

## Strategies for manufacturing and measuring intellectual capital

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### Abstract:

The study seeks to clarify the most important strategies for manufacturing and activating intellectual capital, as well as the approaches to measuring and evaluating intellectual capital that provide information that would draw attention to the way the organization employs its resources, and focus the attention and interest of decision makers towards valuing the components of intellectual capital.

**Methods:** The descriptive approach was relied upon.

**Results:** It was concluded that the intellectual capital mainly reflects the knowledge assets and the intangible assets of the organization. There are many analytical models that explain the composition of intellectual capital with a high degree of similarity, as most of them focus on the fact that human capital is the most important sub-component of intellectual capital, and is an important basis for other components of intellectual capital.

**Keywords:** Intellectual capital, Intellectual capital industry strategies, Intellectual capital measurement.

### Introduction

The knowledge available to the organization has become a competitive advantage that distinguishes it from other organizations, and knowledge is represented in the availability of individuals who have information, stored knowledge, and different techniques.

As a result, a successful organization is one that attracts, selects, and develops the people working in it who can lead those organizations. Also, successful organizations are organizations that care about their customers, their needs, and desires, and take advantage of the opportunities of various technologies in the surrounding environment. Therefore, the main challenge facing organizations today is to ensure the availability of distinguished skilled individuals, and to train them, develop them, and develop their skills.

Also, developments and changes in the environment led to a shift from focusing on money, as the most important asset in the organization, to focusing on knowledge, as the most important and greatest input to the success of the organization.

We live today in a world called the world of knowledge explosion, and information glut; The individual has become a knowledge worker, the communication and information revolution has emerged, and the role of knowledge has grown in the success of organizations, in a way that has been reflected in human life in all its fields. All of this created challenges for the organizations, which began looking for tools and mechanisms that would enable them to confront these challenges in creative ways. Knowledge and investing in intellectual capital was one of the mechanisms adopted to achieve a head start in confronting these challenges.

Intellectual capital has become one of the basic and central issues in management, at the level of most countries of the world, and business organizations have focused a great deal on it.

Based on the foregoing, the problematic of this research paper can be formulated in the following question:

### **What are the strategies for making and measuring intellectual capital?**

This research paper aims to shed light on the status of intellectual capital in organizations, as well as to

identify its basic components, and to indicate the importance of investing in it while clarifying the most important strategies for its manufacture and activation, as well as addressing the approaches to measuring and evaluating intellectual capital that provide information that would draw attention towards a method. The organization employs its resources, and focuses the attention and interest of decision makers towards valuing the components of intellectual capital.

And relying on the descriptive analytical approach as it aims to describe the characteristics of the research problem in an accurate and comprehensive manner, and in order to understand the aspects of this problem, its analysis was relied on two main axes:

Firstly: Intellectual capital, its industry and revitalization

secondly: Approaches to measuring and evaluating intellectual capital

### **First : Intellectual capital, its manufacture and activation**

#### **1. The concept of intellectual capital :**

The real value of the state is its intellectual capital, or its moral assets. In the term intellectual capital; What is meant by it, according to Stayer, is that intellectual capital is that it is the mental capacity that represents the real wealth of companies that accountants did not follow, as they follow cash, assets, and others. (Al Maaita, 2009). In addition, Edvinsson believes that intellectual capital is the intellectual assets, whose value exceeds the value of other assets that appear in the balance sheet, and these intellectual assets consist of two types: human, which is the source of innovation and renewal; Structural, which is human support such as information systems, market channels, and customer relations. (Edvinsson, 1997)

Moreover, Prusak defines intellectual capital as the intellectual material that gives formal form to the production of assets of high value (Prusak, 1994). Hamel & Heene also defined intellectual capital as a unique ability by which the organization excels over its competitors, achieves the integration of different skills, and contributes to increasing the value provided to buyers, which is a source of competitive advantage (Hamel.G & Heene, 1994). As for Webster, intellectual capital was defined as a characteristic of transformational leaders, representing their ability to transfer technology from research to manufacturing with high success that contributes to the survival of the organization in the world of competition for a long time. (Webster, 1995)

Furthermore, Spender defined intellectual capital as a distinguished elite of workers who have the ability to dismantle the black box structure of productive work into its primary components, and to re-install it in a unique way. (Mouritsen & Larsen, 2001)

Likewise, Endres defined intellectual capital as the banking assets that have the ability to transfer technology from research to manufacturing with outstanding success, which is the main indicator of the organization's long-term success in local and international competition (Webster, 1995).

Stewart also pointed out that intellectual capital is the intellectual material knowledge, information, intellectual property and experience that is put to use in order to create profitable wealth, because today's economy is fundamentally different from the economy of yesterday. (Stewart, 1997)

As for Yogesh, he defined intellectual capital as a combined mental force that represents a variety of knowledge, information, intellectual properties, and experience that represent the main raw materials for today's economy. (Yogesh, 1998)

Daft ,as well, indicated that intellectual capital is defined as a set of information resources formed in the form of two types of knowledge, explicit knowledge: easy to express or write, and thus transfer to others in the form of documents and tacit knowledge: based on personal experiences, and intuitive rules that are used in the development of the organization . (Daft, 2001)

While the authors Nerdrum and Erikson defined intellectual capital as the economic value of two categories of the organization's intangible assets, namely the organization and the capital. (Nerdrum & Erikson, 2001)

Finally, Saleh pointed out that the intellectual capital is part of the human capital of the organization, and it is represented by an elite group of workers who possess a set of cognitive and organizational

capabilities alone, and these capabilities enable them to produce new ideas, or develop old ideas that enable the organization to expand its market share, And maximize its strengths, and make it able to seize the appropriate opportunity. Intellectual capital is not concentrated in a specific administrative level and not in others, and an academic certificate is not required for those who characterize it. (Saleh, 2001)

Based on the foregoing, the following can be concluded:

- Intellectual capital represents a mental capacity with a high level of knowledge possessed by a specific group of workers and not by others.
- Intellectual capital represents intangible intellectual assets that have the greatest impact on increasing and maximizing the other tangible assets of the organization.
- Intellectual capital represents the difference between the book value of the organization and its market value.
- Intellectual capital does not arise from a vacuum but rather needs to be built within the organization. This building includes polarization, then manufacturing, then development, and then maintaining it.
- Intellectual capital, if built within the organization, becomes a competitive nuclear weapon for it and guarantees its survival in the business world.

## **2. The emergence of intellectual capital theory:**

In the mid-nineties of the twentieth century, research efforts began to intensify on the subject of intellectual capital in an attempt to find a common understanding among researchers and organizations, and to agree on the principles and practices of this subject. Intellectual money, and I started trying to identify ideas and innovations that had been previously neglected, and to select and develop ideas that achieved the highest benefits, and appointed (Gordon Petrast) as manager of intellectual assets.

In 1995, a meeting was held that included representatives of eight organizations. This meeting was called (intellectual capital). The agenda of the meeting included a number of issues, the most important of which was agreement on a definition of the term intellectual capital and defining its basic elements and methods of extracting value from it. In 1999, a meeting was held. The International Symposium on Intellectual Capital in Amsterdam, and its efforts focused on discussing the objectives of human capital, its trends, methods of measurement, levels and dimensions. In 2001, the Fourth International Conference on Intellectual Capital Management was held in Canada, and in 2000 and 2003 two conferences on intellectual capital and its management were held in New York.

## **3. Importance of Intellectual Capital:**

The following points can illustrate its importance:

- The contributions and impact of intellectual capital on achieving results and goals is one of the vital points that show the importance of intellectual capital.
- The survival and continuity of organizations in carrying out their activities and work is largely linked to the capabilities, skills and different roles played by the human element, which is the basic component of intellectual capital.

## **4. The Roles of Intellectual Capital:**

Intellectual capital performs roles imposed on it by its position in the organization, and (Harrison & Sulliran, 2000) defined these roles as follows:

- Defensive roles, including the following practices:
  - a) Protection of products and services generated from the creations of the intellectual capital of the organization.
  - b) B. Protect design and creativity.
  - c) Reduce conflicts and avoid lawsuits.
- Offensive roles, including the following practices:
  - a. Generate revenue, by:
    - Products and services resulting from the creations of intellectual capital.

Organization's intellectual property.

The intellectual assets of the organization.

- Knowledge of the organization, and know how (ie the ingenuity of the organization).

B. Create metrics for new markets, new services, and products.

c. Create niches to penetrate competitors' technology.

Dr.. Determine mechanisms for accessing new markets.

H. Formulating a strategy that hinders the entry of new competitors.

### 5. Elements and Components of Intellectual Capital:

Determining the elements and components of intellectual capital is one of the fundamental matters that help in measuring and evaluating it, and thus determining the true value of industrial enterprises in the modern era. Also, identifying the components of intellectual capital represents one of the main elements necessary to identify the sources and causes of value creation in organizations more specifically. Many studies dealt with several classifications that dealt with the components of intellectual capital. In the following, the classification of the American Society for Training and Development (ASTD), which is the most common, is discussed, and which divides intellectual capital into 4 basic elements, including: human capital, operations capital, Creativity capital and customer capital (Al-Said, 2008), as shown in table No. (01).

Intellectual capital							
Human capital		Creative capital		Operating capital		Client Capital	
Education	Knowledge	Creative	Ability	Implementation processes	Customer Relations:		
Effectiveness of Education and Training	Transfer of Education and Training	Number of Patents	Copyright	IT technologies	Meeting needs,	customer	customer
Skills: Diversity of Skills	Time Spent in Training	New Products	Exploitation of	Work systems	decision making	customer	support
Competencies:	Performance	Opportunities	Sales	Amount of spending on	Employee relations		
Experience, Wages and Incentives		in the Last 5 Years		technical and administrative spending			

**Source: Hani Mohamed Al-Saeed, Intellectual Capital: A Contemporary Administrative Progress, 1st Edition, Dar Al-Sahab, Cairo, Egypt, 2008, p. 35.**

From the previous, the following can be deduced:

- The classification of the American Society for Training and Development is comprehensive, as it refers specifically to the constituent elements of intellectual capital, with defining the sub-components for each of them.

- The previous classification focuses on the need to combine education and training in order to maximize the return on human resources, which represent the intellectual capital of the organization.

- That there is an interdependence and complementarily between the capital of creativity and the capital of customers, as introducing new products and exploiting marketing opportunities contributes to increasing sales and thus developing the capital of customers, which leads to strengthening the competitive capabilities of the organization.

Within the framework of the American Society for Training and Development's classification of levels of intellectual capital, human capital represents the basis upon which organizations base their building and development of intellectual capital, as the human element is considered the main pillar in generating value through its experience and knowledge in the efficient implementation of operations. Effective human resources also play the main role in developing market capital through their efficiency in developing the organization's relations with customers, suppliers and all external parties. (Al-Said, 2008)

**A. Human capital:** It consists of accumulated experience, skill, the ability to innovate and create, and the ability of the organization's personnel to achieve tasks, and it includes values and culture, and lies in these vocabulary: knowledge, wisdom, and experience, intuition, and the ability of the individual to realize the tasks and goals, as human capital is one of the characteristics that characterize the members of society, and it does not fall within the circle of ownership of the organization.

People competencies are the hard part of intellectual capital, they include knowledge, skills and talents. Knowledge and skill occupy the forefront where knowledge consists of technical knowledge and academic knowledge that is obtained mainly through education, and is therefore theoretical. Skills are the ability of individuals to practical completion of tasks, primarily acquired through practice, especially tacit skills that cannot be expressed literally, although they can also be developed through education. The attitude of individuals is the soft part of intellectual capital, including their motivation to work and job satisfaction, and it is considered a prerequisite for individuals to give full play to their competence. It is the creativity of individuals that enables them to use their knowledge flexibly and make innovations sustainable, so it is one of the main factors in developing the intellectual capital of the organization.

**B. Structural capital:** It expresses the essential competence of the organization, and its explicit knowledge that is kept within the structures and systems of the organization, and it is all that we know and can express, as well as it can be said, written, or transmitted to be transformed according to certain rules into data and measures. methods, processes, policies, procedures and programs, and therefore it represents the values that remain in the organization. Therefore, McElory asserts that structural capital is all the things that support human capital, but it remains in the organization when individuals leave it and go home.

Structural capital is also represented by the infrastructure and support for workers, and structural capital is owned by the organization and remains with it even when workers leave it, and structural capital includes traditional things such as structures and physical parts of computers, software, processes, patents and trademarks, as well as its information system.

**C. Relationship capital:** It represents the value of the relationships that the organization establishes with customers by increasing customer satisfaction and loyalty, and the extent of customer retention, by paying attention to his proposals, listening to complaints submitted by him, finding successful solutions to them as quickly as possible, and participating in its business and deals or establishing strong cooperation relationships. The relationship capital of an organization consists of the strategic alliances it establishes, in addition to the relationship it has with its customers and suppliers.

Some writings have expanded in the category of relationship capital, as it is not limited to the organization's relationships with customers only, but all parties related to the organization's external relations, as the (Meritum Project) presented in its guidelines the expression of relationship capital as an alternative to customer capital. Relationship capital is defined as all resources related to an organization's external relations, such as its relationship with customers, suppliers, and partners in research and development. (Al-Said, 2008)

**6. The intellectual capital industry:** The intellectual capital industry is of great importance to organizations because it is a source of organizational advantage that represents the accumulation of the organization's capabilities to create knowledge and participate in it, which makes it superior to competing organizations in the market.

The process of manufacturing intellectual capital requires the use of effective methods to link new work tools, innovative systems, and appropriate organizational designs.

**1. Knowledge Map:** A knowledge map is defined as providing a visual presentation of vital knowledge leading to the achievement of strategic goals, and then focusing on the type of knowledge you hope to share, and with whom? And where can we find it? On this basis, the organization draws a knowledge map to identify its knowledge portfolio and the level of the gap within it. The purpose of using the knowledge map revolves around:

a. Determine the knowledge center of the organization compared to competing organizations.

There are 3 types of knowledge defined by the map based on determining the knowledge center of the organization, namely: (Zack, 1999)

- *Essential knowledge:* less size and level of knowledge that should be available to the organization to confront the competitor, and according to which it can know the rules of the game in the field of the sector in which it operates, but it does not give it a competitive advantage in the long run.
- *Advanced knowledge:* It is the knowledge that enables the organization to acquire competitive capabilities, when it chooses to compete on the basis of knowledge.
- *Innovative knowledge:* that knowledge that gives the organization the ability to lead the sector, and in this case the organization's differentiation is clear compared to competitors, which enables it to change the rules of the game in the manner and timing that it determines.

B. Identifying knowledge gaps that represent a shortage or weakness in knowledge in order to work to close those gaps by creating what is required of them. The most prominent knowledge practices in the intellectual capital industry are through:

- Enhancing the capabilities of individuals in the field of problem-solving by benefiting from the knowledge codified in software systems, because information technologies allow the creation of intellectual capital in a new, effective and flexible way by collecting and analyzing data and presenting it to specialists for simulation, and drawing appropriate scenarios, which contributes to increasing the experience curve of the organization.
- Enable individuals to work with highly qualified people.

**2. Intellectual Webs Building:** The Webs represent a formation resembling a spider's web in which an innovative group participates, interacting and learning from each other, then dissolving at the end of the specified project, to form another project with a new innovative group, another copy, and another new learning. The vision of the intellectual Webs strategy confirms that it provides independence Flexibility and intense and varied interactions between different professionals and innovators lead to rapid learning, increased knowledge lever and rapid jump from idea to product through the lack of specialized obstacles. The characteristics of successful intellectual Webs are identified as follows:

- Logical homogeneity in the characteristics of the team members in the field of open mindedness, extensive experience and cognitive sensitivity.
- Real interaction to produce ideas that suit the needs of the organization.
- Persuasive negotiation for managers and decision centers of the proposed ideas and their importance in reducing competitive pressure.
- High ability to make ideas suggested practically feasible.

**3. Smart Leadership:** The intellectual capital industry requires dealing with smart leadership, because the smart manager focuses his attention on organizational learning, and is an assistant to learning more than he is a supervisor, and a teacher more than he is a giver of orders.

In order to create knowledge, it is necessary to deal with smart individuals, which generates the need

for smart leadership, because the smart manager focuses his attention on learning and being a learning assistant more than his focus on being a supervisor, teacher, and order-giver. The smart manager is able to practice the foundations of effective appreciation, the most important of which are follows:

- Continuing: by appreciating superior performance, which leads to excellence, and this leads to more appreciation.
- Immediate: immediate and timely appreciation brings positive results, in contrast to late appreciation.
- Enjoyment: making appreciation fun and hard to forget.
  - Inclusion: Encouraging managers and departments to appreciate their workers and appreciate the young before the old.
- Constitution: Making appreciation part of the organization's constitution and culture.

**4. The inverted organization:** that is, the transformation from hierarchical structures to structures that allow managing its intellectual capital with high flexibility because the nature of the organizational structure in the inverted organizations allows complete freedom for professionals (intellectual capital) to issue instructions and orders, so that the senior management in it makes the professionals the real heads of the organization . Effective management is the one that abandons the traditional organizational structures, which are no longer fit to meet the challenges and requirements of knowledge organizations. Rather, it represents a threat to the process of investing their intellectual capital, because if organizations want to survive under competition conditions, they will not take forms of new structures commensurate with the movement of knowledge, circular, overlapping, intersecting, and unstable.

**5. Wages and incentives:** Wages play an important role in determining many organizational performance outcomes. As a means of satisfying the individual's basic needs and as a consideration for the individual's behavior in the organization, it affects the individual's satisfaction with his work and also the individual's desire to perform and its effects on the performance effectiveness achieved. Incentives are considered one of the material and moral methods, or both, by which the user is directed and encouraged to provide the best performance. It is also equivalent to the outstanding work, and the performance that deserves the incentive is an extraordinary performance, or perhaps according to other criteria that indicate the workers' entitlement to additional compensation that is desired for the wage. A good system of incentives achieves beneficial results, the most important of which are:

- Increase work output.
- Satisfying workers' needs.
- Notifying workers of the promotion of justice within the organization.
- Attracting workers to the organization.
- Improving the organization's image in front of the community.

**6. Composition:** Every organization is obligated to organize itself in partnership with the representatives of the workers in order to promote the activity of training and improvement necessary for the needs of the organization and to achieve it and to ensure continuous training for all workers in order to develop it. (Saleh, 2001)

#### **7. Activate Intellectual Capital:**

If the organization cares about the competencies and experiences of the individuals working for it, it must take care and concern for these competencies and talents, in the sense that it works on the principle of intensive activation to saturate with knowledge, by using the information and knowledge present in the minds of individuals firsthand and charging their mental capabilities by providing an appropriate environment to participate in generating ideas such as the use of flexible meetings and consultants and

the interaction between human resources within the organization and among the methods of activating and developing intellectual capital: (Saad Allah, 2008)

#### 1. *Brainstorm:*

It is a method related to the formation of a group of about 5 to 10 individuals, the problem that the organization suffers from is clarified, and then different ideas are received, from multiple sources, (this is due to the different abilities and skills of the intellectual capital,) on how to deal with this problem, Which will undoubtedly end with the acquisition of the creative capabilities of the workers, which leads to the generation of the largest possible number of ideas, sourced from the workers themselves, and thus the organization will witness greater keenness to apply and implement the agreed ideas, as they were of their own making, which increases the chances of their association with the organization. (Al-Mafarji, 2003)

#### 2. *Quality control loops:*

It is a method introduced into the Japanese industry by Kaurua Ishikawa in 1961. It consists in the meeting of a group of workers with similar specializations, voluntarily of their own free will, an hour a week to discuss the problems of achieving productive efficiency. As they study the nature of production or service work, and strive to develop a work program, through discussion and development of ideas, as well as determining the most appropriate strategy for work, senior management may participate in that once or twice annually to see the progress. Field studies in this field have proven that quality control workshops have been well received by workers, and they also contribute to reducing the percentage of absenteeism, as well as investing their intellectual energies by receiving their opinions. (Al-Mafarji, 2003)

3. *Overt management style:* It is a method that aims to use the information in the minds of employees in general, and intellectual capital in particular. This is done by charging them with mental capabilities by providing the appropriate atmosphere to generate through meetings, and meetings that include frankness in the language of numbers between the members of the organization . So that they have a digital sense that enables them to release their energy, and filter suggestions for development. (Shueae, 1996)

4. *The style of enthusiastic groups:* It is represented by a small group of individuals who are energetic and love difficult achievements, as well as those characterized by the factors of risk and adventure. It is based on generating excitement and fun in the discussion, in a way that makes the individual participants in these groups feel energetic and optimistic, and increase the use of their ideas, so that workers are involved face to face with experts in the field of the organization's specialization while facilitating dialogues using information technologies such as sound effects, mail, and computer networks. These were some of the adopted methods for developing intellectual capital and activating the utilization of its ideas. (Beam, 1996)

### **Second: Approaches to measuring and evaluating intellectual capital**

#### **1. Measurement of Intellectual Capital:**

Guthrie & Petty stresses the importance of developing and defining accurate indicators and measures for measuring intellectual capital. These indicators are necessary for small, medium-sized and large organizations alike, as the excellence of organizations has become largely dependent on the effectiveness of their management of intellectual capital. Many organizations face real problems in measuring and evaluating intellectual capital, especially those organizations that rely on quantitative, tangible indicators in measurement, such as measuring costs, profits, sales, market share, tangible assets, financial liabilities, and others. (Petty & Guthrie, 2000)

Petty and Guthrie argue that most researchers' efforts before the mid-1990s were about intellectual capital. Subsequently, these efforts began to focus on another descriptive dimension that focuses on the management and measurement of intellectual capital. (Petty & Guthrie, 2000)

The importance of accurately measuring and evaluating intellectual capital emerges when mergers or acquisitions occur, as the issue of accurately determining the value of intellectual capital determines the value of new shares for owners of new organizations. Error in measurement and estimation leads to an imbalance in the new shares and values.

**2.The importance of measuring intellectual capital:** There is great importance to measuring intellectual capital, and this importance is embodied in the following: (Saleh, 2001)

- the ability to accurately and completely measure the organization's value and performance; In the knowledge society, knowledge constitutes a large part of the value of the product and the value of the organization.
- The inability of traditional accounting methods that rely on measuring tangible assets from the reality of historical records to measure and estimate the value of intellectual capital, which constitutes a large part of the assets of many organizations.
- Sullivan and Sullivan emphasized that traditional accounting methods do not give intellectual capital the importance it deserves.
- Modern models of intellectual capital are capable of measuring many components that are not measured by traditional accounting methods, such as measuring human capital, measuring traditional innovative capital, and others. These models provide the organization with standard tools capable of accurately measuring the organization's performance and value. On the other hand, the modern methods of measuring intellectual capital focus on measuring the value of the organization, depending on the present and the future, while the traditional accounting methods focus on the past only.
- The traditional accounting methods focus on material facts only, and focus on quantities, while intellectual capital measures focus on non-material facts and focus on quality. Traditional accounting methods reflect the results of past transactions and real cash flows, while measures of intellectual capital focus on value creation.
- The traditional accounting methods are not sufficient to build the strategic directions of the organization, and intellectual capital measures are being used as a complementary tool that helps the administration to manage the intellectual capital. The measurement process is based on evaluating the strengths and weaknesses of the intellectual capital, and in the light of the benchmarking process. (Sullivan, 2000)

**3. Models and indicators for measuring intellectual capital:**

(Roos & al, 1997) indicates the need to build an effective model for measuring intellectual capital. The success of this model can be achieved if it is able to include financial indicators, and non-financial indicators together, in a way that reflects the organization's operations in light of the effects of the knowledge economy. Also, this model is able to provide accurate and sufficient data and information, and in a timely manner, to ensure the achievement of successful knowledge management. One of the main obstacles facing the process of building an integrated approach to measuring intellectual capital lies in the lack of senior management's commitment to active participation in building this approach, and its failure to provide sufficient support for the effectiveness of this approach.

A set of models that are used in measuring and evaluating intellectual capital have been mentioned in  
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the management and accounting literature. The most important of these models are the following:

- **Botis 1999 model (Skandia company model):** In 1999, researcher Botis developed a model for measuring intellectual capital, and he developed it while working at Skandia Insurance Company. This model relies on four systems:

*A - Human Resources Accounting System:* (Sackmann, Flamholtz, & Bullen, 1989) indicates that the beginnings of using the human resources accounting system go back to the researcher Hermanson, in 1964 AD. This system aims to estimate the value of individuals within the organization, and this helps in using this value as a basis for making administrative and financial decisions. The human resources accounting system measures and evaluates the value of human capital in a financial form, and this system is widely used in service organizations.

*B- Economic Value Added System:* Economic Value Added System is a comprehensive measure of performance, linking financial planning, capital budgeting, goal setting, relationship and communication with shareholders, performance measurement, compensation and incentive systems, and how these variables can drive together to increase the value of the organization. This system is not directly related to the measurement of intellectual capital, but it stresses the need to take into account it, as this will lead to an increase in the added economic value.

*C- Balanced Scorecard (BSC) System* This system was proposed by researchers (Kaplan, R & Norton D, 1992), and this system emphasizes the need for the organization's management to adopt a measurement system with multiple dimensions that is able to measure performance by focusing on measuring variables and financial and non-financial components. Here, it should be noted that the researchers did not address the concept of intellectual capital clearly, but the balanced scorecard system takes into account the assessment of intangible elements within the organization such as learning and knowledge processes, consumer satisfaction, and others.

**D- Navigator Model System of Intellectual Capital:** Navigator Model System of IC.

This model was developed in the seventies by the researcher Leif Advinsson, who is the director of the Swedish insurance company Skandia. According to this model, intellectual capital has been divided into human capital and structural capital. The explorer model system relies on more than a hundred indicators in measuring and evaluating intellectual capital. However, there are criticisms directed at many of these indicators, as the ability of some indicators to accurately measure intellectual capital is being questioned. (Chen & Xie, 2004) stresses the need to make adjustments to this system to ensure its ability to accurately measure intellectual capital. For example, the number of computers in the organization is being adopted as an indicator of structural capital. However, this indicator does not necessarily reflect the level of knowledge of the organization, nor does it necessarily reflect the employees' use of it in a way that enhances the competitive advantage of the organization.

- **Chen model, and others (2004 AD):**

This model is mainly based on the model of Botis et al. Chen et al.'s model attempts to avoid the shortcomings and weaknesses of the previous model for measuring intellectual capital. This model differs from the previous model in that it does not focus heavily on developing financial indicators and measures for intellectual capital.

This model focuses on identifying the necessary data and information at the right time, and providing them to managers in a way that enables them to formulate and modify strategies related to intellectual capital, and in a way that makes the organization's management able to use knowledge and achieve sustainable competitive advantage.

(Chen & Xie, 2004) stresses that this model focuses mainly on evaluating general indicators and trends of intellectual capital, rather than focusing on economic value. This model has been divided into four systems elements that work together and need to be continuously strengthened in order to reflect the true value of the organization. These elements are:

**A- Human Capital:** Human capital is the basic component of intellectual capital. The most important indicators of human capital:

1. Employee capabilities, including:

- Strategic leadership of the organization's management.

The level of quality of employees.

Learning ability of employees.

Efficiency of employee training.

The ability of employees to participate in decision-making.

2. Creativity of workers, including:

Creativity and innovation capabilities of employees.

The income generated from the original ideas of the workers.

3. Workers' attitudes, including:

Matching the attitudes of employees with the values of the organization.

The degree of employee satisfaction.

Work turnover rate.

The average length of service of employees in the organization.

**B- Customer (market) capital:** Customer (market) capital is one of the basic components of intellectual capital, as it highlights intellectual capital and transforms it in the form of market value and organizational performance. There are several indicators of customer (market) capital:

1. Basic marketing capabilities include:

- Building and using a customer database.

- Providing the necessary capabilities for customer services.

- The ability to identify customer needs.

2. Market intensity, including:

- market share .

Potential market.

Units sold to the number of customers.

- The reputation of the brand and trade name of the organization.

- Building sales and distribution channels.

3. Customer loyalty indicators include:

- customers satisfaction .

- Customer complaints .

- The volume of investment in building relationships with clients.

The level of gaining new customers.

The level of loss of existing customers.

**C- Innovative capital:** The concept of innovative capital expresses the introduction of a new set of basic production elements and elements related to the organization's production system. Innovation may be in the form of a new product, a new market, a new technology, or a combination of innovations. There are several indicators of innovative capital, including:

1. Innovation achievements, including:

- Sales of innovative new products relative to total sales.
- The average number of patents for individuals from the organization.  
Number of innovative new technologies.

2. The innovation mechanism, including:

- Sales volume. R & D ratio of investment in research and development
- Quality (the quality of people working in research and development).

The level of coordination between the research and development function, the production function, and other functions.

- Coordination with external forces related to innovation.  
Management capacity for innovation projects.
- Existence of a motivational system to encourage employees to innovate.

3. A culture of innovation, including:

- Encouraging the organization's culture for employees, and supporting them in innovation processes.

- Level of senior management support for innovation.

D- Structural capital: Structural capital expresses the system and structure of the organization. An organization that has a strong and cohesive structural capital can provide an appropriate business environment capable of utilizing and motivating human capital and benefiting from its maximum potential. This leads to the promotion of innovative capital, and customer (market) capital. There is a group of indicators of structural capital, the most important of which are: (Chen & Xie, 2004).

1. General culture, including:

- The nature of building the culture of the organization.  
Matching employees with the organization's perspective and future vision.

2. The organizational structure, which includes:

- The validity of the organization's control system.
- Clarity of the relationship between authority and responsibility.

3. Organizational learning, including:

- Building an internal information network, and using this network.
- Building an educational stock for the organization, and using this stock.

4. Operations, including:

- Duration of activities and business operations.
- Product quality level.
- Operational efficiency.

5. Information system, including:

- Mutual support and coordination between employees.
- Availability of data and information related to the organization's activities and work.
- Sharing knowledge.

• **Lim and Dallimore 2004 model:**

This model is based on the premise that intellectual capital is achieved through innovation and knowledge management. Intellectual capital, from the perspective of this model, mainly relates to the management and marketing of operations, and activities related to dexterity and skill. Intellectual capital is translated into realistic plans that lead the organization to success. These plans are the management or

business plan, which is built through adopting the strategic management approach, and the marketing and relationship-building plan, which is built through adopting the strategic marketing approach. The successful application of the strategic management approach leads to the emergence of four types of intellectual capital, which are:

1. *Human capital*: Human capital is a combined group of experiences, skills, information, knowledge, characteristics, ingenuity in performing work, and capabilities possessed by all individuals working in the organization at all administrative levels.

2. *Public capital*: It is a set of basic foundations and determinants that the organization uses in strategic planning and management processes, which are an effective basis for competitive operations in the markets.

3. *Business Capital*: It relates to the resource aspect, such as the ability of the new business to generate revenue, the ability or inability of the business to make a profit, and the level of use of e-business.

4. *Functional capital*: Focuses on specific aspects of the functional frameworks and related issues related to intellectual capital, such as the amount of expenditures on training compared to administrative expenses, the level of operating time efficiency, and others.

• **The three directions model of intellectual capital:**

Mouritsen J & Larsen (2001) believes that intellectual capital can be understood and analyzed through the model of the three ways (directions) of intellectual capital. (Stewart, A, 1997) indicates that the model of the three directions of intellectual capital consists of three basic elements:

A- *Human capital*: This element is responsible for thinking, creativity and innovation processes in the organization.

B - *Structural organizational capital*: It is the capital that cannot be transferred from the organization to the home, or to any other place outside the organization with the workers and managers when they leave the organization and return to their homes at the end of the day. It can be restructured, reproduced and re-engineered, and its most important elements are: technology, innovations, data, information, releases, organizational culture, strategies and structure. (Stewart.A, 1997) views the organizational (structural) capital as that knowledge that does not go home with the workers, but rather stays with the organization, and is essentially related to the organization with full return. Thus, structural (organizational) capital is knowledge, and this knowledge can be developed and shared with others. The most important components of structural (organizational) capital. The following: organizational structure, organizational culture, inventions, technology, data, publications, strategy, systems, procedures, and organizational routine.

C- *Customer (market) capital*: The organization cannot own customers, but it achieves value added to it as the market capital of customers through its relations with these customers, and the ability to win new customers.

The ability to retain existing customers, the size of the market share compared to competitors, market growth rates and industry rates. There are several researchers who view this model as incomplete and not covering all aspects of intellectual capital. (Mouritsen & Larsen, 2001)

**Conclusion:**

It was found through the foregoing that intellectual capital basically expresses the knowledge assets and intangible assets of the organization. There are many analytical models that explain the composition of intellectual capital with a high degree of similarity, as most of them focus on the fact that human capital is the most important sub-component of intellectual capital, and is an important basis for other

components of intellectual capital. Where human capital relates primarily to thinking, it also focuses on the knowledge and skills enjoyed by the members of the organization and their characteristics and personal characteristics.

So far, there is no agreement among researchers on a specific concept of intellectual capital, but they agree on an essential point in their definition of intellectual capital, which is that this resource is mainly related to knowledge that can lead to value creation. He also notes three elements closely related to all definitions: it is an intangible resource, it is value-creating knowledge, and it reflects the effects of accumulated experiences. This means that all definitions of intellectual capital exclude everything that is not related to intangible assets, and focus on the fact that the organization's ability to excel depends on its efficiency in using the knowledge inherent in the minds of its employees.

Interest in intellectual capital has increased in the recent period, which led to the emergence of many writings and studies looking at how to manufacture, revitalize and maintain it for the purpose of improving the ability of organizations to compete and because of its impact on creativity and excellence in various fields of business.

## References:

1. -A, S. T. (1997). *Intellectual Capital: The New Wealth of Organizations* . New York: Double Day Currency.
2. -Chen, z. (n.d.).
3. -Chen, z., & xie. (2004). Intellectual capital: Management Attitudes in service Industries. *Journal of Intellectual capital*, 61.
4. -Daft. (2001). *organization theory and design* (7ed ed.). Ohio: South-Wersern.
5. -Edvinsson, L. m. (1997). *"Intellectual Capital. Realizing Your Company's True value by Finding its Hidden Brainpower*. New York: Harper Collins.
6. -Hamel.G, & Heene, A. (1994). *Competence Based Competition*. USA: John Wiley & Sons Inc .
7. -Harrison, S., & Sulliran, p. (2000). profiting form Intellectual capital Learning form Leading companies. *Journal of Intellectual capital*, 38 (1).
8. -Mouritsen, J., & Larsen, H. (2001). Intellectual capital sttement: Describing and prescribing knowledge Management strategies. *Journal of Intellectual capital*, 15.
9. -Mouritsen.J, & Larsen, H. (2001). Intellectual capital sttement: Describing and prescribing knowledge Management strategies. *Journal of Intellectual capital*, 15.
10. -Nerdrum, L., & Erikson. (2001). Intellectual capital: A Human capital perspective. *Journal of Intellectual capital*, vol 2 (No2).
11. -P.and P.H. sullivan Sullivan .)2000( .valuing Intangibles companies: A Intellectual capital Approachvol 50 . *Journal of Intellectual capital*.50 ‘
12. -Prusak, L. (1994). How To Invest In Intellectual Capital. *Harvard Business Review* .
13. -R, K., & D, N. (1992). Le Tableau de Bord Prospectif. *Harvard Business Review* .
14. -Roos ‘al .)1997( .*Intellectual Capital*.London :Mac Millan Business.
15. -Sackmann, S., Flamholtz, & Bullen, M. (1989). Human resource accounting: a state of the review. *Journal of Accounting Literature* .
16. -Yogesh, M. (1998). *Forbes* .
17. -Zack, M. (1999). Developing A Knowledge Strategy. *California Management*, 64 (4).
18. -The assessment is valid for AVI. (2009). Intellectual capital relationship and total quality management. Amman, Jordan: House of Culture Library, Publishing and Distribution.
19. -Hussein Laith Saadallah. (2008). Intellectual capital and its impact on improving the quality of educational service. *Mosul University Journal, College of Administration and Economics*
20. -Adel Harhoush Al-Mafaraji. (2003). Intellectual capital: methods of measuring it and methods of maintaining it for the organization. Cairo, Egypt: Arab Organization for Administrative Development.
21. -Hani Mohamed Al-Saeed. (2008). Intellectual capital: a contemporary administrative breakthrough (Version 1). Cairo: Dar Al-Sahab.