

# The Extent of Using Intellectual Capital Criteria at Jordanian Public Shareholding Companies

## *A Field Study from the Jordanian Shareholding Companies' Point of View*

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### Abstract

Intellectual capital or knowledge has become a lifeline for all business organizations and companies. It plays a key role in the survival and the continuation of these organizations. Companies need to report their competitive position in the business environment, but organizations and companies find it difficult to measure for intellectual capital, as well as to define intellectual capital and the accounting methods to measure and display it in financial statements. The process of measuring intellectual capital and disclosure represents a major challenge for accountants. There is an urgent need to find measured accounting standards and develop the ones existing for some elements of this capital as the decision makers at the present time are in dire need of information on the elements of intellectual capital and the cost of these items and returns achieved by each element. Therefore, this research tried to review the theories regarding the concept of intellectual capital and accounting mechanisms that could be adopted to measure and present it. In addition to this, a special questionnaire for major companies in Jordan was prepared to find out their views about the importance and efficacy of this important resource. One of the most important research recommendations is the need for accountants to be aware and understand the nature and importance of intellectual capital in creating competitive value for shareholding companies in all their types and the need to develop models for the measurement of intellectual capital in companies that combine the indicators of financial and non-financial indicators.

**Keywords:** intellectual capital, knowledge management, reporting intellectual capital, measuring intellectual capital

### 1. Introduction

The problem of research is the difficulties that accountants face in measuring intellectual capital. It needs to be expressed by qualitative data but it is difficult to quantify and convert it into a financial form known in the accounting field. Also, there is no conceptualized form in regard to how to deal with this kind of capital as an important resource and an important element in companies where intellectual capital represents one of their assets. Therefore, the research's problem is embodied in the following question: Is the concept and importance of measuring intellectual capital clear to accountants in Jordanian public shareholding companies?

The importance of this research stems from the importance of the role of intellectual capital in public shareholding companies as an important resource, as it plays an important strategic role in maximizing a firm's value, in addition to its participation in achieving and enforcing a firm's competitive advantage in all local and international issues. Therefore, it is necessary for accountants and those who are concerned with accountancy to know the mechanism of accounting measurement and disclosure in their firms' financial reports.

The purposes of this research are:

- Showing the importance of the intellectual capital concept for a firm.
- Presenting the international accounting perspective (the traditional and the modern) to measure intellectual

capital in a firm.

- Determining if the concept and importance of measuring intellectual capital is clear for accountants at Jordanian public shareholding companies.

## 2. Previous Studies

Many researchers have attempted to address the measurement of intellectual capital from various sides. The current researchers found that some researchers concentrated on the concept of the renewal of intellectual capital such:

The study of Usoff, Thibodeau and Burnaby (2002) aimed at presenting and showing the importance of intellectual capital as the generator of a firm's value and as a participator in evaluating and measuring a firm's system.

The study showed the following results and recommendations, most importantly:

- Testing the importance of the internal audit when evaluating and measuring a firm's intellectual capital.
- Showing the influence of intellectual capital as an important tool of measurement and evaluating the value of any firm.

Some studies concentrated on showing the modern measurement of intellectual capital such as the report of Skyrme (2003). This report aimed at demonstrating the increased interest in the measurement techniques of knowledge and intellectual capital where a firm's balance sheet usually showed a partial idea about its reality and sometimes included misleading information. Therefore, it was necessary to have adequate procedures to arrive at the real value of a firm through the vision of the management used for the intellectual capital.

The report concluded that an important role for a firm is to know the effect of intellectual capital as an intangible resource. Sometimes there is inaccuracy in the measurement and disclosure process which can influence the internal and external auditors' judgments, so there should be a measurement model that addresses the accounting and legal matters for the methods of disclosure.

The study by Alarbeed (2004) showed that many firms acknowledge that their knowledge capital represents their most important asset. Therefore, they have attempted to make better managerial decisions due to the difficulty of specifying the accounting and quantitative procedures for the measurement and disclosure of knowledge capital.

Previously, knowledge capital was represented as intangible assets which are difficult to convert to a quantitate measurement represented in currencies. However, there is an increased interest today in intangible assets which play the main role in determining the profits of growth and future success. Therefore, they deserve to be measured and managed properly. This was clear in accounting's requirement to change the accounting principles that reflect a firm's new attitude towards knowledge capital.

The predictions show that the failure of accounting to track the investment in the knowledge capital will lead to many problems in the industry as a whole. However, there is a big difficulty in determining cash values for this capital. One of the proposed measurements is the difference between a firm's book value and its market value because investors are concerned about knowledge capital while accountants are not.

The study of Dhaan and Bocherbieh (2011) showed the many attempts of management to measure and evaluate intellectual capital from various perspectives, where arguments are still going around this subject. Both researchers attempted to present the most important measures of intellectual capital with the focus on the intellectual capital measurement board.

The study of Bouziane and Zaqai (2011) showed that the most important challenge for an organization is how to measure and retain intellectual capital. If an organization does not retain its intellectual capital, it will face many problems because such capital can be lost and the organization's value becomes zero, or its intellectual capital might leave to another organization since the organization could not transform its skills into executive practices.

This study recommended that an organization should apply certain strategies to retain its intellectual capital, such as the tangible and intangible incentives.

A study for Baqir (2004) showed that the influence of epistemology on the various sides in an organization still represented a main problem for those who are interested in knowledge management. However, more research is required that should lead to applicable models in order to facilitate the measurement of knowledge and its various outputs.

The Al-Sakini study (2006) showed that the success of an organization in the first half of the previous century depended mainly on its material assets. An organization used to have mass production and a large number of

workers, but this situation began to wane, and knowledge has now become a main factor for creativity. The human element has become a main component in an organization because of its relationship to knowledge. Therefore, organizations began to take an interest in this element, and it is now considered an essential element in the success of organizations. Here, appeared the intellectual capital which expresses the epistemological assets in the organization, which now contribute in creating material assets.

The question which the study posed of how to deal with these new concepts in terms of accountancy, and how to measure and disclose such elements represents one of the main challenges that face accountants presently.

In order to achieve this objective, the study of Rizk (2007) addressed intellectual capital (its shape, contents, the importance and problems of its measurement, the importance of its disclosure, and the effect of its disclosure). The study presented a proposed framework to disclose the costs of intellectual capital. The study was divided into four sets:

- The first set: Costs of providing the knowledge (purchase, partnership, creating)
- The second set: Costs of the information necessary for disclosure
- The third set: Costs of the disclosure process (measurement, accuracy of measurement, publication)
- The fourth set: Elements of the disclosure cost (in the short run, and long run)

Each of the sets was addressed according to the contents of the intellectual capital (commodity capital, human capital, organizational capital, creativity capital, and relationship capital).

From the above mentioned, the two researchers found a multiplicity of issues addressed by the researchers in terms of the measurement of intellectual capital because this concept is dynamic and renewable due to the changing environment that surrounds an organization and its reflections on its future.

### **3. The Methodology**

The researchers followed the descriptive analytic methodology and obtained the necessary data from the following sources: the primary sources and the secondary sources.

#### *3.1 The Primary Sources*

A questionnaire was prepared and distributed among a group of public shareholding company accountants, who have financial and accountancy experience and constituted the research sample. Data was collected and analyzed by using the SPSS statistical package for the social sciences to test the correctness of the research's assumption.

#### *3.2 The Secondary Sources*

This was obtained through reviewing university books and dissertations, scientific researches, reports, magazines and articles in order to build the theoretical framework for the research and fulfill its objectives.

### **4. The Theoretical Side**

#### *4.1 The Intellectual Capital Concept*

Intellectual capital is one of the most recent subjects in the managerial and accounting literature. The subject has attracted attention since the 1990s. However, it is not a completed subject yet, as it is still under development. Therefore, there is no clear agreement on its concept.

Prahalad and Hamel (1994) identified intellectual capital as a superior ability of an organization over its competitors. This is achieved through the integration of various skills that participate in increasing the value presented for buyers, and it is one of the sources of competitive advantage.

However, Webster (1995) identified it as a character of transformational leaders, which shows their ability to stimulate innovation and knowledge and transfer the new technology to industrialization with a rate of high success, thus keeping an organization competitive for a long time.

Also, Youndt, Snell, Dean and Lepak (1996) identified it as a unique ability enjoyed by a limited number of workers in an organization, which enables them to present creative thinking that enables the organization to increase its production and achieve high levels in comparison with similar organizations.

Yet, Hansen, Noria and Tierney (1999) demonstrated that intellectual capital is the competitive measure that operates the creative and strategic development of an organization which depends on creativity and innovation, which are considered the key elements that lead to the survival of an organization in the quickly changing work environment.

Edvinsson and Malone (1998) presented an analog for the importance of intellectual capital, where both writers

imagine that an organization represents the tree's trunk, branches and leaves. Therefore, the wise investor who has a high educational background looks at the ability of this tree to provide grown fruits. Judgment on the ability of the tree according to what is seen above the ground is not wise, because the tree's roots are under the ground, and the tree will not be healthy unless its roots and the surroundings are tested. Intellectual capital is similar to the roots of the tree, and to predict the future performance of an organization, intellectual capital must be tested thoroughly.

The concept of intellectual capital usually contains a series of differentiated meanings to the researchers of this concept.

However, Microsoft looks at intellectual capital as it's related to intangible assets where, it contains (Ward, 2001):

- Knowledge and the programmers' skills
- Writer programs
- Licenses related to the protection of programs in the market
- The market share of the software

Some people look at intellectual capital as the epistemology that the project can use to make useful decisions, where this term includes intelligence, intellectual power, and the economic perception of capital which can be used to produce more goods and services. Therefore, it includes the skills and knowledge that a firm develops while developing its goods and services.

Therefore, the users own the knowledge characteristics which are decisive for a firm's success. In others words, intellectual capital is the knowledge that can be used by some people in making useful decisions for a firm.

From the above mentioned, we notice that there is no clear agreement on this concept; it is still being developed and explored either by researchers or others. Therefore, intellectual capital can be seen as:

- The system of epistemology and making of epistemology
- The ability to make decisions in the most difficult cases
- The knowledge acquired through experience and training
- The system used to understand the cases
- Knowledge of how to run businesses
- Knowledge used to avoid crises
- Knowledge of how to find information

Finally, both researchers see that intellectual capital plays an integrated role in knowledge management, particularly as we live in the world of a knowledge economy. This role is embodied in the organization's development in order to achieve a competitive advantage through the intellectual resource in the organization.

#### *4.2 The Importance and Motives of Intellectual Capital Measurement*

Measuring intellectual capital is now important. As a consequence, measurements have been developed to be used to quantify this concept. Edvinsson and Malone (1997) emphasized the need for new measurements for a new age; they believe that the accounting profession needs new measurements to measure the extent of the benefit from intangible assets.

While Skyrme (2003) and Al-Sakini (2006) specified the main motives for managers to measure the intangible assets, such as:

- To provide a base to evaluate a firm by concentrating on assets.
- To justify investments in the activities of knowledge management.

Evaluating and measuring the intellectual capital faces some problems such as how to find a material evaluation for invisible, intangible assets. For example, what is the value of scientists in the factory? It is believed that their value is related to fulfilling new discoveries. However, the question here is how we can measure this materially. This means that the management of intellectual capital has two sides: managerial and accounting. In accounting, it is needed to show in a firm's results. In this regard, many attempts have been made, but they never arrive to a complete model to measure the intellectual assets. However, every organization has its own procedures in regard to enforcing the intellectual rules.

Mouritsen, Larsen, Bukh, and Johansen (2001) indicated some essential differences between the financial accounting system and the intellectual capital accounting system such as:

- In the financial accounting system, transactions are grouped based on cost, revenues, assets and liabilities, while in the intellectual capital accounting system, transactions are grouped based on employees, customers, processes and technology.
- In the financial accounting system, there is a concentration on profitability, liquidity, risks, and the capability of solvency, while in the intellectual capital accounting system, the concentration is on management behavior in regard to the qualifying activities, control and correction of the various influences.

Creating economic value for an organization today is achieved by intellectual capital; however, measuring its elements and disclosing them is a challenge. The estimations of the Federal bank in Philadelphia indicate that the investment in intangible assets in the U.S.A in 2000 was around a trillion U.S. dollars. The problem of measuring these assets is under international scrutiny and there are some differences in the Generally Accepted Accounting Principles (GAAP) in this regard. There is evidence that the disclosure of intellectual capital, goodwill and other intellectual assets, should be by public accounting and financial statements in regard to merged companies. This complies with international standards where the rule is that all merged companies should be explained by the purchase method in accounting so that there is the possibility of comparison between the companies. Disclosure will lead to improved financial reports and measurements and the reporting of intangible assets that are generated internally in the financial statements (Eckstein, 2004).

Therefore, both researchers see that accountants perceive that evaluating the assets in a non-objective process especially for the intangible assets by certain methods and standards must be established to emphasize the reality and credibility of intangible assets. In the case of physical assets, the current and future benefits are measurable through using their discount rates and depreciation, while in the intellectual assets, there is no method to calculate their benefits and costs for the future periods. They can only be calculated for the present period.

Based on the above, accountants face many challenges in measuring intangible assets, such as:

- They are intangible which by their very nature makes them difficult to measure.
- They cannot be determined or reached.
- They cannot be measured directly.
- There are no appropriate markets to determine some elements of intellectual capital such as employees' efficiency and customers' satisfaction.
- Some events in other organizations might influence the elements of intellectual capital.
- There are contradictions in the nature of intellectual capital elements, like some of them cite an increase in their value with time and others not.
- Evaluating each element of intellectual capital separately is difficult because of the interrelationship between these elements. Furthermore, this does not comply with international standard 38, which emphasizes evaluating each element separately.
- The level of uncertainty for expected benefits is increased which leads to an increase in the values of intellectual capital elements or a decrease to zero at a certain moment, such as with patents.
- Unifying intellectual capital elements in an organization is difficult because of the differentiations of intellectual capital.
- There is no direct relationship between the cost of the elements of intellectual capital and its benefits because the value of such elements is in using them and not in their cost (Seetharaman, A. et al., 2002). In other words, the cost of an element might be small, but it is used continuously, or its usage is considered a direct or indirect cause of the creating a value that is not proportionate with its cost.
- The difficulty might not lie in the measurement of intellectual capital but in explaining the results and expectations.
- Measuring intellectual capital in the balance sheet represents a certain moment, and this does not represent the reality of the dynamic elements of it.

However, there are some practical benefits for the measurement of intellectual capital such as:

- Determination of the importance of intellectual capital elements.
- Determination of the return on investment from the elements of intellectual capital.

- Determination of the negotiable elements of intellectual capital.
- Determination of an effective control on intangible assets for the purpose of preparing financial reports.
- Assisting the management to control and correct intellectual capital elements.
- Determining the market value of an organization.
- Assistance in supporting the competitive advantages of an organization.

#### *4.3 Patterns of Intellectual Capital Measurement*

These measurements can be divided into two types: the financial criteria for intellectual capital measurement and the non-financial criteria for intellectual capital measurement.

##### 4.3.1 The Financial Criteria

The management and accounting literature includes many patterns used in measuring and evaluating the capital. Twenty one of the most common models suggested by some researchers are presented here (Baqir, 2004).

###### 4.3.1.1 Skandia Navigator

Suggested by Edvinsson and Malone (1997), it is similar to the balanced scorecard model, so it is a model of an inclusive report which divides the intellectual capital of an organization into four main forms:

- Human capital which includes the distinguished competencies and capabilities, skills and experiences of the workers and managers and their creativities.
- Structural capital which is the supporting infrastructure for the human capital and it includes organizational processes, the procedures, the technologies and the information resources and intellectual rights.
- Customer capital which represents the value embodied in the relationships between a company and customers, the manufactures, the industry entities, and the marketing windows.
- Organizational capital which consists of the process capital and innovation capital.

The model analyzes each element of intellectual capital separately to guarantee more concentration in the analysis and measurement. This model's indicators cover five areas of activities and concentration as follows:

- The financial area includes seventeen indicators.
- The customer area includes twenty indicators.
- The process area covers nineteen indicators.
- The development area consists of thirty five indicators.
- The human resources area includes twenty six indicators.

###### 4.3.1.2 Balanced Scorecard (BSC)

This model translates an organization's mission and strategy into an inclusive group of performance indicators; it focuses on the financial objectives, capability building, intangible asset acquisition for future growth, the internal measurements for decisive activities, creativity, learning and growth.

The balanced scorecards measure a firm's performance by indicators that cover four points of view, as follows:

- The learning and growth perspective: focuses on the interest of the organization's members and the infrastructure.
- The internal perspective: focuses on the main internal transactions because the improvement of such transactions will lead to future financial success.
- The customer perspective: focuses on the organization's activity from the customers' points of view; therefore, the organization is interested in the customers.
- The financial perspective: measures the final outcomes of the organization for its shareholders. These indicators are based on the strategic objectives of the organization.

It is clear that this model focuses on tracking the development and strategy of a firm through a set of criteria that helps in translating a firm's strategy into a group of purposes and objectives. They also track the objectives by using specific performance criteria. The adequate investment in the four areas above is important and decisive in order to achieve long term success; therefore, the four perspectives of the four areas altogether seek to arrive at a balanced point of view for present and future performance.

On the practical side, there are subscales for each perspective. They use the ratios, ordinals, and intervals to

control a firm's performance data. The points produced by these scales are considered in order to connect them with each other and integrate them into one decision point. This supposes that all the scales interact in a cause-effect chain which is connected in its turn with a firm's main strategy and the final outcomes of a firm. However, developing a mathematical method for the various scales in one theoretical frame work is a difficult issue. Therefore, there is no specific mathematical model for this scale so it is left to the managers to decide how these scales are connected with each other.

Such self-interpretation is entrusted to the managers to put the model in a relegated position, i.e., in the prescientific stage, as there is no theoretical framework. However, the promising use of the balanced scorecards might be realized when they are used as a guidance tool to connect the strategic vision with the main distinguished capabilities and connect the success factors with the organizational success.

#### 4.3.1.3 Intangibles Assets Monitor

The Intangibles Assets Monitor model was suggested by Sveiby (1997), and it is similar to the Skandian Navigator and the Balanced Scorecard in many aspects. However, its main focus is on the individuals which are considered the only generators of a firm's profits. Therefore, the distinguished capabilities of these people are the main focus of the model (similar to the human capital in the first model). Such capabilities are converted into external structures (similar to the organizational capital in the first model).

The management in accordance with the strategic objectives of the organization analyzes the indicators that measure the creation value from the intangible assets through four sides: growth, restructure, efficiency and stability.

Therefore, the model specifies the intangible assets by three types:

- The distinguished capability of individuals
- The external structures
- The internal structures

It considers the individuals as the real representatives for the business activities in the organization, and all the internal and external structural sides embody the human actions. The measurement of the value of the three types of intangible assets interprets the difference between the book value and the market value of a firm, and, therefore, the difference between them is attributed to the different capabilities of the individuals, the external structure and the internal structure.

#### 4.3.1.4 IC Index

Presented by Goran and Johan Roos and colleagues of the London – based Intellectual Capital Services (1997), the IC Index concentrates on observing the movement change in regard to the intellectual capital. Four indicators are integrated in a single index according to the correlation between the changes that occur in the intellectual capital and the changes that occur in the market.

The four indicators are as follows:

- Relationship capital
- Human capital
- Infrastructure capital
- Creativity capital

The synergy of all these single indicators represents the character/content in a single indicator. As in the other models, this model depends on personal judgment to determine the value and takes previous performance into consideration.

#### 4.3.1.5 Value Chain Score Board

This model was suggested by Lev (2002), and it is a matrix of non-financial indicators distributed in three sets according to the stages of the development cycle. These sets are as follows:

- Discovery/Learning
- Implementation
- Commercialization

#### 4.3.1.6 Human Capital Intellectual

Human Capital Intellectual was developed by Fitz-Enz (1994); it selects a group of indicators related to

measurement of intellectual capital, and then uses these indicators to make comparisons with the database of this content. It is similar to the Human Resource Costing and Accounting model (HRCA).

#### 4.3.1.7 Technology Broker

This model was suggested by Brooking (1996) which seeks to estimate the value of intellectual capital for a firm through a diagnostic analysis. The intellectual capital according to this model consists of four types of assets as follows:

- Market assets
- Human – centered assets
- Intellectual property assets
- Infrastructure assets

Each of the above four types are tested through questionnaires related to the changes in one type of asset. The first round of the test includes twenty questions in order to enforce the intellectual capital, and one hundred seventy eight questions for the later stage of test.

The analysis requires the existence of a strong relationship between the qualitative results and the financial and cash values; there are many similarities between the test questions of Brooker's technological model which are subjective in nature and the intellectual capital measurements developed by Skandia which is objective in nature.

#### 4.3.1.8 Citation Weighted Patents

In this model suggested by Bontis (1996), the technology factor is calculated by depending on the patents developed by a firm's intellectual capital, and its performance is measured based on the efforts of developing the scientific research according to a series of indicators that describe a firm's patents like the number of patents and the cost of a patent to the sales cycle.

#### 4.3.1.9 Inclusive Valuation Methodology (IVM)

Suggested by Mcpherson (1998), IVM shows the relationship between a firm's value and intellectual capital and the cash measurements in the aim to give an inclusive evaluation for the business activities in the organization.

The model uses three types of value: intrinsic value, extrinsic value and instrumental value. The model seeks to arrive at the overall business value expressed by the total of the intellectual capital for the cash flows of a firm, in other words, measurement of the value added (cash and intangible).

$$\text{Total value added} = \text{cash value added} + \text{intangible value added}$$

#### 4.3.1.10 The Value Explorer

This model was suggested by Andriessen and Tiessen (2000) which represents a methodology or an accounting method to estimate the intellectual capital which is related to the intangible endowments, the implicit skills and knowledge, the inclusive values and scales, the explicit technology and knowledge, and the main and managerial processes.

#### 4.3.1.11 Intellectual Asset Valuation

Presented by Sullivan (2000), this model represents a method to estimate the value of intellectual property.

#### 4.3.1.12 Total Value Creation (TVC)

Initially started as a project by the Institution of Canadian Chartered Accountants, this model was suggested by Andersson and Mclean (2000) to use the discounted planned cash flows for the purpose of restudying how the previous events influence the planned activities.

#### 4.3.1.13 Accounting for the Future (AFTF)

Suggested by Nash (1998), AFTF represents the discounted planned cash flow system. The AFTF value is calculated at the end and at the beginning of the period, and the difference between them represents the value added for that period.

#### 4.3.1.14 Tobin's q

This model was presented by Stewart (1997), and it is similar to the market-book value except it substitutes the book value with the alternative cost of the tangible assets. If a firm owns a value greater than (1) for Tobin's q and greater than the q value for the competitors, this firm is supposed to achieve higher profits than the profits of the competitors. Such profits are the result of the competitive advantage of the intellectual capital in a firm.

This model considers settlements and changes to overcome market-book value limitations.

#### 4.3.1.15 Investor Assigned Market Value (IAMV)

This model was suggested by Standfield (1998), which distinguishes the real value of a firm from its market share value. It is the result of four contents expressed by the following equation:

$$TV = TC + RIC + ICE + SCA$$

Where:

TV = Company's true value

TC = Tangible capital

RIC = Realized intellectual capital

ICE = Intellectual capital erosion

SCA = Sustainable competitive advantage

#### 4.3.1.16 Market to Book Value

This model was presented by Stewart (1997). It is based on the difference between the market value and the book value of a firm. This value includes the tangible assets and intellectual capital. This model is considered an acceptable accounting method and easy to apply.

#### 4.3.1.17 Economic Value Added (EVA)

This model was also presented by Stewart (1997). The value is calculated by the settlement of a firm's disclosed profit with the intangible assets expenses. The changes that occur in the value of EVA is an indicator of whether the intellectual capital of a company's product will stay the life of a company or not. This model provides a surrogate measure for the intellectual capital because it does not provide specific information about the participation of a firm's intellectual capital in its performance.

#### 4.3.1.18 Human Resource Costing and Accounting (HRCA)

The model was suggested by Johansson (1996), and it determines the invisible effect on the costs related to human resources, which in turn decreases a firm's profits. The intellectual capital is measured through a firm's human resources participation divided by capitalized salary expenditures.

#### 4.3.1.19 Calculated Intangible Value

This model was supposed by Stewart (1997), where the additional revenue on the fixed assets is calculated, and then the figures of this revenue are used to specify the revenue ratio for the intangible assets. This model can be used as an indicator for the investment profitability of the knowledge assets.

#### 4.3.1.20 Knowledge Capital Earning

It is suggested by Lev (1999) that the revenues of the intellectual capital are calculated as a ratio of the normal revenues divided by the expected earnings of the book value of assets.

#### 4.3.1.21 Value Added Intellectual Coefficient (VAIC)

This model was suggested by the public (1997), and it measures the quantity of the intellectual capital and the capital used to create value and how they can be used efficiently, based on the relationship between three main elements: capital employed, human capital, and structural capital.

### 4.3.2 The Non-financial Measurements of Intellectual Capital

Designing a system to measure intellectual capital is as important as using the double-entry system for accountants and using currencies as a standard measurement unit. However, if we measure new ideas with old techniques, we will not obtain good results.

Both financial and non-financial measurements bear the elements of uncertainty, and there are no objective measurements in the absolute meaning. However, there are many reasons that the financial scales are more objective; these measurements are related to the implicit concepts of the project and what is seen, but the problem arises when behavior is translated into currency units. For example, the services of the employees are measured by cash amounts. Therefore, the accounting system in existence for the past 500 years cannot handle intangible assets. There is no inclusive system which uses money as an equivalent to measure intangible assets.

An appropriate theory has not been found to handle the new epistemology economy. Many firms use special non-financial methods to measure the operating efficiency. Both the external structure (the relationship with the

suppliers and customers, commercial names, trademarks and goodwill) and the internal structures (the concepts, forms and systems) in a firm are not specified systematically in any firm. Such elements are difficult to be converted into cash values, in contrast to the material assets that can be legally owned.

#### *4.4 Importance of Disclosure of Intellectual Capital*

The traditional financial statements do not present precise information about the real value of a firm, due to the ignorance of disclosure of intellectual capital including intangible assets. Such assets represent (80%) of the market value of the organization, and they are important for the continuity of the competitive advantage for an organization (Rizk, 2007, P 13-16).

Disclosure of intellectual capital under the efficient market assumption assists in decreasing the cost of preparing and disclosing the information for more transparency, and a lesser degree of monopoly or non-disclosure of information that is related to a firm's activities.

The disclosure of intellectual capital depends on standard results, where the internal parties in the organization depend on the cost principle (i.e. the cost of replacing the assets), the value of the principle (calculated through the discounted cash flow), the difference between the market value and the book value in the organization, or the income principle (estimation of the income that results from the operation of the assets, i.e. the net present value of the net cash flows resulting from operating the assets) to measure the elements of intellectual capital. However, the external parties prefer the value principle.

There have been attempts to measure intellectual capital and disclose it, but they have been only partially completed. Human capital has taken the lion share of these attempts, where it is treated as an asset after capitalizing it (Seetharaman A. *et al.*, 2002, p 128), but until now, although the disclosure of intellectual capital is very important, the disclosure of the human capital has not been allowed in financial statements. This has also been applied to all the elements of intellectual capital because there is too much dependence on financial information and not enough dependence on the non-financial information. However, in the last few years, there has been more interest in managing and accounting for human capital, and with this attitude, there has been demands from external project owners on different types of information. Many firms now seek to satisfy this requirement, although creating measurements and the disclosure of this information is more complicated than the financial information.

#### *4.5 The Effects of Disclosing and Reporting Intellectual Capital*

The most important benefits of disclosing and reporting intellectual capital are as follows (Rizk, 2007, p15):

- An attempt to arrive at one standard term for elements and components of intellectual capital
- Assisting in providing the necessary data for planning intellectual capital contents according to negotiable elements
- Assisting in providing the data necessary for the control of intellectual capital contents for the purpose of supporting the competitive situation of the organization
- Assisting in providing the data necessary for planning and controlling intangible assets for the purpose of social reports
- Increasing the level of transparency in the financial statements, which increases the degree of dependency on them by their present and future users and decision makers within and outside the organization

Despite the above advantages for reporting intellectual capital, there are some disadvantages for disclosing and reporting it. The most important of them are as follows (Rizk, 2007, p16):

- Revealing information that might provide benefit to the competitors and harm to the competitive situation of the organization
- Increasing the organization's responsibility towards others especially since this evaluation is completed under uncertain conditions
- Evaluating intellectual capital elements and preparing financial statements that include the evaluation values can be costly
- Increasing the limit of speculation in evaluating the organization's situation
- Disclosing of the intellectual capital is not generally accepted under the traditional accounting system
- Contradicting the requirements of the external review and contradicting the reports outside the traditional accounting system

## 5. The Practical Side

### 5.1 The Hypothesis

The research is based on the main hypothesis that says: "There is no clarity for accountants in regard to the concept and importance of measuring intellectual capital in Jordanian public shareholding companies".

### 5.2 The Population and Sample

The study's population consists of Jordanian public shareholding companies listed at Amman Exchange. The study's sample consisted of fifty five accountants in these companies who have financial and accounting experience.

### 5.3 Analysis of the Demographic Characters of the Sample

The sample was analyzed as to the distribution of individuals according to their specialization variable.

Table 1 shows that the accounting major was the greatest among the sample individuals. Its ratio arrived at 89.1%, which gives an indication that the surveyed group had an appropriate background to answer the questionnaire questions, and their answers were realistic with high credibility.

Table 1. Distribution of the sample individuals according to their specialization variable

Specialization	Frequency	Percentage
Accounting	49	89.1
Financial and Banking Sciences	4	7.3
Business Administration	2	3.6
Economics	0	0
Others	0	0
Total	55	100

The sample was also analyzed as to the distribution of the sample members according to the qualifications of the members.

Table 2 shows that the bachelor qualification had the greatest percentage (81.8%). This supports the findings because the participants belong to suitable qualifications, like bachelors in accounting.

Table 2. The sample's members according to their scientific qualification

The Scientific Qualification	Frequency	Percentage
Community college diploma and less	5	9.0
Bachelor	45	81.8
Master	-	-
PhD	-	-
Professional certificates	5	9
Total	55	100

The sample members were distributed according to length of their experience.

Table 3 shows that those who have experience more than 15 years were the majority between the sample's members (47.3%), which means that the sample's members have good experience which reflected positively on the accuracy of the answers.

Table 3. The sample's members according to their experience

Experience	Frequency	Percentage
Less than 5 years	9	16.4
5-10 years	8	14.5
10-15 years	12	21.8
More than 15 years	26	47.3
Total	55	100

#### 5.4 Results of Testing the Hypothesis

Table 4 shows the means and the standard deviation of the questionnaire, regarding the clarity for accountants about the concept and measurement of intellectual capital in Jordanian public shareholding companies, (n=55).

Table 4. The means and the standard deviation of the questionnaire

Statement of the questionnaire	Mean	Standard deviation	Percentage	Rank in the field
1. The accounting measure and disclosure of intellectual capital leads to showing a company's value and its distinction from other companies.	4.37	0.65	87.43	1
2. Determining intellectual capital and measuring its value leads to creating a distinguished value for a company.	4.11	0.53	82.29	2
3. The accounting measurement of intellectual capital for individuals' creativity in a firm leads to specifying the excellence of their human resources.	3.91	0.74	78.29	7
4. The accounting measurement of intellectual capital of individuals' knowledge leads to showing their creative roles and their value in a company.	4.06	0.54	81.14	3
5. The accounting measurement of intellectual capital of individuals' experience leads to specifying distinguished experience in a company to upgrade a company's efficiency in all fields.	3.66	0.84	73.14	10
6. The accounting measurement of intellectual capital of individuals' practical, managerial and scientific skills leads to improving customer service in a company.	3.94	0.76	78.86	6
7. The accounting measurement of intellectual capital for the patents of individuals in a company leads to determine the strategic situation of a company and its ability to compete internationally.	3.83	0.79	76.57	8
8. The accounting measurement of intellectual capital for a company's name leads to an increase in a company's value locally and internationally.	4.00	0.64	80.00	5
9. The accounting measurement of intellectual capital for a company's information systems and its modern technologies lead to an increase in a company's value.	3.77	0.84	75.43	9
10. The accounting measurement of intellectual capital regarding a company's customer's loyalty leads to creating value for a company locally and internationally.	4.03	0.71	80.57	4
Total	3.97	0.53	79.37	

Upon reviewing the percentages, we find that the first statement ranks first with a mean of 4.37 and percentage of 87.43%. This means that showing the real value of a company is embodied in the necessity of disclosing the mechanism of this valuable resource because it shows the reality and value of a company, which pushes it to be distinguished from the remaining companies that work in the same field, thereby pushing them to compete at local and international levels. The fifth statement has a mean of 3.66 with a comparative importance of 73.14%, while the mean for the field as a whole equals 3.97 and a comparative importance of 79.37%.

#### 5.5 Results of the Hypothesis Test

H0: There is no clarity for accountants in regard to the concept and importance of measuring intellectual capital in Jordanian public shareholding companies.

In order to verify this hypothesis, the T-test for the single sample has been used as shown in table 5.

Table 5. Results of T-test for the single sample for the test of the research's hypothesis (Ho)

The variable	The mean	The standard deviation	Calculated t	Degrees of freedom	Significance level	The reference value	Decision
There is no clarity for accountants in regard to the concept and importance of measuring intellectual capital in Jordanian public shareholding companies.	3.97	0.53	10.76	34	0	3	Rejection of the null hypothesis

Table 5 shows the results of the T-test for the research's hypothesis. The hypothesis "There is no clarity for accountants in regard to the concept and importance of measuring intellectual capital in Jordanian public

shareholding companies” had a mean of 3.97, a calculated t of 10.76 and a level of significance of 0.000.

The calculated t shows that there are differences with a statistical significance between this mean and the reference value which was 3.0 because the value of the significance level was less than 0.05. This significance was in favor of the contrary of the null assumption “There is clarity for accountants in regard to the concept and importance of measuring intellectual capital in Jordanian public shareholding companies”.

With this result the null assumption will be rejected, which means that there is clarity for accountants in regard to the concept and importance of measuring intellectual capital in Jordanian public shareholding companies.

## 6. Results

- Through the statistical analysis, it was shown that the accountants surveyed see that the accounting measurement and the disclosure of intellectual capital leads to showing a company’s value and its distinguish from other companies with a mean of 4.37 and a standard derivation of 0.65.

- It was shown that there is clarity about the concept and importance of intellectual capital in Jordanian public shareholding companies, with a mean of 3.97. As a result, the null hypothesis was rejected, which stated that there is no clarity for accountants in regard to the concept and importance of measuring intellectual capital in Jordanian public shareholding companies.

- Many intellectual capital scales as viewed by the accountants (self-scales) from many sides depend on their experience and their personal judgment to evaluate the assets, particularly the intangible assets, because the evaluation process lacks the existence of guiding rules and clear evaluation standards. Also, there is a lack of statistical methods and ways which might be used as evidence to measure this important resource.

- The present measuring models do not rely on a certain method to calculate the costs and returns of the intellectual capital at a firm, for example, the discount rate, the interest rate when conducting comparative calculations, and the revenues of tangible assets for reasons related to the characteristics of this resource which are described as non-materialistic and intangible. Therefore, they are immeasurable and not complying with the daily accounting transactions which are recorded according to the normal accounting rules when preparing accounting and financial reports.

- The current conceptual accounting framework lacks many concepts in regard to intellectual capital. This forms additional defects in the accounting theory because intellectual capital contents are difficult to be quantified. Therefore, their evaluation depends on the diligence and personal judgment of accountants or others. This makes the information obtained not trusted because there is no clear evidence that support it.

- The reports on intellectual capital have many positive effects, such as the attempt to unify one term for the elements and contents of intellectual capital. There are other positive effects like assisting in providing the necessary data for planning intellectual capital according to the prevailing values especially the negotiable contents, assisting in providing the necessary data for controlling the contents of intellectual capital for the purpose of supporting the competitive situation of a company, and finally, assisting in providing the necessary information for planning and controlling intangible assets for social and environmental purposes that surround a company.

## 7. Recommendations

- It is necessary to develop measurement scales between the financial and non-financial indicators to measure intellectual capital in companies.

- Companies should resort to experts and those who are interested in the measurement issues for this important resource, through holding educational seminars for accountants and interested parties within a company about the importance of intellectual capital and the importance of disclosing it within financial statements.

- A conceptual and intellectual accounting framework is required in order to understand the importance of measuring intellectual capital. This should be a clear reference for these concepts and agreed upon.

- International accounting and financial disclosure needs to be developed and the accounting mechanisms to measure and disclose intellectual capital contents need to be specified in order to approximate the points of views of the accountants and those who are concerned with the profession and to reduce the contradiction between them in regard to intellectual capital’s measurement and disclosure.

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