

## Intellectual Capital vs. Accountancy and Some Relationships: are they useful to the Scientific Knowledge?

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**Received:** July 14, 2023; **Published:** July 27, 2023

DOI: 10.55162/MCET.05.152

### Abstract

This paper seeks to do a brief literature review about what is most recent in the topics of intellectual capital and accountancy, their relationships and their usefulness for scientific knowledge. Research question: *what do the papers that consider, alone or together with others, these 2 topics reveal? Do they present something new, not expected at first? Are they useful for scientific knowledge?* It was found that the research confined to these 2 is very meager, falling short of what would be expected in terms of usefulness for scientific knowledge, and could be broader if it included other topics (technology, performance, environmental management, ...). The methods used were questionnaires, Likert scale, econometrics and financial statements of firms. As main results and conclusions, we can mention that the dimension of intellectual capital has positive effects on firms' performance, and variables able of improving it were identified. Environmental management accounting has a positive effect on business decisions and information systems accounting also has positive effects on the efficiency of workers. The geographic areas that served as context were Italy, Indonesia and Jordan. The temporal context in which the research was carried out in 3 papers was omitted, deliberately or not, which reveals a lack of detail.

**Keywords:** Intellectual Capital; Accountancy; Performance; Information Systems; Technology

### Introduction

The intellectual capital vs. accounting, occurs with the problem of, in many authors, appearing in the context of intangible assets (Sullivan Jr. et al. (2005); Shakina and Barajas (2015); Rodov and Leliaert (2002); Joia (2000); Ciprian et al. (2012)).

It happens, however, that, many times, a distinctive definition is not presented among the various types of possible intangible assets and, much less, is a definition presented, accepted by the scientific community. Andriessen (2004) is one of the authors who presents a simple definition of intellectual capital: *skills to do something*. Among other authors, such as Gogan and Draghici (2013) and Housel and Nelson (2005).

But a definition of intellectual capital is just one of the aspects of the paper. Subsequently, the question arises of how to measure intellectual capital (Goebel (2015); Palacios and Galván (2007); Yildiz et al. (2014)) and, above all, how to know its value, as if it were a product or service, with a price (or a value) (Abdullah and Sofian (2012); Arvan et al. (2016); Berzkalne and Zelgalve (2014)).

Therefore, approaching the issue of intellectual capital, requires defining it, presenting methods of measuring and, finally, ways of knowing its value. All of this should not only be accepted by the scientific community but also be feasible, in practice. Only then, it reveals the usefulness desirable.

Unlike authors, such as (Gogan and Draghici (2013); Delgado-Verde et al. (2016); Gibbons et al. (2012)), belonging to research currents, who approach the value of intellectual capital from a static perspective, the true usefulness of knowing the ultimate value of intellectual capital lies in a dynamic approach, that is, knowing its variation over time: it remains the same or it does not. And in this case, it increases or decreases. Thus, from this perspective, Andriessen (2004) appears as an author whose contribution comes closest to this idea, of approaching intellectual capital.

Concretely, through a small literature review, the relationship between, intellectual capital and accounting, it is pertinent to know, insofar as, since there is no treatment of intellectual capital disclosed separately, it is important to know what some papers convey for this purpose, considering only these 2 topics or in addition to others.

The selection of papers obeyed the criterion, on the one hand, the inclusion of these 2 and, on the other hand, according to a chronological criterion. It was carried out from the Google Scholar query, essentially.

The research question is the following: *what do the papers that consider, alone or together with others, these 2 topics reveal? Do they present something new, not expected at first? Are they useful for scientific knowledge?*

The consideration of only these 2, revealed difficulties of selection, since they appeared together with other topics and not only, *per se*.

### Literature Review

Torre et al. (2020), are authors whose research deals with the technology used, intellectual capital, firm's performance, and employees' satisfaction, from an accounting point of view, in the health sector, in 2 Italian cities: Naples and Salerno.

Indeed, the purpose of the first 3, according to the authors, is of greater importance, insofar as they have impacts on the public. With regard to technology, its integration with data, within the scope of traditional processes, the authors allude to a change in the competitive balance of markets, opening up new perspectives for growth.

Regarding intellectual capital, understood as one of the resources available in a company and which are important for its competitive capacity and value, the authors refer that there are models based on 3 dimensions: relational capital (external relations that firms maintain with suppliers, customers, ...), human capital (relationships that have to do with knowledge and skills) and organizational capital (related to the organization of know-how). However, there are no studies that synergistically integrate these 2 topics, in order to understand the value from the point of view of influence on business performance, public firms, and on worker satisfaction, on the other hand.

Regarding the research method, which the time frame is missing, was based on a randomly questionnaire, to workers who performed functions in the accounting sector of *Local Health Firms of Naples and Salerno*. The sample size was 510 questionnaires of which 250 in Naples and 260 in Salerno. The administration was carried out at random, without identifying the workers, so that they could reveal their free will. In total, 61% were male and 39% female. Ages ranged between 25 and 65 years, with an average of 57.5 years and 56.5 years, respectively.

The constructs of the model used, were 6: technology used, intellectual capital (relational capital, human capital, organizational capital), and firm performance with employees' satisfaction. They coincided with those used by other authors.

A 7-point Likert scale, where used: 1 means *strong disagreement* and 7 means *strong agreement*. With regard to the technology used (7 indicators), in the intellectual capital (3 components), 5 indicators, firm performance (4 indicators), and in the measure employees' satisfaction (7 indicators).

With regard to the results and their discussion, the authors came to the conclusion that the dimension of intellectual capital (remember, relational capital, human capital and organizational capital) exert a positive impact on the firm's performance in the health sector and, ultimately, they also have a positive impact on employees' satisfaction. Particularly, the research underlined the importance of the human capital dimension, with empirical evidence. Thus, workers should not be seen as passive in the activities carried out, but as the main protagonists in daily processes, which leads to a new interpretation and reading of decision-making processes, in which a new concept of innovation should be conceived, with improvements in quality, in order to facilitate the development of decision-making processes, which calls for the need to measure and evaluate the firm's performance in the health sector. The organizational capital dimension positively affects the performance of the workers in these firms.

The relationship between firm's performance and employees' satisfaction, underlines the idea, according to which, how does the first exert a positive effect on the second.

Among the most important implications, it should be highlighted the fact that it provides valuable information for the governance of business processes. Intellectual capital is the factor that allows greater efforts to be made in relation to the relational capital and social capital dimensions. With regard to technology used, it is closely linked with the use of new technologies, which leads to future research related to the identification of factors that allow to increase those in business management, attributing importance to the role played by the skills of the workers and the organizational procedures of the firm's processes. Research also proved to be useful, to help decision-making processes.

As main conclusions, the authors concluded that the research made it possible to identify which variables are likely to improve firm's performance, and ultimately, has repercussions on employees' satisfaction. The paper demonstrated how technology used and intellectual capital, as well as firm's performance, manage to exert positive effects on employees' satisfaction. The analysis, by the *National Health Service*, made it possible to know the tools that make firms improve their performance and their control processes. ... *improvement of firm performance should be seen as the result of the ability to promptly capture changes in the surrounding environment, acting, through effective control systems, on the decisive firm levers* (p. 15).

Sidik et al. (2019), in turn, produced a paper that lists several interconnected topics: the dynamic association with energy efficiency (EE), environmental management accounting (EMA) system and green intellectual capital (GIC) and their impact on firm environmental performance and firm competitive advantages. The goal of the authors is know, what are the impacts of the first three over the last two, in the Indonesia manufacturing industry.

The authors say that the field of EMA makes organizational accounting information work, in favor or against, the business management process. If there is an excess of physical or monetary information, from EMA, it helps to support not only the fundamentals of about EMA, but also the decisions to build environmental protection agencies. The resulting efficiency, makes firms increase sales, decrease costs, in general, and bankruptcy, in particular.

The method used in the research was a Likert Scale, from 1 (strongly disagree) to 5 (strongly agree). The research used 5 variables: EE (4 items), GIC (6 items), EMA (4 items), firm environmental performance (4 items) and firm competitive advantages (4 items). All these items were based in other authors with similar research. Sidik et al. (2019) used, too, an econometric model of, partial least squares structural equation modeling (PLS-SEM), to verify the association between the EE, GIC, EMA with firm environmental performance and firm competitive advantages.

The sample was based on data collected from the manufacturing sector, in Indonesia. The time reference is omitted. In addition, 117 small companies were considered. The totality of the sample information amounted to 309 surveys, which were obtained for a period that amounted to approximately 7 months. With a response rate of 97%.

As main conclusions, it is emphasized that EMA makes the organizational accounting information certain, has a positive or disruptive effect on the firm environmental performance and is available for managerial decision making, with an excess of physical and monetary information, resulting from EMA. On the other hand, this paper has the ability to help the study of variables, so that they are useful in increasing the firms' competitive advantages. However, there are still some firms, according to which, the environmental performance and its acceptance is not a window of opportunity but continues to be an obstacle to growth and performance. The outcomes indicate that all variables that the authors defined, exhibited a positive and significant effect on firm environmental performance and firm competitive advantages, in Indonesia's manufacturing sector.

Al-Dalahmeh et al. (2016), conceived a paper entitled "*The Impact of Intellectual Capital on the Development of Efficient Accounting Information Systems Applied in the Contributing Jordanian Industrial Companies – Viewpoint of Jordanian Accountant Auditors*". It all has to do with the fact that knowledge and information systems are recognized as a valuable resource for your strengths and effectiveness. Thus, firms lack resources to increase these, in addition to developing their knowledge and information systems. This is not possible until intellectual capital is developed.

The goal of this research is to find out the importance of developing intellectual capital to increase the efficiency of knowledge and accounting information systems, in Jordanian firms. On the other hand, it intends to present a theoretical framework on what intellectual capital is, what is the effect of developing its dimensions on the efficiency of accounting and information systems.

And the problem is divided in 4 questions:

1. In the Jordanian firms, there is a positive linear correlation (PLC) between polarization the intellectual capital (IC) and the efficiency of the accounting information systems (AIS)?
2. In the Jordanian firms, there is a (PLC) between the industry of the (IC) and the efficiency of the (AIS)?
3. In the Jordanian firms, there is a (PLC) between activating the (IC) and the efficiency of the (AIS)?
4. In the Jordanian firms, there is a (PLC) between maintaining the (IC) and the efficiency of the (AIS)?

There are also 4 study's hypotheses:

1. In the Jordanian firms, there is no (PLC) between polarizing the (IC) and the efficiency of the (AIS).
2. In the Jordanian firms, there is no (PLC) between the industry of the (IC) and the efficiency of the (AIS).
3. In the Jordanian firms, there is no (PLC) between activating the (IC) and the efficiency of the (AIS).
4. In the Jordanian firms, there is no (PLC) between maintaining the (IC) and the efficiency of the (AIS).

The notion of intellectual capital used was that of the American Society for Training and Development, which divides it into 4 components:

1. Human capital, which refers to the skills of human resources;
2. Creativity capital, which consists of the ability to create new products and new services;
3. Operations capital, which is associated with organizations' technical operations and information systems, in addition to administrative expenses;
4. Customers' capital which includes customer relationships, providing customer support and marketing efficiency and skills;

As a research method, the researchers resorted:

1. Primary sources (questionnaire to auditors) and analyzed with the SPSS software (version ?);
2. Secondary sources (books, theses, scientific papers, ...);

The population consisted of 75 industrial firms in Jordan, listed on the Amman Stock Exchange and the sample, the 75 auditors of the same. The sample period is not mentioned.

For the analyses of the 4 study's hypotheses, the authors used the Pearson's linear correlation coefficient and the simple linear regressions. For this, the dependent variable was the efficiency of the (AIS), and the independent variables were, polarizing the (IC), the industry of the (IC), activating the (IC) and, for the last, maintaining the (IC).

The main details about the demographic profile of the sample is this:

1. Academic degree: Bachelor's degree (51), Master degree (22), PHD (2);
2. Specialty: Accounting (45), Business Administration (20), Economy (3) and Financial and Banking Sciences (7);
3. Professional Certificate: JCPA (54), ACPA (14), CA (4), APA (3);
4. Years of Experience: Less than 5 years (3), 5-10 (12), 10-15 (21), 15-20 (31), 20+ (8);

As main results, the following stand out:

1. The accounting efficiency of the information systems is measured by the benefits obtained by the output of the accounting systems, and which is compared with the costs incurred;
2. There is an urgent need for firms to develop intellectual capital, to increase the application of the (AIS);
3. Industrial firms work to determine the level of knowledge and information (skills) to ensure the quality of work;
4. If the (AIS) is applied in a firm, it increases the efficiency of workers;
5. Industrial firms provide more opportunities for work and progression and development, which increases the quality of products or services;
6. Industrial firms, due to the nature of their work, participate in conferences and symposiums, which increases their performance and the efficiency of their (AIS);
7. The firms use practical means to find new ideas, raising the level of the products and the quality of their accounting systems.

Hayati et al. (2015), in their paper, researched the effect of intellectual capital on the relevance of value in PSAK-based information, to what extent it converges with IFRS (in the Indonesian manufacturing sector).

The obligation to use IFRS in companies listed on the Indonesian Stock Exchange (Amman) is one of the most important changes in accounting regulation, as it increases the comparability of financial reports between firms. In addition to increasing the transparency of information, improving the quality of reports, resulting in benefits and profits for various stakeholders, especially investors.

Intellectual capital research and financial performance gives an idea of how important is accounting information.

Regarding the research method, the basis was the Financial Statements and Financial Reports, of the firms listed on the Amman Stock Exchange, from 2010 to 2013. The panel sample (varies time and firms, simultaneously), consisted of 65 firms, using multiple linear regression method, to evaluate the effect of intellectual capital on the value relevance of accounting information PSAK convergence IFRS.

As dependent variables, EPS (Earnings Per Share), BVEPS (Book Value of Equity Per Share), CFOA (Cash Flows From Operation Activities) were defined, the 3, as proxies of *Value Relevance of Accounting Information of a Firm*. The idea was measure how important is accounting information PSAK convergence IFRS. As an independent variable, the VAIC (Value Added Intellectual Coefficient) was defined.

As the most evident conclusions drawn by the authors, it is emphasized that intellectual capital has a positive and significant effect on the value of accounting information, in Indonesia: EPS and CFOA. This is compared, before and after, the implementation of PSAK convergence IFRS. Except in the case of the dependent variable, BVEPS (after PSAK convergence IFRS). Although, in this case, it was not significant, it revealed a positive effect. The study also provided empirical evidence that firms with large intellectual capital, can generate greater value, revealed in the accounting information for the following year.

The dependent variable EPS, proved to be the one that most contributed to the creation of value, in accounting information, before and after, the implementation of the PSAK convergence IFRS.

## Conclusions

This paper deals with the subject, doing a short literature review about, intellectual capital and accounting, in the perspective of the relationships between them being useful for scientific knowledge.

In fact, it turns out that, in a brief selection, it appears that these 2 topics are not treated as research, only in this pair. Rather, they appear combined with other topics, such as technology, business performance, employees' satisfaction, energy combined with environmental management accounting and firms' performance and competitive advantages. On the other hand, they still arise related to the efficiency of accounting information systems. It should be noted that the geographic context includes Indonesia, Italy and Jordan.

These are countries that, so to speak, are not the scene that arouses greater scientific interest, much less in the manufacturing and health sectors. They are restrictive, insofar as they carry out quantitative and qualitative approaches, not very precise insofar as they do not allow replication, which further accentuates the reduced interest and scope shown. In the European and American panorama, the research obtained was nil, or almost, with the exception of Italy.

Thus, we can conclude that there are many research directions to be developed and knowledge to be refined, above all, in the intellectual capital topic. But, however, it was possible identify variables that, in Health Sector (Italy), improve firm's performance and employees' satisfaction. Also, it was possible to know, in Indonesia, environmental management accounting (EMA) system, could makes certain the organizational accounting information. All variables defined a positive effect on firm environmental performance and firm competitive advantages, in the manufacturing sector of the Indonesia. In Jordan, the research underlined that is urgent developing the intellectual capital to increase the application of the (AIS) and, therefore, the efficiency of workers, the quality of products and services, and it firms use practical means they found new ideas. In Indonesia is was found that the intellectual capital has a positive effect on EPS and CFOA except BVEPS.

With regard to the research question, *what do the papers that consider, alone or together with others, these 2 topics reveal? Do they present something new, not expected at first? Are they useful for scientific knowledge?*, the papers do not reveal anything substantial to scientific knowledge. On the contrary, they are a good example of future directions to be developed, not only in geographic domains but also in activity sectors. The main interest, which would be to display a value for the intellectual capital, remained unknown, not even the way to replicate. The papers were conceived more with the intention of presenting authorial research, with individual interests and less with the intention of serving, expanding knowledge in the 2 topics or even just in intellectual capital. Perhaps, it is the main contribution of the paper.

As limitations, they are related with the sources of data collection: some situation, 3, it is unknow, the period, and data they are those that were available and not those that would be desirable, for scientific purposes.

Implications: the sources of data are, always, a shortcoming, a root that limit the development of any paper, no matter the topic. In this case, and others too, it is found to be one of them. If were primary sources, can be less limited but, without sure, because, one quantitative approach is more useful, for have results more accurate and, we can not know if it is possible, in practical terms. If were secondary sources, the limitations are greater and the results are worse, in quantitative terms. One qualitative approach gives outcomes more limited from the point of view of final numbers.

Avenues for future research are, for instance, consider other geographical areas, and other activity sectors: banking sector, automotive sector, and so on.

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**Volume 5 Issue 2 August 2023**

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**Citation:** Óscar Teixeira Ramada. "Intellectual Capital vs. Accountancy and Some Relationships: are they useful to the Scientific Knowledge?". *Medicon Engineering Themes* 5.2 (2023): 03-09.