares, Munoz and Lopez Guzman, (2007) define this type of capital as the value of relationships occurring between different agents and composes the social environment of the company.

Measuring IC

As intellectual capital is a new concept for many organizations and one that may be difficult to embrace, identifying ways of measuring it are likely to appear daunting. The famous saying: "what you manage you must be able to measure". Numerous suggestions were made to solve this problem. For example, some wanted to adjust the traditional financial measures to make them more relevant, while others suggested adapting operational

measures like cycle times (Becker, Huselid & Ulrich, 2001).

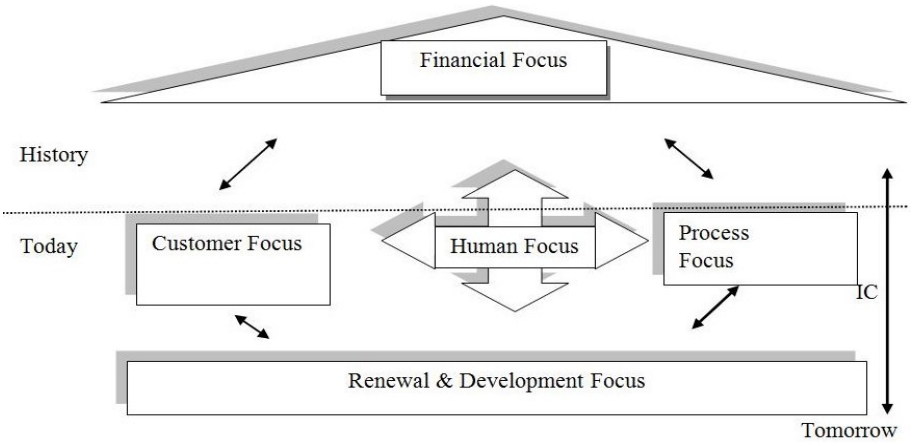
Human Resource Accounting (HRA)

The study of Hermanson in 1964 relating to evaluate assets caused numbers of debates among accountants and human resource theorists. The objective of HRA is to quantify the economic value of people to the organization "to provide input to managerial and financial decisions" (Chen, Zhu & HongYuan, 2004). Researchers have proposed three types of HRA measurement models: Cost models, HR value models and monetary emphasis models. It is acknowledged that HRA made significant contributions in the 1970s and it therefore can be regarded as an important branch of IC measurement. HRA models evaluate human capital in financial terms and they are extensively used in service organizations; where human capital comprises of a significant proportion of organizational value. All of these models, however, tend to be subjective and uncertain and thus lack reliability in that their measures cannot be testified with any assurance. Besides, HRA methods require too many assumptions, some of which cannot hold and even violate common sense. Furthermore, HRA models only deal with the value of human capital without taking into consideration other important elements, such as customer, internal structure, corporate culture and innovation.

Skandia Navigator

In the 1980s, Skandia invited a new management system which is related to the "hidden value" that is not inverted in the traditional accounting. This method tries to visualize this value and to communicate it to the stock market. Skandia determines the intellectual capital as a difference of market value and book value (Figure 2).

FIGURE 2
Skandia Navigator



Source: Philips, (2002). In Action: Measuring Intellectual Capital. American society for training and development.

This is the first model suggested to give the value of intellectual capital. Skandia divides the market into financial capital and intellectual capital. So the intellectual capital contained human capital and structural capital. A mutual relationship exists between these two forms as the latter makes up the infrastructure of the former and in return, human capital aids development of structural capital (Sandra et al. 2007).

IC Index

The IC Index is a tool to integrate all the different individuals into one index, and link the variations in intellectual capital with variations in the market (Bontis, 2001). The index gives an instant advance to obtaining lists containing individual indicators, in front to explain the relationships between their different measures.

The concept of an IC-Index was first developed by Goran Roos and his colleagues at Intellectual Capital Services Ltd. And in 1997, it was first utilized by Skandia in the annual report. The use of this method by Skandia was open to many uses by researchers. Bontis (2001) mentions that the IC-Index proposed by Roos, Dragonettin and Edvinsson (1997) has different characteristics:

- It is a typical measure;
- The IC Index concentrates on supervising the moving of IC;
- It gives to the company information about the performance from prior periods;
- It draws attention to the company from the external view typically based on an examination of physical assets;
- It is a selfrectifying index in that if performance of the

IC-Index does not reverberate variations of the market value of the company, it was hard to determine forms and weight of the capital.

Intangible Asset Monitor

Sveiby (1997) suggests the following equation to measure hidden assets: book value of the organization = tangible assets - visible debt. For years, old system of accounting has taken part of a system of non-financial knowledge flows and intangible assets that use new proxies. According to Sveiby, IC contains three types of intangible assets: External structure, internal structure and individual competence. Sveiby (1997) proposes a model containing knowledge perspectives that replace the traditional accounting measurement. Sveiby (1997) also argues that it is possible to integrate the financial and non-finical measures to have a complete indicator of the success of the company (shown in Table 1).

TABLE 1
Seeing Intangible Assets

Visible Equity (book value)	**Intangible Assets (stock price premium)**		
Tangible assets minus visible debt	External structure (brands, customer and supplier)	Internal structure (management, legal structure, manual systems, R & D, software)	Individual competence (education, experience)

Source: Bontis, (2001).

Research Hypothesis

According to the understanding of conceptual paradigm, the hypotheses of this research are as follows:

Hypothesis 1: There is a positive correlation between intellectual capital and business performance.

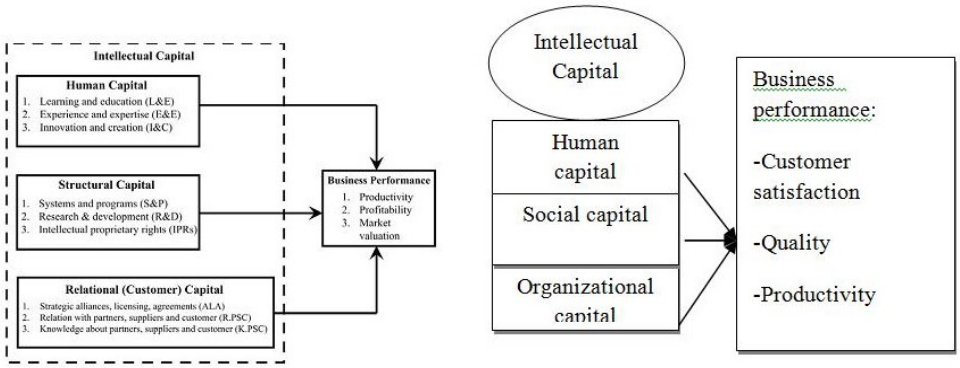
Hypothesis 2: There is a positive effect of Intellectual capital on Business performance.

RESEARCH METHOD

The first model used in this study is the model of Choudhury (2010) used in Indian IT sector that divides intellectual capital into three elements: human capital, social capital and organizational capital and their impact on performance.

The second model of Sharbati et al. (2010) divides IC into components of human capital, structural capital and relational capital, with replacing market value by market share (For the nature of the prevailing economic environment in Algeria shown in figure 3):

FIGURE 3
Conceptual Models



Sharbati et al. (2010); Choudhury, (2010)

Data Collection

The respondents were all employees in Algerian companies. The questionnaire contained 64 statements for the first model and 63 statements for the second model using Likert Scale with five points (1 = strongly disagree and 5 = strongly agree).

Our sample of this research was employees working in companies including: Banks, Industrial Goods and Services, Insurance and Telecommunications. Most of the respondents are situated

in the medium level of the companies mentioned in the table below (Table 2).

TABLE 2
List of the Companies Used as Sample in the Study

Company	The Sector
Pepsi	
Coca Cola	Drinks
Mobilis	
Djezzy	Telecommunications
Ooredoo	
Touring Voyage Algerie	Tourism
CNEP	
NATIXIS	Banks
BDL	
CPA	
Sancella	
Nestle	
LU	Goods
La Vache Qui Rit	

In order to ensure that the sense of the questions was understood, we have encouraged respondents to ask questions about the goal of this research. All such questions were answered during the survey.

Very few concerns regarding the meanings of the questions were reported. About 60% of the respondents were from financial services (Banks) and the remaining 40% were from no service industries (e.g., production). See Table 3 for descriptive information.

Data were collected through quantitative survey approach. The questionnaires were distributed to 320 employees who work in different companies.

In this research, several statistical methods will be used to analyze the data which were collected from the 307 respondents. The response rate was 67.3%. A description of the respondents is represented in table 3.

The Statistical Package for the Social Sciences (SPSS, version 17.0) was used.

Respondents' Profile

The data were collected from 307 respondents from various Algerian companies. It involves various aspects of intellectual capital and business performance. The table - 3 shows the demographic profiles of the respondents. It is evident that the majority of the respondents were female (59%). Age wise distribution depicts 31-40 age group dominates in the study consisting of more than 40% of the total sample. About 28.7% of the population has the license diploma. And the plurality of the respondents have experience in the company (56.35%).

TABLE 3
Respondents' Profile

Parameter	Group	#	%
Sex	Female	181	59
	Male	126	41
Age	20-30	48	15,6
	31-40	139	45.3
	41-50	91	29,6
	>50	29	12,1
Education	Primary	60	19.5
	Medium	68	22,1
	Secondary	83	27
	License	88	28,7
	Post Graduation	8	2,5
Profession	General manager	54	17,5
	Account	46	15
	Branch manager	121	39,4
	Others	86	28
Total Experience	>5years	173	56,35
	<5 years	134	43,65
	Total	307	100

Descriptive Analysis

The Test of the Reliability

To test the reliability of the items, we used the Cronbach's alpha test. As we see in the table 4, the variables of the two models have the reliability with values more than 0.4 (Bontis, 1996; Bollen, Vergauwen, & Schniders 2005).

TABLE 4
The Test of the Reliability and Normality of the Two Models

Items	Cronbach's alpha	(K-S)Z	Sig	Items	Cronbach's alpha	(K-S)Z	Sig
Human capital	0.5602	0.768	0.456	Human capital	0.678	0.674	0.345
Social capital	0.4686	0.02	0.654	Structural capital	0.756	0.104	0.634
Organizational capital	0.6167	0.567	0.354	Relational capital	0.589	0.554	0.324
Business performance	0.7846	0.923	0.234	Business performance	0.566	0.789	0.213

The Kolmogorov-Smirnov Test

It is evident from the table 4 that the dependent and independent variables have normally distributed with significant level more than 5% using the Kolmogorov-Smirnov. So all the independent and dependent variables are normally distributed in the two models and they have the validity.

Testing Hypotheses

Hypothesis 1: There is a positive correlation between intellectual capital and business performance.

The population of this research is heterogeneous, so the respondents are randomly selected, to obtain 307 respondents from different levels of Algerian companies. To examine the relationship between business performance and intellectual capital, we used linear regression model.

The table 5, shows the regression equation of the business performance with human capital, social capital and organizational capital.

As we can see in the table 5, Business performance and the three types of intellectual capital (human capital, social capital and organizational capital) are positively correlated and we note that human capital is weak in explaining the relationship with R value 0.370.

TABLE 5
The Test of the Reliability and Normality of the Two Models

	Mean	Std	1	2	3	4
1-Human Capital	3.24	1.212				
2-Social Capital	3.36	1.205	0.345			
3-Organizational Capital	3.32	1.256	0.456	0.768		
4- Business Performance	3.23	0.928	0.370*	0.449*	0.435*	0.485*

Note: All correlation values are significant at the 0.01 level (two-tailed)

About the Second Model

About the Second Model, the correlation between business performance and the three types of intellectual capital (human capital, structural capital and relational capital) showed that the variables are positively correlated. Note that human capital is weak in explaining the relationship with R value 0.22 (Table 6).

TABLE 6
The Test of the Reliability and Normality of the Two Models

	Mean	Std	1	2	3	4
1-Human Capital	4.03	0.843				
2-Structural Capital	3.19	0.945	0.410			
3-Relational Capital	3.87	0.924	0.222	0.215		
4-Business Performance	3.25	0.461	0.220*	0.387*	0.335*	0.420*

Note: All correlation values are significant at the 0.01 level (two-tailed)

So this means, the hypothesis is accepted: there is a positive relationship between IC and Business performance in the two models of measurement but it is a weak relationship.

Hypothesis 2: There is a positive effect of Intellectual capital on Business performance in Algerian companies.

The results show that the regression equation is:

$Y = 1.005 + 0.311X_{HumanCapital} + 0.461X_{SocialCapital} + 0.506X_{OrganizationalCapital}$

The results showed that a one-unit increase in organizational capital would lead to a 0.506-unit increase in business performance, one-unit increase in social capital would lead to a 0.461-unit increase in business performance and one-unit increase in human capital would lead to a 0.311-unit increase in business performance.

To conclude, the findings show that there is a positive effect of intellectual capital on business performance through its three types, so this means the acceptance of the alternative hypothesis 2. Thus, there is a relationship and an effect of intellectual capital on the business performance.

In other words, the results of the statistical analysis also display that there is an influence of the intellectual capital components on business performance, with F calculated equal to 9.841 at the level of significance $(a \leq 0.05)$ that means the rejection of the null hypothesis and acceptance the alternative hypothesis.

About the Model of Bontis (2010)

The equation for business performance was expressed in the following equation:

$Y = 0.987 + 0.396X_{HumanCapital} + 0.449X_{StructuralCapital} + 0.345X_{RelationalCapital}$

The results showed that a one-unit increase in structural capital would lead to a 0.449-unit increase in business performance, one-unit increase in human capital would lead to a 0.396-unit increase in business performance and one-unit increase in relational capital would lead to a 0.345-unit increase in business performance.

To conclude, the findings show that there is a positive effect of intellectual capital on business performance through it three types, so this means the acceptance of the alternative hypothesis 2. Thus, there is a relationship and an effect of intellectual capital on the business performance.

The results of the statistical analysis mention that there is an influence of the intellectual capital dimensions on business performance, with F calculated (65.175), which amounted to 30 that means it is significant at the level of 0.05 that means the rejection of the null hypothesis and acceptance of the alternative hypothesis.

DISCUSSION

The findings of this research mention, on one hand that there is a weak use of the component of IC in the Algerian companies used in this study and on the other hand, there is a positive impact of IC dimensions on Business performance.

The Algerian companies should adopt a new managerial aspect like team work to increase the level of using the different IC's components. To do this, it is useful to gain good leaders who have characteristics that can generate commitment and loyalty and rise the awareness to apply the concept of the IC within all levels of the company. The Algerian companies should adopt an IC strategy and determine the function of IC that helps them to build a competitive advantage within the formal organization. This can be achieved by drawing a map for IC in each company. Managers should plan programs, design databases, choose the qualified employees to apply, manage and monitor IC and related databases. These can be achieved by relating the IC's management with the company's strategic goals (Sharbati et al., 2010).

The New Model

For the purpose of compiling the study variables in the form of a tree cluster, we identified the similar qualities convergent using the cluster analysis with SPSS program, where the aim of the cluster analysis is the classification sample that views into two categories but unknown or more depending on the configurations of the categories of variables. Usually, the purpose of this study is to analyze and discover a particular pattern that regulates views.

In contrast to the classification problem where each observation is known to belong to one of a number of groups and the objective is to predict the group to which a new observation belongs, cluster analysis seeks to discover the number and composition of the groups.

The table 7 shows the differences between the variables using the method of cluster analysis with Square Euclidean Distances. For example in the cause to have the distance between human capital and structural capital, we calculated the mean of human capital and the mean of structural capital, then we calculated the square between these two variables: Square Euclidean Distances = $(XHC-XSC)^2$ when XHC: shows the mean of human capital and XSC: shows the mean of structural capital.

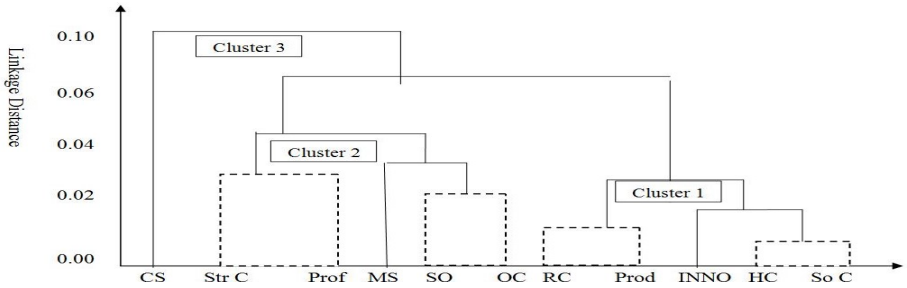
TABLE 7
The Differences between the Variables Using the Method of Cluster Analysis Using Square Euclidean Distances

	Market share	Profitability	Productivity	Innovation	Services/product quality	Customer satisfaction	Relational capital	Structural capital	Organizational capital	Social capital	Human capital
Human capital	0.0003	0.0523	0.123	0.0113	0.0004	0.0004	0.0187	0.063	0.0065	0.0002	0.000
Social capital	0.076	0.0624	0.1456	0.0225	0.0008	0.0002	0.0256	0.0467	0.0085	0.000	0.0002
Organizational capital	0.043	0.0657	0.0645	0.0056	0.0056	0/02	0.0072	0.0115	0.000	0.0085	0.0065
Structural capital	0.063	0.0467	0.0115	0.000	0.0017	0.0576	0.0545	0.0051	0.023	0.0177	0.0067
Relational capital	0.0187	0.0256	0.0072	0.0017	0.000	0.0021	0.0754	0.0311	0.0031	0.086	0.034
Customer satisfaction	0.0004	0.0002	0/02	0.0576	0.0021	0.000	0.0015	0.0354	0.134	0.076	0.0879
Services/product quality	0.0004	0.0008	0.0056	0.0545	0.0754	0.0015	0.000	0.0443	0.0411	0.0154	0.034
Productivity	0.0113	0.0225	0.0056	0.0051	0.0311	0.0354	0.0443	0.000	0.0441	0.0123	0.0897
Innovation	0.123	0.1456	0.0645	0.023	0.0031	0.134	0.0411	0.0441	0.000	0.0052	0.0032
Profitability	0.0523	0.0624	0.0657	0.0177	0.086	0.076	.0154	0.0123	0.0052	0.000	0.0043
Market share	0.0003	0.076	0.043	0.0067	0.034	0.0897	0.034	0.0897	0.0032	0.0043	0.000

It is evident from the table that the square of the distance between the variables varies depending on the different characteristics and qualities between the variables. For example the square of the Euclidean distance between human capital and social capital was 0.0002, also the square of the Euclidean distance between organizational capital, human capital, and social capital was 0.0065 and 0.0093.

These results show that through the distances between the variables, it formulates three clusters mentioned in figure 3. The figure (3) shows the tree clusters of the variables that contain the model proposed.

FIGURE 4
Tree Diagram for 11 Variables Complete Linkage Squared Euclidean Distances of Intellectual Capital & Business Performance



When: HC: human capital, So C: Social capital, INNO: innovation, RC: relational capital, SQ: service/product quality, MS: market share, Str C: structural capital, Prof: profitability, CS: consumer satisfaction

It is clear from the figure (4) that there are three clusters formed as a result of interdependence and relationship between the 11 variables of the present study, as the square of the distance at least was between human capital and social capital. That reflects the convergence between these two variables in the characteristics and qualities, followed by the square of the distance between the productivity and relational capital, then between organizational capital and service/product quality, finally between structural capital and profitability.

The figure also shows that the similarities in characteristics and qualities between human capital and social capital led to their relationship with innovation relational capital and productivity and as a result, this link met with relational capital and productivity that allows to formulate the first cluster.

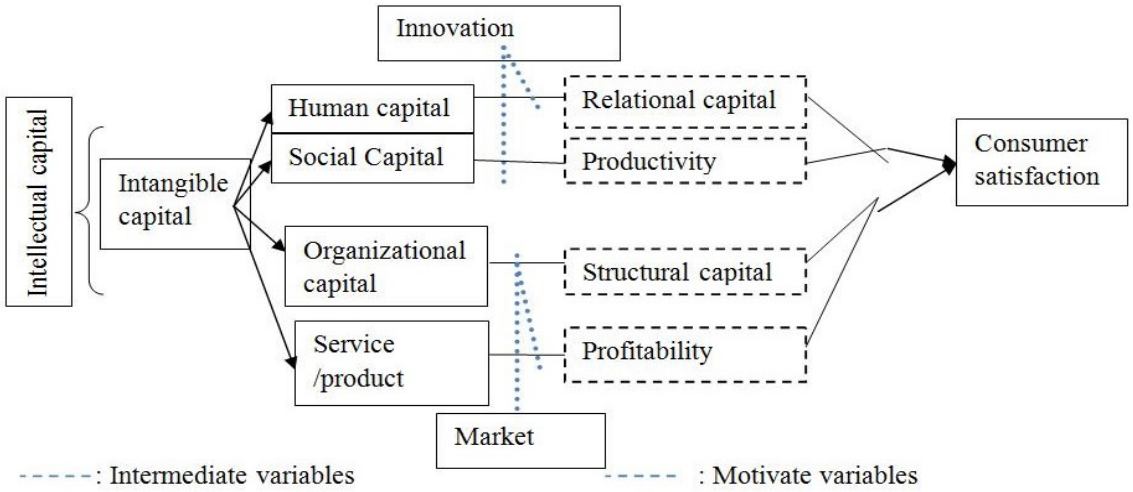
The similarities in the characteristics and qualities between profitability and structural capital allow to relate with market share. Also the similarities in the characteristics and qualities between service /product quality and organizational capital led to relate. And the figure also shows the result of the similarities in characteristics and qualities between productivity and structural capital that led to their relationship with organizational capital that allows the formulation of the third cluster.

The relation of the first cluster with the second cluster has an impact to make the relationship between these two clusters with the customer satisfaction that we can consider it as the independent variable or the final strategic results of the Algerian companies in the long term.

Else, for the objective of this survey is to propose a new model

for the measurement of the intellectual capital that is compatible with the Algerian environment, we can say that the main aim of the Algerian companies is to improve the business performance, they have a consideration of the customer satisfaction as a main strategic objective that allows them to have an added value and to continue in knowledge era.

FIGURE 5
Tree Diagram for 11 Variables Complete Linkage Squared Euclidean Distances of Intellectual Capital & Business Performance



We divided intellectual capital into intangible capital that has an impact on the satisfaction of the consumers through some variables that are considered intermediate and motivate variables.
Intangible capital is composed of: human capital, social capital, organizational capital and product/service quality, these components have an impact on the customer's satisfaction instead of the business performance.
The figure below shows that to realize the relationship between intangible capital and customer's satisfaction, there are some intermediate and motivate variables.

Testing of New Model

The test of the new model based on the hypotheses is as follows:
Hypothesis 1: Customer satisfaction is positively impacted by the human capital through the relational capital in Algerian companies.
Hypothesis 2: Customer satisfaction is positively impacted by the social capital through the productivity in Algerian companies.
Hypothesis 3: Customer satisfaction is positively impacted by organizational capital through the structural capital in Algerian companies.
Hypothesis 4: Customer satisfaction is positively impacted by the service/ product quality through the profitability in Algerian companies.
Hypothesis 5: Innovation motivates the relationship between human capital and relational capital.
Hypothesis 6: Innovation motivates the relationship between social capital and productivity.
Hypothesis 7: Market share motivates the relationship between organizational capital and structural capital.
Hypothesis 8: Market Share motivates the relationship between service/product quality and profitability.

RESEARCH FRAMEWORK

According to the above hypotheses, we attempt to test the variables developed in Figure 4.

METHODOLOGY

We used a questionnaire to study the direct and indirect influences of intangible capital on consumer satisfaction as well as the moderating role of innovation and market share on the above relationships and the influence of the intermediate variables on the consumer satisfaction. We used 120 questionnaires that were distributed to the employees in different Algerian companies.

The Sampling

For this research, the sample was chosen randomly to obtain a sample size of 120 potential respondents, with response rate of approximately 83.33% which means that we have 103 responses.

Respondents' Profiles

The characteristics of respondents are summarized in Table 8. As we see in this table the majority of the respondents were male (67.69%). About the education, almost 55.33% of the respondents had license degree and they had age more than 30 years old with 42.72 percent. The respondents had experience of less than 5 years (52.42%).

TABLE 8
TDemographic Characteristics of Respondents (New Model)

	Demographic characteristics	Frequency	%		Demographic characteristics	Frequency	%
Gender	Male	79	67.69		Middle school	2	1,94
	Female	24	35.31		High school	10	9.70
	25-30	7	6.79	Education	University	57	55.33
	31-40	44	42,72		Graduate school	34	33.00
Age	40-50	10	9.70	Experience	Less than 5 years	54	52.42
	More than 50	42	40,77		More than 5 years	49	47.57

Data Analysis

In the cause to test the direct and moderating effects, we employed the Statistical Package for the Social Sciences (SPSS) for Windows Version 17.

Reliability

Cronbach's alpha test is chosen to measure the internal consistency or reliability of the items of the questionnaire used and the values of more than 0.4 are accepted to have an internal consistence among variables. Table 9 summarizes the results of the eleven variables, it is clear that these variables had values between 0.543 and 0.897 of Cronbach's alpha coefficients.

Factor Analysis for Reliability Testing

For factor analysis, the Kaiser-Meyer-Olkin (KMO) measure is used. The values more than 0.5 are accepted for this test. The results showed in Table 9 of the KMO values were between 0.612 and 0.832, so the items were suitable for factor analysis.

TABLE 9
Results of Reliability and Normality Analyses (New model)

Variables	Items	Cronbach's alpha	KMO value
Human capital	8	0.675	0.635
Social capital	5	0.578	0.612
Structural capital	4	0.768	0.698
Organizational capital	5	0.897	0.766
Innovation	5	0.789	0.654
market Share	4	0.543	0.832
Service /product quality	5	0.645	0.777
Productivity	6	0.845	0.735
Profitability	3	0.756	0.645
Relational capital	5	0.544	0.711
Customer satisfaction	11	0.546	0.633

Testing Hypothesis

Table 10 shows that the mean values for each variable are more than 3, the mid-point, this means that all the items are in the affirmative.

To test the correlation relationship between the independent variables (i.e., human capital, social capital, organizational capital and service/product quality), moderating variables (i.e., innovation and market share), intermediate variables (relational capital, productivity, profitability and structural capital) and dependent variable (customer satisfaction), the Pearson correlation coefficients show that the coefficients were less than 0.90.

TABLE 10
Correlation between Variables and Descriptive Statistics (New model)
Pearson Correlation

Variables	Mean	StD	1	2	3	4	5	6	7	8	9	10	11
1-Human capital	5.23	0.65	(1)										
2-Social capital	4.34	0.67	0.56	(1)									
3- Innovation	5.34	0.54	0.55	0.54	(1)								
4-Organizational capital	5.21	0.78	0.54	0.67	0.33	(1)							
5- Productivity	4.34	0.56	0.57	0.34	0.45	0.68	(1)						
6-Profitability	5.22	0.78	0.50	0.44	0.68	0.89	0.33	(1)					
7-Structural capital	5.43	0.67	0.52	0.78	0.54	0.77	0.51	0.34	(1)				
8-Share market	5.45	0.97	0.67	0.45	0.55	0.66	0.87	0.78	0.55	(1)			
9-Relational capital	4.85	0.84	0.45	0.57	0.43	0.65	0.56	0.85	0.33	0.82	(1)		
10-Service /product quality	5.32	0.74	0.53	0.53	0.56	0.43	0.67	0.65	0.85	0.76	0.74	(1)	
11-Customer satisfaction	5.22	0.59	0.89	0.88	0.53	0.62	0.52	0.55	0.62	0.69	0.73	0.67	(1)

Note: All correlation values are significant at the 0.01 level (two-tailed)

About the intermediate variable, we utilized the AMOS 17.0. The structural equation modeling examined the hypotheses of this research. All the index showed an acceptable level of fit X2 = 298.011, p = 0.000, df = 82; Goodness of Fit Index (GFI) = 0.863, AGFI = 0.812, Tucker-Lewis Index (TLI) = 0.928, comparative fit index (CFI) = 0.941, Standardized Root Mean Residual (SRMR) = 0.061, Root Mean Square of Approximation (RMSEA) = 0.083, Normed Fit Index (NFI) = 0.909.

TABLE 11
Results of Hypothesis Testing (New Model)

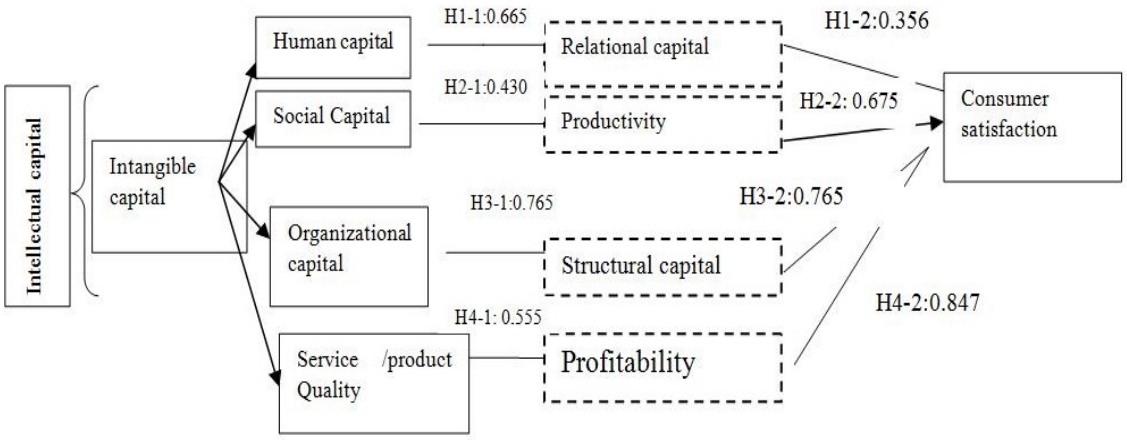
‘	**Customer satisfaction New model**		
Dependent variables:			
Human capital	0.38		
Social capital	1.35		
Organizational capital	-1.06		
Service /product quality	0.68		
Moderating variables:			
Human capital * Innovation	0.23		
Social capital *Innovation	-1.83		
Organizational capital * share market	1.72*		
Service/product quality * Share market	1.65		
Intermediate variables: (Path)	Path Coefficient	t -value	p-value
Human capital → Relational capital	0.655	11.034	0.000
Social capital → productivity	0.430	6.903	0.000
Organizational capital → Structural capital	0.765	10.435	0.000
Service ’product quality → Profitability	0.555	12.345	0.000
Relational capital → Customer satisfaction	0.356	9.324	0.000
Productivity → Customer satisfaction	0.675	12.354	0.000
Structural capital → Customer satisfaction	0.765	13.245	0.000
Profitability → Customer satisfaction	0.847	14.556	0.000
R^2	0.57		
R^2 Adjusted	0.35		
F	9.32***		
R^2 Change	0.04		
F $\triangle R^2$	1.96		

Note: Correlation value significant at *p<0.05, **<0.01, ***p<0.001

$X2 = 298.011, p = 0.000, df = 82$
$GFI = 0.863, AGFI = 0.812, TLI = 0.928,$
$CFI = 0.941,$
$SRMR = 0.061, RMSEA = 0.083,$
$NFI = 0.909$

The results are represented in the Figure 5, in which the structural diagram illustrates direct effect among the standardized paths. The findings demonstrated that human capital affected relational capital in positive path with = 0.655, t = 11.034, p = .000, this means the hypothesis 1 was accepted. And the same can apply to the other variables.

FIGURE 6
Results of Analysis of the New Model



The table 11 also showed the test of the moderating variables, the results are summarized as follows:

1- H5 was accepted, because the interaction variable (human capital x innovation) is significantly correlated to the customer satisfaction (B = 0.23, p>0.05). This result explains that innovation had increased the effect of responsiveness on customer satisfaction. SOA indicates that innovation does act as a moderating variable in such relationships.

2- Innovation doesn't play the role of moderating variable in the relationship between social capital and customer satisfaction with B = -1.83, p>0.05 therefore H6 was rejected.

3- H7 was accepted, in order that the interacting variable (organizational capital x share market) significantly correlated with customer satisfaction (B= 1.72, p<0.05). We can say that the market share intermediates the relationship between the organizational capital and customer satisfaction.

4- Also the hypothesis 8 was accepted because the results showed the interacting variable (product /service quality x share market). Therefore share market had increased the impact of organizational capital on customer satisfaction. This indicates that share market does act as a moderating variable in such relationships.

DISCUSSION

The findings for this research showed that:

Relational capital intermediates the relationship between human capital and customer satisfaction in the positive way; this means that the increase of the consideration of the human capital e.g. people innovation, satisfaction of the employees can raise the level of the capacities of the enterprise to react with the external environment which contains customers, suppliers, franchisers, partners and other stakeholders (relational capital) in order to increase the satisfaction of the customer (Sundar & Al Harthi 2015).

The productivity intermediates the relationship between the social capital and customer satisfaction; this means that the social capital has a positive effect on productivity that has a positive influence on the consumer satisfaction. In other words, the consideration of the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions can increase the productivity; for the company that is able to satisfy the needs of the customers, it is useful to allocate the resources that can lower the costs and improve the productivity (Putri, 2015).

The organizational capital has a positive influence on customer satisfaction through the structural capital in Algerian companies; structural capital aids the company to have a good and powerful culture that authorizes the employees to win experience. So it is clear that there is a great relationship between human capital, structural capital and organizational capital to achieve the strategic goals of the company like the rise of the level of customer satisfaction.

The profitability intermediates the relationship between service quality and customer satisfaction; Profitability is related to the customer satisfaction through the loyalty of the customer. So the customer satisfaction outcomes from the importance of products extended to the customers which is related to the service quality (Na Ayutthaya, Tuntivivat & Prasertsin, 2016).
The results of this research also show that Innovation motivates the relationship between human capital and relational capital and does not motivate the relationship between social capital and structural capital. Market share motivates the relationship between organizational capital and structural capital. And also motivates the relationship between service quality and profitability.

CONCLUSION

At present, it is difficult to give a financial sense to the knowledge assets because there is a little information about the intangible assets especially in Algerian companies. The efforts to assign the hidden assets have contained treating to give employees a value in the balance sheet items and measured in money, to facilitate the evaluation of the human capital in the company. The researchers emphasize the importance of intellectual capital as a key contributor to create wealth and a competitive advantage, and to transform tangible resource into productive services. Therefore, increasingly the future success of organization will be dependent upon their intellectual capital, for these reasons, we tried to propose a new model.
The model proposed to measure intellectual capital is compatible with our companies and points to the importance of managing human capital. Although most of the components of the model were evident in the companies, the model shows that it is useful to the Algerian companies to take consideration of their human capital as a key important to success, especially with increased interest of the Algerian economy to the local capabilities instead of the reliance on the oil with the collapse of its prices.
In spite of the lack of formal management or strategies for intellectual capital, there were encouraging indicators of knowledgebased change. The employees (especially the young managers) recognized the importance of the human capital to their business performance. They acknowledged the need for a more proactive approach to managing the human resources. In general, it was admitted that there were knowledge gaps, and that greater attention needs to be given to eliminating those gaps.

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– This article does not have any appendix. –