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The impact of management accounting systems on development of intellectual capital dimensions by emphasis on business intelligence in Iran capital market

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ABSTRACT

In recent years, several attempts have been made to position management accounting systems (MAS) on development of intellectual capital (IC) and the use of Business Intelligence (BI) and Business Analytics for supporting decision-making is widespread in the world, hence Business Intelligence has effect on relatinship between management accounting systems with intellectual capital dimensions. The purpose of this research is the survey of impact of management accounting systems on development of intellectual capital dimensions by emphasis on intelligence business in Iran capital market. This research is practical and descriptive-correlation and case study that did in Iran capital market in 2019. To do this research a sample was chosen which includes 376 firms of the listed firms in Tehran Stock Exchange. In this research two hypothesis were set forth. After completing the research and doing descriptive and (Linear Multiple regression) inferential statistic's tests, the research hypothesizes were proved. Finding show that there is relationship between management accounting systems with development of intellectual capital dimensions and business intelligent had impact on these relationships. It is better that Managers use management accounting systems and Business Intelligence together in order to development of intellectual capital.

Keywords:

Management Accounting Systems, Intellectual Capital Dimensions, Business Intelligence .

1. Introduction

Since intellectual capital has appeared as an important topic in organizational theory over the past 20 years, the concept of organizational knowledge has been significantly developed. So far, attention has been focused on knowledge and role of organization in actions to develop knowledge, because this important method was considered to create and develop organizational knowledge. Without learning about the importance of human capital, the concept of organizational knowledge has also been developed to include structural capital and relational capital as well as collective relations and effects of elements that are generally considered as IC. Therefore, organizational knowledge has been a set of resources involved in the process of value creation (Bitay and Name, 2013) and mainly attracts the attention of organizations. Therefore, there is a development path from individual-knowledge perspective - to organization-collective knowledge outlook- especially to corporate resources network, because through the combination of organization resources, organizations have a very limited purpose and reach them.

From the perspective of financial accounting, capital is classified into two categories: tangible (tangible) and intangible (nontangible). Tangible assets and assets include all physical facilities such as land, buildings, and production equipment, but understanding intangible capital is ambiguous for organizations. The concept of human capital is rooted in economic literature. In fact, they are quality characteristics of people's capital. Human capital is not physical capital, but human capital is defined as knowledge, skill, creativity, and individual health.

- The literature of intellectual capital indicates the value and intuitive nature of these resources. The first attempt related to the concepts of intellectual capital is due to the studies of Machalap in 1962, but historically the concept of intellectual capital is attributed to 1969 by Galbris¬ He believed that intellectual capital is something beyond his mind and includes intellectual action. This means that in the literature of intellectual capital, in explaining the concept of intellectual capital, moving from knowledge to knowledge to using knowledge, it points out that relations and processes in order to be considered intellectual capital, must turn knowledge into products or service that is valuable to the organization, company, or so on. It also leads to a process that takes us from having knowledge to using knowledge, which leads to providing different definitions of intellectual capital. Edvenson and Malone ¬ say the intellectual capital of information and knowledge used to work is a value to create. Recently, researchers have introduced a comprehensive definition of intellectual capital ¬. In this definition, the requirements for identification of this property are also explained. "Intellectual capital is an asset that measures the ability of the economic agency to create wealth. The property does not have a physical or objective nature and is an invisible property that is derived from the use of assets associated with human resources, institutional performance and relationships outside the enterprise. "All of these features create value within the organization and the value that is obtained because it is a completely intra-organisation phenomenon is not traded." Intellectual capital is the domain of science and knowledge. The word is still in its developmental period. Despite the fact that more systems are using intellectual capital, many people in organizations and businesses still do not know this concept. Research results have shown that companies with more levels of control and focus on invisible assets have less performance and price fluctuations in these companies than companies that are not interested in these assets and specifically intellectual capital.

In recent years, attempts have been made to place management accounting in the field of intellectual capital (Cleary, 2009; 2015; Kairi and colleagues, 2007; Gatrai and colleagues, 2012; Roberts, 2003; Tails and colleagues, 2002; 2007; Turchi and colleagues, 2015; Wingren, 2004, which made the gap filling possible in the experimental academic literature (Rosender and Finchham, 2001) and made transparency about how much management accounting is involved in identification, measurement and management of intellectual capital. The main problem here is that if the knowledge is a source, there is a relationship between management and knowledge management accounting and this includes the question

of whether or how technology can be involved in this field. After several years of development, it is clear from literature that the phenomenon of intellectual capital has a leading human focus and the prospect of management accounting on intellectual capital should not ignore it (Birjstrom and Roberts, 2007; Cleary and colleagues, 2007; Roberts, 2003; 2000; Rosender and Fincham, 2001; Tails and colleagues, 2002.(

Therefore, HR perspective on management accounting is required to provide accounting information for human resources for management. As Roberts (2003) observed, the development is done in the management control framework (for example, balanced scorecard, control lever, etc.) to integrate different functional perspectives and place human capital in a broader interpretation.

However, it is clear that the widespread activities of knowledge management are not merely a responsibility in a field but also a confluence and discourse is necessary between several disciplines (imperfection and roberts, 2004); Johnson, 2005; Roberts, 2003; 2002), as human resource management, information systems and strategy. Also, it is clear from literature that knowledge management includes the confluence of financial and non-financial methods (Bigstrom and Roberts, 2007; Roberts, 2003; Tyles and colleagues, 2002, which means that organizations should guarantee that accounting for management and control systems will be developed to address this issue. Last, it is also clear that accounting for the KM tool activities is Immense and Roberts (2004; Edwards and colleagues, 2005) and a large part of management accounting for intellectual capital rely on its ability to deal with knowledge management and information issues, information flows, and the mechanisms it covers. So considering the existence of supplements between management accounting and intellectual capital is logical.

Intellectual capital has been introduced as one of the most important indicators of sustainable development. Intellectual capital is very effective in all aspects of organizations and is closely related to the performance of companies and to the increase in shareholders' wealth (Young and Colleagues, 2019). The relationship between intellectual capital and the organization's internal and external environment has made the organizations' performance without intellectual capital of any meaning (Hong and Hwang, 2020).

In recent years, many studies have attempted to consider intellectual capital as one of the dimensions of management accounting. The relevant researchers have expressed this important role by expressing the role of management accounting in the identification, measurement, and management of intellectual capital. The main issue is that if intellectual assets and knowledge are an important organizational source, then there must be a relationship between management accounting and intellectual capital. The appearance of management accounting tools such as the balanced assessment card has tried to describe intellectual capital as an important factor of management accounting and to increase the effect of management accounting on intellectual capital (George and colleagues, 2017).

Management accounting is one of the important branches of accounting, which is one of the most important tasks of which informing and producing knowledge to help managers in planning and decision-making (Hajjiha and Sorkhani Ganji, 2020). This adds to the likelihood of a relationship between management accounting and intellectual capital. Management accounting has several financial and non-financial means, which has an effective role by managing costs and evaluating performance on the development of intellectual capital components (George and colleagues, 2017); Saeedi and colleagues, 1398). Management Accounting System for improving its role in this field requires using modern decision-making tools such as business intelligence. Recently, in management accounting system, managers pay attention to the use of strong accounting information systems for forecasting or structure of information and first data. Using the process of decision-supporting systems and trade intelligence as a means of facilitating decision making and data pumping, 39100003 2; Nespu and Chiyochi, 2018).

The main issue of this study is to investigate the effect of management accounting system on the development of intellectual capital components with the help of business intelligence. This research is aimed to investigate the impact of the management accounting system on the development of intellectual capital components.

2. Research Methodology

The research population is all the companies that have been accepted on the Tehran Stock Exchange. The number of companies whose information was available is 376 companies, which were extracted from the modern Rahavard-e Novin software, and data related to management accounting and business intelligence were collected through the questionnaire. The questionnaire and financial data in financial and financial forms are the main tools of this study. The average responses of the questionnaire are used in the model.

Research tools for each of the variables of the research are as follows:

Management accounting systems: The measuring instrument of this variable is the standard George et al. (2017) which has 27 points in the following three components:

Management accounting system usage style: 1 to 11 questions, types of information provided by management accounting systems: Questions 12-21 and various decisions supported by management accounting systems: Questions from 22 to 27

Intellectual capital: The thinking capital with the Palic (2000) model has five stages:

First step: value added

$$VA = OUT – IN$$

Company Added Value (VA), Total Revenue From Sale of Goods and Services (OUT), and Total Cost of Service and Product (IN)

In this model, the cost of salary and wage are not included in the input because of the active role of human force in the process of creating value. Therefore, the cost of employees is not considered as a cost, but rather as an investment. Value added can be calculated by using annual reports:

$$VA = OP + EC + D$$

operational profit (OP), Cost of Staff (EC) and Depreciation (D)

Second step: capital performance evaluation

In this model, in order to provide a complete picture of the efficiency of the source of value, it is necessary to calculate the efficiency of physical capital and financial capital:

$$CEE = VA / CE$$

capital efficiency (CEE) and capital used (CE) as an office value of intuitive assets

Third step: human capital performance

According to the model, all employee costs are considered as human capital. So the efficiency of human capital is calculated as follows:

$$HCE = VA/HC$$

human capital (HCE) and human capital equivalent to total pay (HC)

Fourth step: structural capital performance

In this stage, the role of structural capital in value creation process is calculated. According to the model, the structural capital is obtained from the following relationship:

$$SC = VA – HC$$

company structural capital (SC)

The efficiency of structural capital is calculated from the following relationship:

$$SCE = SC / VA$$

structural capital (SCE) performance

Now we can calculate the efficiency of intellectual capital in this way:

$$ICE = HCE + SCE$$

Intellectual Capital Efficiency (ICE)

Fifth stage: determination of value added intellectual

The last step is the computation of the value-added value of the thought that is calculated according to the following relations:

$$VAIC = ICE + CEE = HCE + SCE + CEE$$

Value Added Intellectual Coefficient (VAIC): This coefficient indicates the efficiency of creating the company's value. The higher the coefficient, the management has better company's potential (nexi and priests, 2014).

Business intelligence: The measuring instrument of this variable is the standard Perovich questionnaire (2012) which has 31 points in 6 components: Data integrity: Questions 1 and 2, analytic capabilities: Questions 3-8, information content quality: Questions 9-15, Information Access Quality: Questions from 16 to 27, using information in business process: The questions of 20-28 and the culture of analytical decision making: Questions from 29 to 31

3. Data Description

Table1: descriptive statistics for independent and control variables of research

Extracted variables from the foundamental analysis of Rahavard-e Novin and questionnaire		Mean	Median	Standard deviation	Min	Max
Human capital	HCE	4.76	3.39	5.24	2.75-	28.89
Structural capital	SCE	0.65	0.75	0.5	1.02-	2.86
Intellectual capital	ICE	5.39	4.3	5.23	2.77-	27.78
management accounting system	MAS	3.78	4	1.04	1.67	5
business intelligence	MAS*IB	13.61	14.38	4.31	5.11	20.21
Company size	SIZE	14.79	14.54	1.7	9.63	20.16
Quick Ratio	RR	1.13	0.83	1.05	0.01	6.15
liquidity ratio	CR	0.3	0.09	0.57	0.00	3.9
inventory	IP	138.39	101.78	134.37	0.00	883
statement duration	RP	225.52	114.98	298.17	1.72	1541
current investment flow	CCT	3.75	2.14	15.8	35.94-	86.39
fixed asset flow	FAT	8.45	4.16	12.54	0.01	69.09
debt ratio	LEV	0.57	0.55	0.3	0.01	2.06
net advantage financial costs	FE	34.35	6.53	88.17	74.94-	570.45
Liquidity ratio	LIQ	297.1	302.5	169.97	2	598
dividend	DPS	380.79	100	715.32	0	5000

3.1. Regression analysis

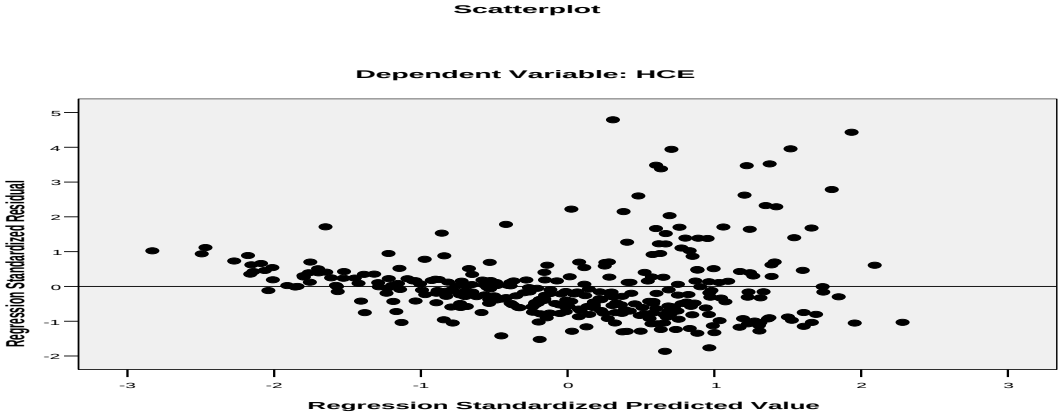
Regression First Assumption Test (Evaluation of Dependent Variable Distribution Normality)

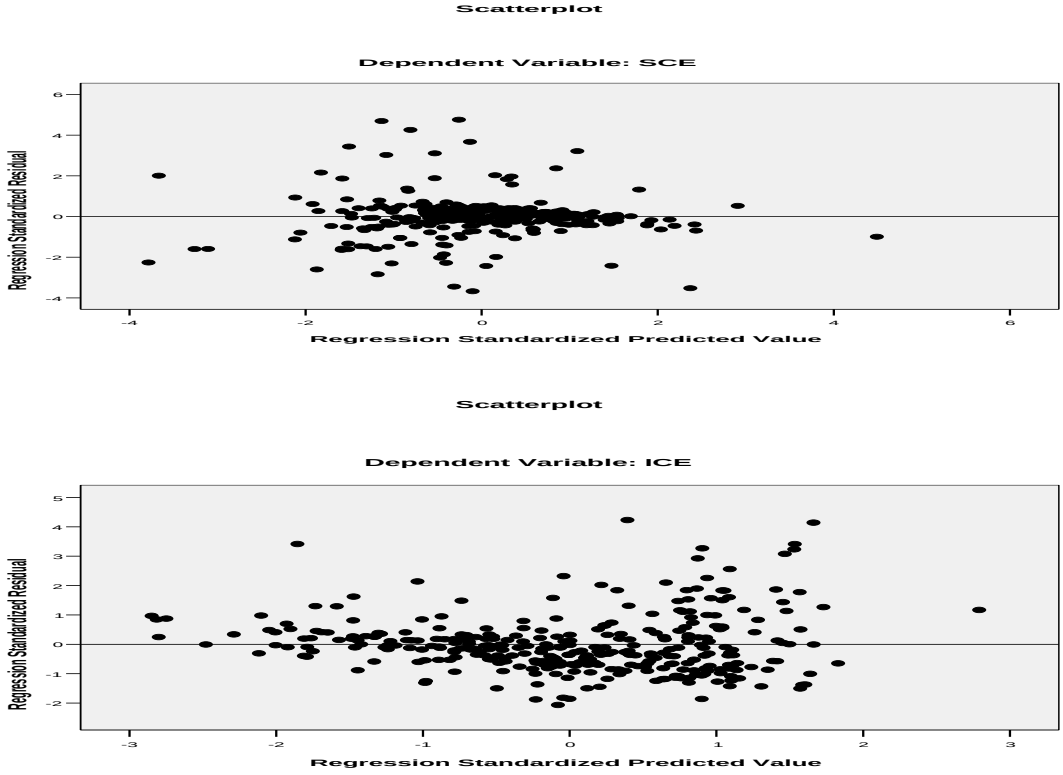
Table 2: Kolmogrov Smirnev test to investigate the normal function of research variable

dependent variable	Mean	Median	standard deviation	z kolmogrov-smirnof value	probability value	result
HCE	376	4.76	5.24	1	0.274	Normal
SCE	376	0.65	0.5	0.99	0.279	Normal
ICE	376	5.39	5.23	0.83	0.502	Normal

Second and fourth assumption regression test with residual scattering diagrams

The scattering in the following diagrams is random and there is no pattern and there is no regular pattern in the distribution of these points, which indicates to be compatible with variance.





Residual scattering charts of dependent variables (intellectual capital and size)

Regression analysis and hypothesis testing

First hypothesis: Management accounting systems have a direct positive effect on the development of intellectual capital components of the stock companies.

According to the first hypothesis, the model is as follows:

$$IC_{it} = \beta_0 + \beta_1 MAS_{it} + \gamma\ CONTROLS + \varepsilon$$

In the above model, the components of intellectual capital include two variables of human and structural capital and finally intellectual capital. In this paper, three models are studied:

$$HCE_{it} = \beta_0 + \beta_1 MAS_{it} + \gamma\ CONTROLS + \varepsilon$$
$$SCE_{it} = \beta_0 + \beta_1 MAS_{it} + \gamma\ CONTROLS + \varepsilon$$
$$ICE_{it} = \beta_0 + \beta_1 MAS_{it} + \gamma\ CONTROLS + \varepsilon$$

The null hypothesis and the research hypothesis are:

$$\begin{cases} H_0 : \beta_1 = \beta_2 = ... = \beta_{12} = 0 \\ H_1 : \beta_i \neq 0 \quad i = 1,2,...,12 \end{cases}$$

In the submodels, F has been estimated that the three models are 0.000. This value is less than 0.05 so zero assumption at 95% confidence level is rejected, that is, at 95% confidence level the model is meaningful. The determination coefficients for human capital are 0.41, 0.09 and intellectual capital is 0.40. The Watson camera statistics for the related models are from 1.5 to 2.5. The values close to 2 indicate that the remaining are not self-correlated, which is another of the regression, (so there is no self-correlation between the remaining ones). VIF values (factor of increase variance) are an index for investigating the linear correspondence between the independent variables, where it is higher than 10, there is a possibility of a linear agreement between the independent variables. The index for the variables was less than 10 and the maximum value was 3.27 for the RR variable. To estimate the coefficients, it is possible to make the following assumptions using T-partial statistics.

Human capital: The value of t-statistic for MAS is equal to 9.58. This value is in the rejection zone of

the null hypothesis, so management accounting systems have a significant and direct relationship with human capital. Also, the value of test statistics for SIZE is equal to 4.14 (significant and positive), for RR is equal to 2.75 (significant and positive) and for CR is equal to -2.29 (significant and negative). Other variables have no significant relationship with human capital.

Structural capital: The value of t-statistic for MAS is equal to 3.92. This value is in the rejection zone of the null hypothesis, so management accounting systems have a significant and direct relationship with structural capital. Also, the value of test statistics for LEV is equal to 2.74 (significant and positive) and for LIQ is equal to -2.00 (significant and negative). Other variables have no significant relationship with structural capital.

Intellectual capital: The value of t-statistic for MAS is equal to 11.47. This value is in the rejection zone of the null hypothesis, so management accounting systems have a significant and direct relationship with intellectual capital. Also, the value of test statistics for LEV is equal to 2.00 (significant and positive) and for LIQ is equal to -2.19 (significant and negative). Other variables have no significant relationship with intellectual capital.

Table 3: estimation and testing of parameters of the first model - human capital

Parameters	Coefficient	value t	probability value	Result	VIF
Fixed value	14.704-	5.35-	0.000	significant and negative	-
MAS	2.671	9.58	0.000	significant and positive	1.69
SIZE	0.659	4.14	0.000	significant and positive	1.5
RR	1.152	2.75	0.006	significant and positive	3.27
CR	1.534-	2.29-	0.023	significant and negative	2.46
IP	0.0002	0.11	0.916	non-significant	1.27
RP	0.0009-	0.87-	0.383	non-significant	1.45
CCT	0.0129-	0.94-	0.349	non-significant	1.06
FAT	0.032-	1.24-	0.217	non-significant	1.15
LEV	0.208	0.21	0.836	non-significant	1.79
FE	0.0011-	0.45-	0.651	non-significant	1.05
LIQ	0.0017-	1.13-	0.26	non-significant	1.4
DPS	0.00038-	1.06-	0.29	non-significant	1.45
Value F		**18.54**	**F probability value**		**0.000**
Determination coefficient		**0.41**	**Durbin-Watson Test**		**1.82**

Table 4: Estimation and testing of the parameters of the first model - structural capital

Parameters	Coefficient	value t	probability value	Result	VIF
Fixed value	0.05	0.16	0.877	non-significant	-
MAS	0.129	3.92	0.000	significant and negative	1.69
SIZE	0.004	0.22	0.828	non-significant	1.5
RR	0.010	0.19	0.846	non-significant	3.27
CR	0.015-	0.18-	0.855	non-significant	2.46
IP	0.0001	0.41	0.68	non-significant	1.27
RP	0.0000	0.4	0.689	non-significant	1.45
CCT	0.0018-	1.09-	0.276	non-significant	1.06
FAT	0.003-	0.94-	0.35	non-significant	1.15
LEV	0.325	2.74	0.006	significant and negative	1.79
FE	0.0002-	0.66-	0.509	non-significant	1.05
LIQ	0.0004-	2-	0.046	significant and negative	1.4
DPS	0.00004	0.98	0.326	non-significant	1.45
Value F		**2.51**	**F probability value**		**0.004**
Determination coefficient		**0.09**	**Durbin-Watson Test**		**2.4**

Table 5: Estimation and testing of the parameters of the first model - intellectual capital

Parameters	Coefficient	value t	probability value	Result	VIF
Fixed value	11.475-	4.08-	0.000	significant and negative	-
MAS	3.273	11.47	0.000	significant and positive	1.69
SIZE	0.273	1.67	0.096	non-significant	1.5
RR	0.694	1.62	0.107	non-significant	3.27
CR	1.004-	1.46-	0.144	non-significant	2.46
IP	0.0008	0.41	0.685	non-significant	1.27
RP	0.0017	1.59	0.113	non-significant	1.45
CCT	0.0151-	1.07-	0.286	non-significant	1.06
FAT	0.032-	1.19-	0.235	non-significant	1.15
LEV	2.05	2	0.046	significant and positive	1.79
FE	0.0018-	0.7-	0.484	non-significant	1.05
LIQ	0.0035-	2.19-	0.029	significant and negative	1.4
DPS	0.00014-	0.38-	0.703	non-significant	1.45
Value F		**17.57**	**F probability value**		**0.000**
Determination coefficient		**0.4**	**Durbin-Watson Test**		**1.78**

Hypothesis 2: Business intelligence affects the relationship between management accounting systems and the development of intellectual capital components of listed companies.

According to the third hypothesis, the model is as follows:

$$\mathrm{IC_{it}} = \beta_0 + \beta_1 \mathrm{MAS_t} + \beta_2 \mathrm{MAS} \times \mathrm{IB_t} + \gamma \mathrm{CONTROLS} + \varepsilon$$

In the above model, the components of intellectual capital include two variables of human and structural capital and finally intellectual capital, so in this section, three models are examined as follows:

$$\mathrm{HCE_t} = \beta_0 + \beta_1 \mathrm{MAS_t} + \beta_2 \mathrm{MAS} \times \mathrm{IB_t} + \gamma \mathrm{CONTROLS} + \varepsilon$$

$$\mathrm{SCE_{it}} = \beta_0 + \beta_1 \mathrm{MAS_t} + \beta_2 \mathrm{MAS} \times \mathrm{IB_t} + \gamma \mathrm{CONTROLS} + \varepsilon$$

$$\mathrm{ICE_{it}} = \beta_0 + \beta_1 \mathrm{MAS_t} + \beta_2 \mathrm{MAS} \times \mathrm{IB_t} + \gamma \mathrm{CONIROLS} + \varepsilon$$

The null hypothesis and the research hypothesis in this model are as follows:

$$\begin{cases} \mathrm{H_0}: \beta_1 = \beta_2 = \cdots = \beta_{13} = 0 \\ \mathrm{H_1}: \beta_\mathrm{i} \neq 0 \mathrm{i} = 1,2,\ldots,13 \end{cases}$$

H0: There is no significant model
H1: There is a significant model

In the tables below the models, it is estimated that the probability value of F for all three models is equal to 0.000. This value is less than 0.05, so the null hypothesis is rejected at the 95% confidence level, ie there is a significant model at the 95% confidence level. The coefficients of determination for human capital are equal to 0.42, structural capital is 0.11 and intellectual capital is equal to 0.42.

Watson camera statistics for the first to third models are 1.84, 2.40 and 1.79, respectively. The maximum VIF values are 3.27 (for the RR variable).

Table 6: Estimation and testing of the parameters of the second model - human capital

Parameters	Coefficient	value t	probability value	Result	VIF
Fixed value	14.306-	5.24-	0.000	significant and negative	-
MAS	3.656	7.69	0.000	significant and positive	5
MAS*IB	0.288-	2.55-	0.011	significant and negative	4.87
SIZE	0.675	4.27	0.000	significant and positive	1.5
RR	1.09	2.62	0.009	significant and positive	3.28
CR	1.457-	2.19-	0.029	significant and negative	2.47
IP	0.0007	0.35	0.73	non-significant	1.28
RP	0.0013-	1.23-	0.219	non-significant	1.48
CCT	0.0105-	0.76-	0.446	non-significant	1.07
FAT	0.037-	1.41-	0.159	non-significant	1.16

Parameters	Coefficient	value t	probability value	Result	VIF
LEV	0.153-	0.15-	0.879	non-significant	1.83
FE	0.0009-	0.37-	0.71	non-significant	1.05
LIQ	0.0022-	1.44-	0.152	non-significant	1.42
DPS	0.00034-	0.95-	0.342	non-significant	1.45
Value F		**17.91**	**F probability value**		**0.000**
Determination coefficient		**0.42**	**Durbin-Watson Test**		**1.84**

Human capital: The value of t-statistic for MAS*IB is equal to -2.55. This value, because it is in the area of rejecting the null hypothesis, therefore, management accounting systems have a significant and inverse relationship with human capital. Also, the value of test statistics for MAS is equal to 7.69 (significant and positive), the value of test statistics for SIZE is equal to 4.27 (significant and positive), for RR is equal to 2.62 (significant and positive) and for CR is equal to -2.19 (significant and negative). Other variables have no significant relationship with human capital.

Structural capital: The value of t-statistic for MAS * IB is equal to -2.82. This value is in the rejection zone of the null hypothesis, so management accounting systems have a significant and inverse relationship with structural capital. Also, the value of test statistics for MAS is equal to 4.60 (significant and positive), the value of test statistics for LEV is equal to 2.35 (significant and positive) and for LIQ is equal to -2.35 (significant and negative). Other variables have no significant relationship with structural capital.

Table 7: Estimation and testing of the parameters of the third model - structural capital

Parameters	Coefficient	value t	probability value	Result	VIF
Fixed value	0.102	0.32	0.751	non-significant	-
MAS	0.258	4.6	0.000	significant and positive	5
MAS*IB	0.038-	2.82-	0.005	significant and negative	4.87
SIZE	0.006	0.34	0.738	non-significant	1.5
RR	0.001	0.03	0.976	non-significant	3.28
CR	0.004-	0.06-	0.955	non-significant	2.47
IP	0.0002	0.68	0.497	non-significant	1.28
RP	0.0000	0.00	0.999	non-significant	1.48
CCT	0.0015-	0.9-	0.367	non-significant	1.07
FAT	0.003-	1.13-	0.26	non-significant	1.16
LEV	0.278	2.35	0.020	significant and positive	1.83
FE	0.0002-	0.57-	0.567	non-significant	1.05
LIQ	0.0004-	2.35-	0.019	significant and negative	1.42
DPS	0.00005	1.12	0.263	non-significant	1.45
Value F		**2.98**	**F probability value**		**0.000**
Determination coefficient		**0.11**	**Durbin-Watson Test**		**2.4**

Table 8: Estimation and testing of the parameters of the third model - intellectual capital

Parameters	Coefficient	value t	probability value	Result	VIF
Fixed value	10.917-	3.95-	0.000	significant and negative	-
MAS	4.651	9.65	0.000	significant and positive	5
MAS*IB	0.404-	3.52-	0.001	significant and negative	4.87
SIZE	0.296	1.84	0.066	non-significant	1.5
RR	0.607	1.44	0.152	non-significant	3.28
CR	0.896-	1.33-	0.185	non-significant	2.47
IP	0.0014	0.74	0.458	non-significant	1.28
RP	0.0012	1.11	0.27	non-significant	1.48
CCT	0.0116-	0.84-	0.403	non-significant	1.07
FAT	0.038-	1.44-	0.152	non-significant	1.16
LEV	1.544	1.52	0.13	non-significant	1.83
FE	0.0015-	0.6-	0.552	non-significant	1.05
LIQ	0.0041-	2.64-	0.009	significant and negative	1.42
DPS	0.00008-	0.23-	0.82	non-significant	1.45
Value F		**17.74**	**F probability value**		**0.000**
Determination coefficient		**0.42**	**Durbin-Watson Test**		**1.79**

Intellectual capital: The value of t-statistic for MAS*IB is equal to -3.52. This value is in the rejection zone of the null hypothesis, so management accounting systems have a significant and inverse relationship with intellectual capital. Also, the value of test statistics for MAS is equal to 9.65 (significant and positive) and for LIQ is equal to -2.64 (significant and negative). Other variables have no significant relationship with intellectual capital.

Discussion and conclusion

Since intellectual capital has appeared as an important topic in organizational theory over the past 20 years, the concept of organizational knowledge has been significantly developed. So far, attention has been focused on knowledge and role of organization in actions to develop knowledge, because this important method was considered to create and develop organizational knowledge. Without learning about the importance of human capital, the concept of organizational knowledge has also been developed to include structural capital and relational capital as well as collective relations and effects of elements that are generally considered as IC. Therefore, organizational knowledge has been a set of resources involved in the process of value creation (Bitay and Name, 2013) and mainly attracts the attention of organizations. Therefore, there is a development path from individual-knowledge perspective - to organization-collective knowledge outlook- especially to corporate resources network, because through the combination of organization resources, organizations have a very limited purpose and reach them.

In recent years, many efforts have been made to establish management accounting systems to improve intellectual capital and performance, and the use of business intelligence and business analysis to support decision-making and increase profitability has been widespread in the world, so business intelligence on the relationship between Management accounting systems are effective with components of intellectual capital and financial performance. Because intellectual property and knowledge are an important organizational resource, there is a relationship between management accounting and intellectual capital. The advent of management accounting tools has tried to identify intellectual capital as one of the most important factors influencing management accounting, and finally management accounting with emphasis on cost management has an impact on improving financial performance. On the other hand, studies have shown that business intelligence is effective in improving the accounting role of management by using new methods. The purpose of this study was to investigate the effect of management accounting systems on the development of intellectual capital components with emphasis on business intelligence in the Iranian capital market. According to the research findings, management accounting systems had a direct positive effect on the development of intellectual capital components and the performance of listed companies, and business intelligence has also had an effect on these relationships.

The results of Nespa and Chiuchi (2018) are consistent with the second hypothesis of the present study and the results of the research of Clary (2015) and George et al. (2017) are consistent with the first hypothesis of the present study. According to the relevant results, the simultaneous implementation of management accounting systems and business intelligence has an effect on improving intellectual capital and ultimately increasing shareholder wealth.

According to the result of the first hypothesis, it was found that management accounting systems have a direct positive effect on the development of intellectual capital components of listed companies, so it is necessary that managers improve the style of using management accounting systems, types of information provided by accounting systems. Management and the types of decisions supported by management accounting systems to take steps to improve the components of intellectual capital.

According to the result of the third hypothesis, which was found to be business intelligence on the relationship between management accounting systems and the development of intellectual capital components of listed companies, so it is necessary that managers improve data integrity, analytical capabilities, information content quality, quality Access to information, the use of information in the business process and the culture of analytical decision-making take steps to improve the components of intellectual capital. Future researchers are advised to do the following research and compare it with the results of this research:

- Investigating the effect of management accounting systems on the development of

intellectual capital components in various industries

- Investigating the effect of business intelligence on improving the power of management accounting tools in managers' decisions

References

* Hajiha, Zohreh, Sarkhani Ganji, Hamid Reza, (2020). Investigating the role of management accounting mediation on the relationship between cost system design and company performance, Management Accounting Quarterly, Volume 13, Number 44, pp. 41-53.
* Rahnamaei Roodpashti, Fereydoon, Mahmoudi, Mohammad, (2010), Explaining the Business Intelligence Model in Management Accounting Information System, Business Management Quarterly, Volume 2, Number 5, from page 31 to page 51.
* Rahnama Roodpashti, Fereydoon, Nikomram, Hashem, Mahmoudi, Mohammad, (2013), Assessing the Impact of Management Accounting Information System Based on Decision Support and Business Intelligence on Financial Performance of Economic Units, Quarterly Journal of Researcher (Management), Volume 10, Number 32, from Page 111 to Page 122.
* Sabkroo, Mehdi, Safarishad, Frank, Rahimi, Ebrahim, Abbasi Rostami, Najibeh, (2018), The effect of business intelligence on the structure of open innovation, Journal of Management Futurology, Volume 29, Number 2, pp. 21-32.
* Saeedi, Hadi, Tatar, Nazgol, Mohammadi, Shaban, (2019), The role of management accounting mediation on the relationship between cost system design and firm performance using covariance-based structural equations, Management Accounting Quarterly, Volume 12, Number 41, pp. 37 -51.
* Nikomram, Hashem, Mahmoudi, Mohammad, (2012), Measuring the effect of management accounting information system based on decision support and business intelligence in decision making of managers of economic units, Quarterly Journal of Management Accounting, Volume 5, Number 13, pp. 47-65.
* Yarmohammadzadeh, Peyman, Siadat, Seyed Ali, Hoveida, Reza, Bakhtiar Nasrabadi, Hassan Ali, (2010), Determining Multiple Relationships between Strategic Management Process and Components of Intellectual Capital in Isfahan Public Universities, Iranian Higher Education Quarterly, Volume 3, Number 2 , Pp. 103-124.
* Cleary, P. (2015), An empirical investigation of the impact of management accounting on structural capital and business performance, Journal of Intellectual Capital, Vol. 16 No. 3, pp. 566-586.
* Haung, C., C., Haung, S., M., (2020), External and internal capabilities and organizational performance: Does intellectual capital matter?, Journal of Asia pacific management review, in press.
* Harris, J. and Durden, C. (2012), Management accounting research: an analysis of recent themes and directions for the future, Journal of Applied Management Accounting Research, Vol. 10 No. 2, pp. 21-41.
* Jorge Casas Novas, Maria do Céu Gaspar Alves, António Sousa, (2017) "The role of management accounting systems in the development of intellectual capital", Journal of Intellectual Capital, Vol. 18 Issue: 2, pp.286-315
* Nespeca , A. and Chiucchi, M. S., (2018), The Impact of Business Intelligence Systems on Management Accounting Systems: The Consultant's Perspective, Springer International publishing AG, part of Springer Nature 2018, R. Lamboglia et al. (eds.), Network, Smart and Open, Lecture Notes in Information, Systems and Organisation 24, https://doi.org/10.1007/978-3-319-62636-9_19
* Popovic,A., Hackney,R., Simoes,P., Jurij,j.(2012), Towards business intelligence systems success: Effects of maturity and culture on analytical decision making, journal of Decision Support Systems, 54(1), 729-739.
* Pulic, A. (2000). VAIC-An accounting tool for IC management. International Journal of Technology Management, Vol. 20. N. (5-8), pp.702-714.
* Tayles .M, Richard H. Pike, Saudah Sofian, (2007), Intellectual capital, management accounting practices and corporate performance; Perceptions of managers. Accounting, Auditing & Accountability Journal. Bradford. Vol. 20, Iss. 4; p. 522.
* Yong, J., Yuslia, M., Ramaya, T., Fawehinmi, O., (2019), Nexus between green intellectual capital and green human resource management, Journal of Cleaner production, Vol. 215, pp. 364-374