

INTELLECTUAL CAPITAL AND KNOWLEDGE AS A COMPETITIVE ADVANTAGE IN INDUSTRY A CASE STUDY OF ALGERIAN S.M.ES (SCIMAT)

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Abstract:

The competitiveness of a cement factory depends on the intellectual capital(IC) resources and knowledge management of all the company, as well as on the ability to use them for competitiveness. But these days the use of the IC and knowledge is not optimal in Algerian enterprises because there is lack of methods and techniques which give managers some kind of advice how to use properly their own IC/knowledge potential-obviously maximizing advantages for this company.

It is also the lack of research concerning what each components of both the structure of IC and knowledge influence on gaining competitive advantage and increasing value of the hole company. the intellectual capital created in the company could have higher efficiency if it is possible to identify all its components and to know the measurement methods. Also knowledge if used properly increases the value of the company.

The aims of this work is not only to describe all aspects of IC and knowledge management but to present a practical approach to the effective use of both of them as applied in other companies. We also focus on some determinants of IC/knowledge to give some advices, for employers and employees, about the way they could increase the value of the company. A comprehensive model of efficiency of IC use which helps in creating values and building competitive advantage on a large industrial scale.

Résumé:

La compétitivité d'une cimenterie dépend des ressources du capital intellectuel (CI) et de la gestion des connaissances(GC) de l'entreprise, ainsi que sur la capacité de les utiliser pour la compétitivité. L'utilisation du CI et de la gestion de connaissance n'est pas optimale dans les entreprises algériennes, ceci est du au manque de méthodes et de techniques utilisées par les gestionnaires. L'utilisation d'une façon correct le CI/ connaissance, afin de maximiser les avantages de compétitivité de l'entreprise.

Il est également a noter que le manque de recherche concernant ces deux composants a une influence directe sur l'avantage concurrentiel la valeur de l'entreprise. Le capital intellectuel dans l'entreprise pourrait avoir une plus grande efficacité si on est en mesure d'identifier toutes ses composantes et de connaître les méthodes de mesure à appliquer. Même chose pour la connaissance, si elle est utilisée correctement, elle augmente la valeur de l'entreprise.

L'objectif de ce Travail est non seulement de décrire tous les aspects du CI et de gestion des connaissances, mais de présenter une approche pratique pour l'utilisation efficace de chacun d'eux. Nous avons aussi mis l'accent sur certains déterminants du CI/GC pour donner des conseils pratiques aux employés et employeurs, surtout dans le contexte de l'industrie du ciment. Comment augmenter la valeur de l'entreprise vis-à-vis de ses concurrents. Un modèle d'efficacité du CI qui permet l'introduction d'un avantage concurrentiel et de compétitivité sur une grande échelle industrielle.

Introduction

An intellectual capital (IC) becomes very important for the future-oriented company, because it is a main factor in creating development of the company at the present day. To obtain competitive advantage, it is crucial for enterprises to use knowledge and IC they have in most efficient way. Thus, proper measuring and managing of IC is emerging as an effective tool for increasing competitiveness and efficiency of the company on the market. Reporting IC to customers, partners and investors systematically has become a crucial factor of success in the context of Strategic watch of the company. Unfortunately the use of IC is not optimal, in Algerian SMEs, because there is a lack of methods and techniques which give employers hint about the use properly their intellectual/knowledge potential and in consequence to maximise advantages for the firm. Also there is a lack of study of IC/knowledge management with reference to current company activities and lack of research concerns an influence of each component of the IC structure in gaining competitive advantage and increasing values of the whole firm. Furthermore number of companies may be hesitant to disclose important figures to fear of giving away their competitive advantage but the external disclosure standards and the lack of clarity in (IC) constructs for disclosure can also hinder measurement and reporting. There is also the question of the perceived importance of different intangible resources across the companies, which should call for more detailed studies of what is disclosed of IC and for what reason (Marr and al 2003). Also disclosure has practical implications internally since it can help companies in the strategy formulation, execution assessment, decision and finally as a tool in determining compensation.

The objective of this article is to analyse the use of intellectual capital and knowledge management in companies in order to determine the appropriate method of IC/Knowledge efficiency. We would like to draw special attention as far as SCIMAT is concerned to:

- 1-detailed identification of IC components, what leads to the correct estimation of IC usage.
- 2-Advantages result from effective use of IC and how it can be used to leverage the competitive situation of the company.
- 3-Determinants which influences the efficiency of IC use in company.
- 4-Knowledge Management cycle in the given company.
- 5-Knowledge management cycle.

Finally The creation of the company strategy based on knowledge and treatment of employees as an intellectual capital is, for the organization, an opportunity for survival and achieving success in a dynamically changing surrounding.

1. The Concept of Intellectual Capital

Intellectual capital was introduced in early 90s as a concept concerning intangibles with reference to company value creation and performance (Edvinsson & Malone 1997). Today, intellectual capital is an increasingly important part of running a business with success but its definition stays difficult task. So IC is still not defined completely and different authors give different interpretation of the concept. There is still a lack of research about companies that set out to develop IC statements, therefore, there is little evidence about the question that makes an IC an interesting answers.

DEFINITION OF INTELLECTUAL CAPITAL:

The starting point in defining IC or IA should be from assets. IA(IC) are considered the most critical resource of today's company and yet most companies cannot clearly define what constitutes an IA (Andreou&al 2007 cited in K.K Choong). There is a wide range of definitions that can be considered as IC or IA. Also proliferated with different terms to describe either the same or different information used in relation to IC/IA. However one can define the concept as:

- "all non-physical and non financial resources that are fully or partly controlled by the organisation and that contribute to the organisation value creation (Ross 2005).
- Intelligence of the organization which is not only a sum of intelligence of its employees but is a result of existing synergy phenomenon. The intelligence of a company consists of different elements like: communication, technological, innovative, organizational, marketing, social and finally ecological intelligence.
- Total knowledge of a company's employees and translation of this knowledge to IC components.
- Intellectual capital consists of knowledge, information, intellectual property, experience that can be put in use to create wealth and creation (Stewart 1997).
- IC is the result of the "collaborative effort among the company's human and social capital, and knowledge management". This definition is similar to Lev's (2001) and Daum (2002) in the sense that IC does not exist on its own but is the result of the network effect (Rastogi P.N 2003).

The definition of IC by Lev (2001) Daum (2002) Rastogi (2003) and Mauritsen (2004) have two things in common: First intangible cannot stand by itself, and hence it cannot be valued separately from other assets. Second IC is the result of a network effect of utilizing various intellectual, human and organizational resources.

- Knowledge that can be converted into values (Edvinsson 1996).

As we can see, we can divide IC into categories such as: human, organizational and relational as shown in (figure1).

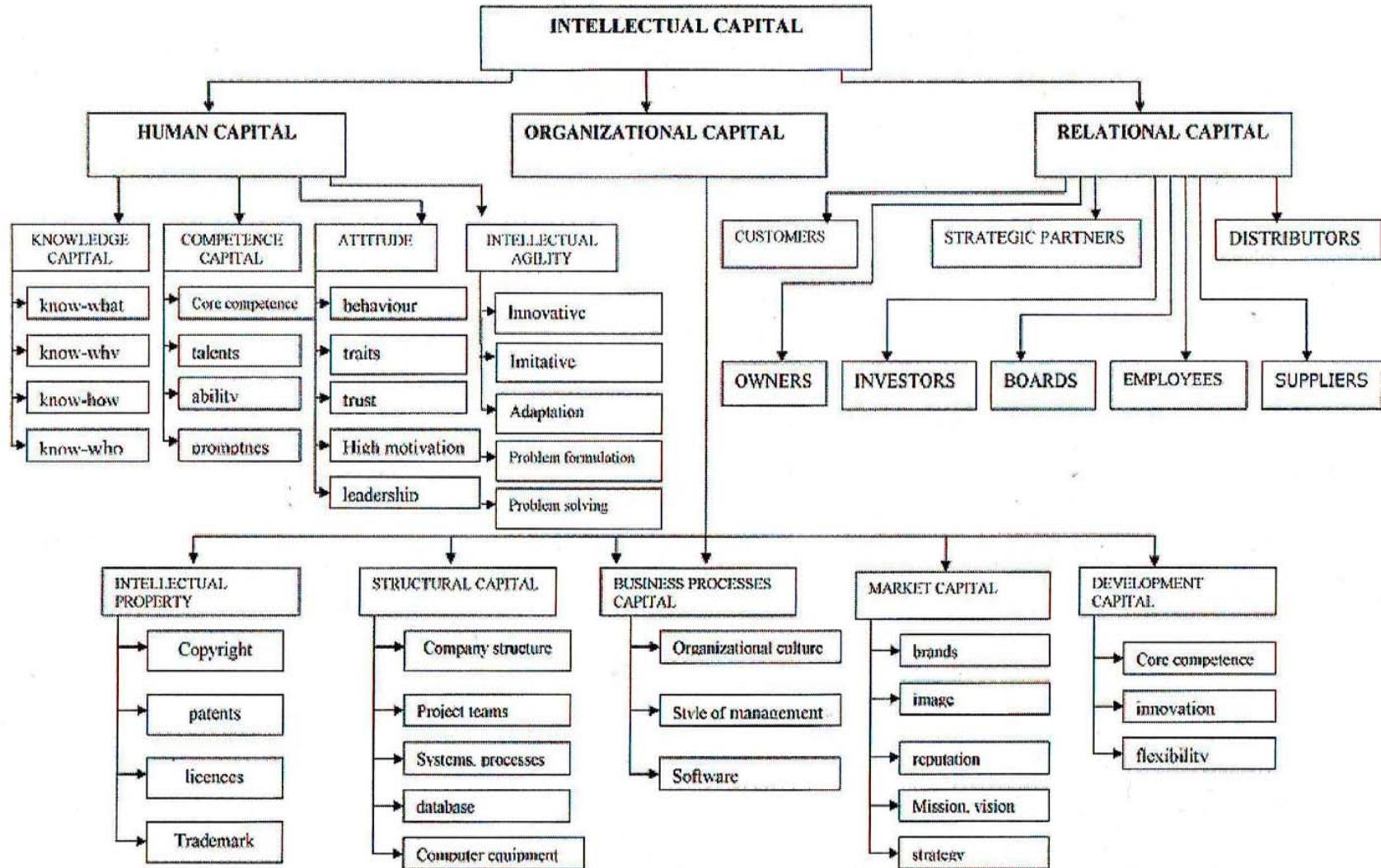


Fig 1: categories of intellectual capital (SVEIBY 1997)

Using this classification, Guthrie and petty(2000)suggest that the indicators used in this figure spread across the three forms of IC as 30% human capital 30% organizational capital(internal structure) and 40% relational capital(external structure).

The IC indicators within Scimat Algeria were arranged into 18 along the three different dimensions of IC, human structural and relational capital

Table1: Categories of IC indicators

Human capital	Structural capital	Relational capital
Employees	Information system	Customers
Staff turnover and recruiting	quality management	Market and image
Skills and competence	innovativeness	Visibility of expertise
Employee satisfaction and attitude	Competence development	Networks
Executive competency	Working conditions	ISO9001
Management competency	Governance	QHSE

We noticed that working with other enterprises in the same industry(cement) has provided Scimat the opportunity to learn more than just IC theory and knowledge management because of many things enterprises have in common.Scimat hopes to improve its operations and value creation mechanisms.It hopes also to be more competitive if all the indicators are looked after on the same bases.The question to be answered is whether these objectives can be met in the near futur.

2. Knowledge

In literature, knowledge is defined through the prism of such terms as: data and information. Data is individual signs combined by syntax rules. From an organization point of view, these are registered facts about an event, e.g. numbers.

One can encounter various definitions concerning this term however related to this context we can retain (D.J.Skrymes's) definition"Knowledge management is a defined and systematic management of a specified set of information of a given company and connected with its processes of creation, organization, diffusion, and implementation in order to achieve certain targets of the company. This view underline processes of the so called "knowledge management cycle".

2.1 Typology of knowledge:

Despite the fact that the literature includes different types of knowledge-scientific and practical-objective- procedural-incorporated.The most frequently used is, the one that distinguishes between tacit and explicit knowledge,proposed in 1966 byPolanyi.

Tacit knowledge,is acquired through experience.It is the form of knowledge with which we are familiar, explicit or codified knowledge(Polanyi) is transmitted through formal, systematic language, and many adopt the form of computer programs(Table 2 shows the main differences between the two types of knowledge).

Much of the knowledge is tacit; it is generated through the experience of daily work.

Table2: Types of knowledge

<i>Tacit knowledge (subjective)</i>	<i>Explicit (objective)</i>
Knowledge of experience (body)	Knowledge of rationality (mind)
Simultaneous knowledge (here and now)	Sequential knowledge (there and then)
Analog knowledge (practice)	Digital knowledge (theory)
Source: Nonaka and Takeuchi (1995, p. 61)	

2.2 Knowledge management cycle:

Observation of the” living enterprises” convinces of rightness and purposefulness of the integration of knowledge management, not only with the quality management, but also with normalized system: the security management and work safety or environmental management. There are no standards, though, concerning management of such an issue as knowledge. Due to this fact the certification of knowledge management is impossible. That is why the optimal way is implementing the knowledge management into the already existing management system.

2.3 Knowledge management cycle in the given enterprise:

“Scimat” company had already implemented the quality management system which is currently being improved (ISO9001/2000). Scimat is a producer of cement situated east of Algeria, it has been present on the national market since the 80s and currently it is employing 500 people. Scimat does have certification that confirms its standard of production and technological requirements (ISO9001). The company possesses IT management system, production module.

* Localization and gaining of knowledge:

Knowledge location and gaining deal with search of outer and inner sources of knowledge, in other words, answers to questions as “how» and “where” one may gain knowledge.

Scimat has not yet developed any standards concerning descriptions of working positions; it lacks procedures and instructions concerning access to outer and inner information. An employee, depending on situation, sets the access to knowledge himself. This called pull which means the access to information is forced. In this case it is hard for the employee to localize and gather knowledge .In such a situation ”Scimat”, means prolongation of task implementation, lack of knowledge clarity, waste of time and money. The company seems to be immature in the case of knowledge localization and gathering.

* Creation of knowledge:

The necessity of trainings comes directly from ISO9001 and is a manifestation of a constant improvement. The culture of Scimat is not conducive to team worth. Workers are not willingly sent for training and if there training these are irregular. Difficult access to inside and outside information, market competition and competition among employees make the efficient process of knowledge creation and development impossible.

*** Sharing of knowledge and its dissemination**

In Scimat, the process of knowledge sharing encounters many obstacles, among these obstacles the uncertainty of information, lack of defined organizational policy. Scimat has irregular informational meetings and have not gained the respect of workers who believe that participation in such meetings is not important. All these factors show that employees are in willing to share their knowledge with others and do not take part in team work.

*** Knowledge preservation:**

Knowledge preservation is an extremely important element since it has a direct influence on further usage of knowledge gathered during work on project, improvement or preventive and corrective actions. In this process of knowledge Scimat Company, some part of gathered information is recorded in IT system but the majority of informal knowledge is passed on verbally. The consequence of such an attitude is loss of this important value which leads to the waste of time and money,

*** Knowledge usage:**

Knowledge use is the last stage in the knowledge management process and has direct link with previous stages however Scimat does not build a knowledge platform which is the base to a quick development and creation of innovation. Its market power is based only on material issues. Top management does not pay attention to culture, communication. This makes the creation of new knowledge for the company difficult and at the same time prevents creation of new products and technology. It is hard seeing the process of knowledge usage.

3. Knowledge management and IC competitiveness

knowledge management is seen as a business process that is driven by and supports,an enterprise competitive strategy.The potential of KM lies long term viability and competitiveness of enterprises facing volatile business conditions.An enterprise capacity to generate and expand the nature and range of its strategic options,and exploit the selected option rapidly and effectively,would depend upon the overarching meta-capability of leveraging its IC.In this sense the KM in and by an enterprise may be seen as the foundation of its effort towards securing and sustaining a leading competitive edge.What an enterprise knows,how it uses this knowledge,and how fast it can know something new and important are part of IC process.The focus of the process(IC) is the enterprise creation of wealth through innovation and exploitation of expertise.

Development of IC of an enterprise, does not involve a plan,it is a systemic process.

Knowledge management and its graduation towards intellectual capital together imply a new paradigm of competitiveness(RASTOGI 2001).This paradigm is based on competing through the collective intelligence.Competitive success is seen to stem from the individual and collective creativity and innovation.

Knowledge management and IC are quite essentially about the way people think, feel, behave towards one another, and how they work together to learn, share, create and use knowledge.

In order for knowledge to become a source of competitive advantage, certain characteristics must be present (Dierickx and cool 1989)

- That they cannot be commercialized, as they are developed and accumulated within the enterprise
- That they display a strong intrinsic character as well as social complexity.

- That their origin lies in organizational skill and learning.
- That they should be strongly linked to the firm, with a high component of immobility.
- That their development is path dependant, being conditioned on the level of learning, investement, and previous activity.

4. Proposed model of using IC efficiency in company:

There is a need for more objectives, reliable and complex methods for measuring IC of companies. a careful analysis of knowledge management and IC in theory.

The model based on general procedure for analyzing an measuring IC efficiency

And on the following assumptions:

1. Firms can be viewed as bundle of different resources distributed across firms
2. Competitive advantage arises from valuable resources that are mobilized into activities and value creation.
3. There is a possibility to identify the main areas of IC and their components.
4. It is possible to estimate the influence of each component on the organization value.
5. IC efficiency is an effect of human resources transformation in organizational capital. And this process due to competence of all employees can cause building a proper relationship with environment.

The introduction of such method requires:

1. Building awareness among all the employees at the company
2. Creating an IC measurement teams
3. Introduction of IC measurement methods, for analyzing and measuring IC efficiency.
4. Timely and complex implementation and publication of the results.
5. Engaging the scientific community into the process of evaluating their performance based on IC measurement tool.

A company, which will be aware of the importance of IC and knowledge in creating competitive advantage, should also introduce other actions such as:

- * Planning human resources
- * Effective selection process
- * Interpersonal communication (knowledge transfer).
- * Organizational culture.

On the other hand measurement of IC efficiency and evaluation, its influence in creating value and building competitive advantage require the model of efficiency of using IC in the company (fig 2)

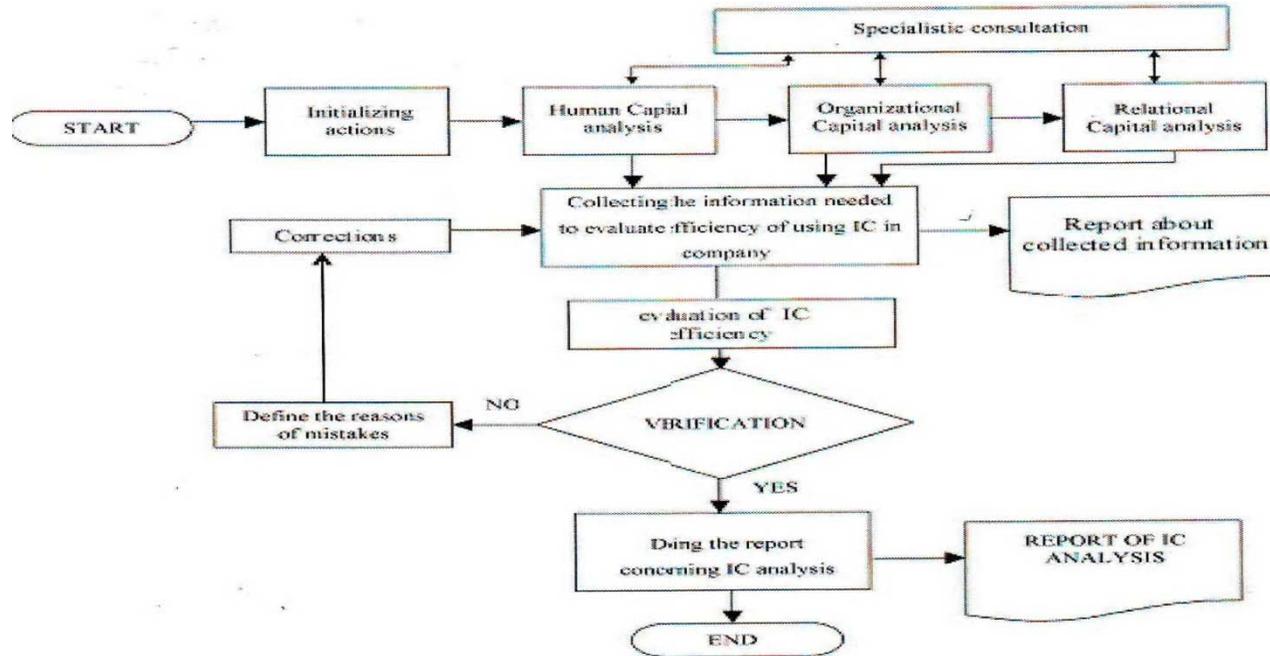


Fig 2: measurement of IC efficiency and evaluation

The Research mode of IC efficiency consists of four stages: preparation, execution, verification and the final stage.

The first stage (preparation):

- Is crucial because errors arising in this step affect final results.attention are needed:

- * Creating team consists of expert who realizes the process.
- * Preliminary touch with the company (expert familiarize with firm activities)

* Informing all organization participants about the process and training for mutual cooperation.

* Choosing the evaluation method.

Team should consist of managers of the company and external experts.

Here is some of the information needed:

→ Statute, trade contract, notarized acts, etc

→ Organization structure chart

→ Clients and suppliers list

→ other company documents.

The management must provide all necessary information concerning the company a special attention should be paid in transferring attention to experts. Full cooperation is needed from the employees

Second stage: (Execution)

- Detailed analyses and measurement of the human capital resources.
- Detailed analyses and measurement of organizational capital resources.
- Detailed analyses and measurement of relational capital resources.
- Collecting information needed to evaluate of using IC/knowledge efficiency in company.
- Evaluation of IC/knowledge efficiency.

External experts can participate as a consultant

Third stage: (verification)

- if efficiency is correct if not, a source of errors must be identified and adequate correction should be introduced.

The final phase: (summing up)

Ends the process by summing up evolution of the efficiency.

Implementation of this model is shown in (fig 3).

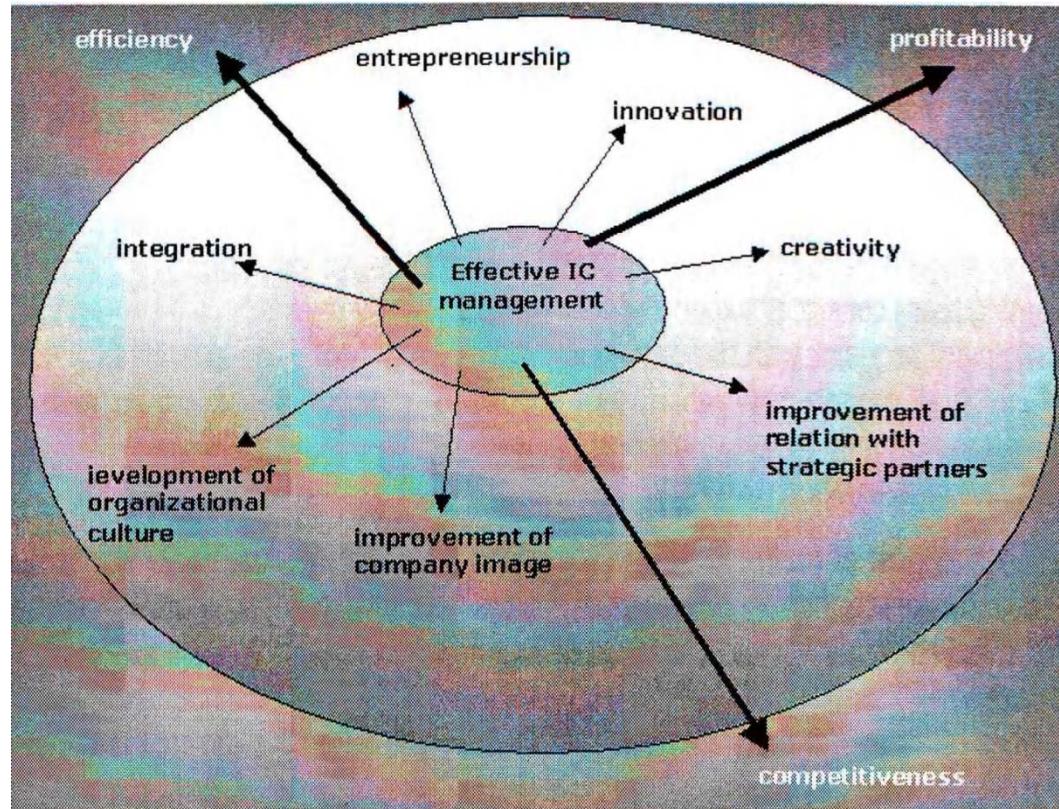


Fig 3: Implementation of the IC model.

Remark: It is clear that the presented method needs to be enriched by detailed analysis of each IC and knowledge area. However, it is a complicated task, which requires lots of work within the enterprise.

5. Recommendations

-Eventhough there is a vast body of available materials on IC/KM there is a little empirical testing in the area of strategy development, diversification and expansion(within the Algerian cement companies).

-Share information with every individual across the company (RIM) record and inf management.

-The creation of reliable information system within the company, with access to information anytime anywhere via a system.

-The need for further research into the knowledge creation process in enterprises (applied to the cement industry).

6. Conclusion

Now days, many companies around the world have found that measuring and managing IC and knowledge provide a competitive advantage. And estimating the efficiency of IC is crucial to gain good position in the market. It is also important that companies should possess skills in building competitive advantage through using knowledge and IC in an effective way. However it is a difficult task. But Scimat should remember about elementary steps such as: identifying determinants which influence the use of IC in human, organizational and relational area

IC in different companies and institutions can be evaluated in different ways. To win a competition in the industrial place, it is necessary to take into account all actions which develop the value of the company. Finally Creation of enterprise strategy based on knowledge and treatment of employees as an intellectual capital is for the company an opportunity for survival and achieving success in the dynamically changing surrounding.

Enterprises must also pay attention to other forms of knowledge. Furthermore research is needed on how various combinations of knowledge (human, social, and organizational) can lead to competitive advantage. It must be taken into account that in the new era, enterprises compete in complex and dynamic areas, so that the value and the uniqueness of an enterprise's knowledge base is likely to shift as competitors create newer competitive strategies. As a result the task of managing knowledge and intellectual capital within the enterprise become further complicated.

7. References

- [1] **DJEGHDJEGH A.**, VSST'2007 Marrakech, ed. IRIT Toulouse, France.
- [2] **GORNY A.**, The OHS management Institute of Management Engineering POZNAN UNIVERSITY Of Technology POLAND.(HAAMAHA July 2007)
- [3] **BONTIS N.**, the copyright paper: Assessing knowledge assets: A review of the model used to measure IC 2000
- [4] **BROOKING A.**, Intellectual capital, International Thomson 1998
- [5] Cahier des Cimenterie Algériennes (SCIMAT Algeria 2005)
- [6] **DAVENPORT TH., PRUSSACK L.**, 1998,working knowledge Harvard Business school Press, BOSTON
- [7] **EDVINSSON L., MALONE M.S.**, Intellectual capital: The proven way to establish your company's real value.Piantkus,1997
- [8] **PACHOLSKI L.**, TQM SIX dilemmas of contemporary management in manufacturing business, (Politechniki Poznan Poland) n°22 PP151- 160 1998
- [9] **SKRYME.D.J.**, 1999 Knowledge creation. Creating the collaborative enterprise, Butterworth- Heinemann OXFORD
- [10] **STEWART T.A.**, Intellectual capital Bantam Doubleday Dell publishing Group, New York 1997
- [11] **EDVINSSON L, KITTS B., BEDLING T.**, (2000) the next generation of IC measurement Journal of intellectual capital Vol 1 N°3
- [12] **MAURITSSE J., LARSEN H.T.**, (2001) reading an IC statement Journal of Intellectual capital Vol 2 N°4
- [13] **RASTOGI P.N.**, Knowledge management and IC: the new virtuous reality of competitiveness, Human systems and management 19(2000)pp39/48
- [14] **CLAESSEN E.**, strategic use of IC reporting in SMEs IT compagnies.Journal of IC vol 6 N°4 2005

- [15] **CHOONG K.K.**, intellectual capital:Definition,categorization and reporting models. Journal of IC Vol 9 N°4 2008
- [16] **DUFFY J.**, Managing IC The information management journal April (2001)
- [17] **GRUDZEWSKI WIESLAW M.**, intellectual capital of compaignies in gaining competitive advantage on global market, “managing entreprises of the futur”HAAMAHA 2007 Poland.
- [18] **JAKUB B.**, Knowledge management implications in IT infrastructure management, “managing entreprise of the futur” HAAMAHA 2007 Poland.
- [19] **STARZYNSKA BEATA**, knowledge management in the enterprise oriented towards of products, “Managing enterprise of the future” HAAMAHA 2007 Poland.
- [20] **NONAKA I, TAKEUCHI H.**, (1995), The knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation.