Investigating the Effect of Management Accounting on Business Intelligence of Companies Accepted in Stock Exchange

Abbas Daryabari[*1]
*1. Ph.D. Student Islamic Azad University of Qeshm International. (Corresponding Author)

A B S T R A C T

Today, in the business world, we are facing with a large amount of information and data. New achievements in information technology enable organizations to access and store information effectively and efficiently. However, there is a huge gap between the massive data and its use. Today, the accounting information system has changed a lot as a key to organization success in the business environment. If the accounting information management system in management accounting is not able to provide timely and prompt information to business managers, the organization success in a competitive environment will be threatened. To confront competitors and grow long-term strategies, the accounting information system should use business intelligence techniques to provide timely and cost-effective financial information. The purpose of this study is to investigate the effect of management accounting on business intelligence of companies accepted in Stock Exchange. The methodology in this study is descriptive-survey in terms of data collection and it is practical study in terms of purpose. The statistical population includes companies accepted in Stock Exchange in 2017. In this study, in addition to using library studies for literature review, field studies were also conducted in companies accepted in Stock Exchange by a questionnaire tool which included business intelligence Components (IT, employees (HR), customers and competitors) and management accounting. The questionnaires were distributed among the personnel. After collecting descriptive statistics, the demographic variables of the population as well as structural equations and SPSS and LISREL software were used to investigate the validity and reliability of the hypotheses.

Introduction

Technology is emerging into a new age in marketing process, and we are indebted to the tools such as information storage, informing by using satellite services and multidimensional databases, and so on. The massive marketing processes of the past also open the way to the new strategies. The market serves specific groups of buyers. This information is used by the information technology tool to make decisions and plan and convert data into business intelligence. Now accountants can play an important role in their companies by extracting business intelligence and planning and controlling marketing activities. Debi Bliss (Manager of a marketing project in Weirs Kow) said: "Knowledge is the power and today's technology provides unprecedented ability to collect information about sales activity". Accountants and financial managers consider moving into a customer-oriented method in four activity field to collaborate in marketing activities. First, the needed and necessary information such as financial information must be identified; because accountants are familiar with the collected financial data. Second, in many cases, information can be collected because the multidimensional data base has already provided the required data. Third, it is possible to study the data by using advanced analysis techniques. And finally, use information to set up activity planning. These four activity fields will convert information into business intelligence. Financial professionals can use the databases as marketing manager advisors to control the cost against profit or can act as an observer. Accountants in this new role will obtain the stored information in the database. So, they should pay attention to the private issues about shared information (Fordham et al., 2002).

Business intelligence technologies data collection, analysis and transformation and are used to support decision making. Based on the assumption that management accounting is a decision-making process, there is a clear relationship between business intelligence and management accounting. This relationship is important because business intelligence is seen in many organization plans and better data analysis and decision making can create value for organizations. Therefore, management accounting will benefit from the integration of business intelligence techniques with managerial accounting

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Correspondent author: Abbas Daryabari

practices. This interest has taken root in professional accounting institutions, and in 2016, Certification Institute of Management Accountants (CIMA) has been seeking analytical research by providing some privileges in its studies.

To evaluate the credibility of these observations, extensive researches have been done in the sixteen journals and the accounting system. Literature review is necessary because it will save time and effort for future researchers and culminate in the effective development of new knowledge. The specific purposes of this discussion are:

1) Reviewing and evaluating the relationship between business intelligence and management accounting.

2) Based on this, gaps and opportunities for future researches will be expanded.

3) Management accounting conceptualization.

This study has investigated the effect of management accounting technologies on four elements. For example, the research path is based on how to adapt ERP systems or information systems and its effect on accounting practices. Although, these systems have increased the efficiency of the accounting data collection and reporting, but many concluded that often they had sustained effects on the management accounting principles rather than direct or significant changes risk. Undoubtedly, ERP systems have a better control and a positive effect on organizational performance. Many Studies have focused on the role of accounting management variable to digitize accounting processes. While the role of the managerial accountants is based on business and is strategic and consultation-based and has better access to information, it makes its function more effective, where the accounting management practices are implemented in other organizational performances.

Business intelligence is a technology and process for analyzing data and providing practical information to help decision makers make better decisions. Business intelligence is a supportive term that includes a range of different technologies and methodologies which results in the organization obtaining data from external and internal sources. And collects it to analyze, develop and implement the required demands and creates reports and visualize data to make these results available. In this study, we use Chen's definition of business intelligence, which includes emerging fields of analysis such as mobile content and large data analysis.

Theoretical Principles and Literature Review

Based on the new literature in the Accounting Information System (AIS) and existing relationships, we can investigate five new approaches in the accounting information system researches.

1) New technology adoption processes in the Accounting Information System;

2) Designing and modeling in Accounting Information System;

3) Cognitive sciences;

4) Business evaluation and evaluation of information technology application;

5) Investigation, control and audit.

Due to the new achievements of information technology, Accounting Information Systems Decision Support has not grown too much. And companies that need to use this now can merely benefit from the experience of others in this field by using the purchase of expert systems. Application of decision support and business intelligence information systems in accounting based on the creation of competitive advantage is a new approach to accounting profession. There is fewer systems that use decision making normalization, accountants' decision making with logical reasoning and structural analysis based on scientific methods. While some users also expect magical imagination which accountants can also handle processing and management decisions with such systems, but such capabilities are merely an imagination (Begard, 2017).

Technology adoption paradigm in IT field in Accounting Information System perspective and its adoption by potential users pay attention to innovation in IT (Begard, 2003). Model designing in AIS is very powerful during the past decades since McCarthy developed REA model (McCarthy, 1979). Currently, this kind of AIS researches are generally conducted by designing an information model with the aim of databases construction in order to present the real world (Gritss and McCarthy, 2002).

The informational and computational cognitive sciences use human thoughts in order to find out more in AIS (O'Larry Ray, 2003). IT valuation is more rooted in accounting rather than IT. The effects of business performance discusses about information technology (Baja et al., 2008). Controlling and auditing focused on systems that are communicated to improve the quality of accounting information by the accounting information system. In this context, the focus is on controlling the inputs and outputs of the accounting information system (management controls) or it is done by controlling the accounting control information system.

Thematic literature on this paradigm is about concepts such as continuous auditing, Internet sales (WEB), information security, and information retrieval methods (Bourtic and Curtis, 2008). This literature provides an overall image of accounting researches in the information system, and it seems that AIS researches are suitable for research about information technology.

Decision support and business intelligence today have led to the rapid changes in the business environment. The need for timely and effective business information is needed more than ever and it is not only necessary for the organization success, but vital for organization survival. In the definition of the decision support system, it is noted that the computer information system combines models and data to solve in semi-structured and non-structured problems with a wide practical

environments. Many companies have turned to DSS systems to upgrade 3 decision support decision. The major reasons that managers have mentioned to increase DSS use is the need for new, accurate, high-speed information and business practices tracking. The information systems department (office) is not able to address the diversity of company needs or management specific requirements, and the internal commercial analysis system is not automatically implemented. This interpretations multiplicity is partly referred to the evolution of this approach. Instead of mentioning the definitions, it is better to introduce the main characteristics of decision support systems from Peter Scuderberg's view:

- The decision support system is a computer-based system that uses computer technology and methodologies.
- It helps decision making, but it is not replaced by decision maker people.
- Use databases, analytical and computational models and expert systems to solve problems.
- Ability to use semi-structured and unstructured problems.
- Ability to support individual decisions and GDSS.
- It can be used for all management levels.
- It improves accuracy, speed, and quality of decision-making.
- Decision support systems are moving towards learning and creativity, networking and ease of use.
- Decision support systems are easily made and used in many cases.

Business intelligence also refers to a philosophy and management tool that helps organizations manage and refine business information in order to make effective decisions. The term "business intelligence" can be used to refer to these cases: Organizational information and knowledge that describes the business environment, organization and market situation, customers, competitors and economic considerations.

A systematic and organized process by which organizations acquire, analyze, and distribute information from internal and external resources to make decisions on business activities. The purpose of business intelligence is to help control the resources and business information flow that exists within and around the organization. Business intelligence greatly helps organizations by identifying and processing massive data and information. Business intelligence provides timely and appropriate business information and provides the ability to reason and understand hidden meanings in business information. The main application of business intelligence is to help organizational decisions. So, the use of structured and non-structured data of organizational systems is the basis of business intelligence in the organization. In the literature on business intelligence, it has been pointed out that more benefits can be gained by the use of business intelligence in organizational systems. This is while there is fewer organizations have criteria and indicators for measuring business intelligence in their organization and their organizational systems. t is also noteworthy that business intelligence is sometimes also known as ……. And its reason is 6 competitive intelligences which many organizations choose to use business intelligence to gain an organizational competitive advantage (Peter Gatt Schalck, 2015).

**Accounting Information Systems with New Approaches**

Accounting information system is a component and element of the company that provides users with processing of financial events, financial information and decision-making information. An accounting information system can be considered as a logical intersection of two broader concepts: Accounting and Management Information Systems (MIS). What is common in both accounting disciplines and management information systems is the focus on information. Accounting is more focused on information while MIS is focused on covering systems that generates information. These three environments are shown in the figure below:

Figure 1- Accounting Information System Position
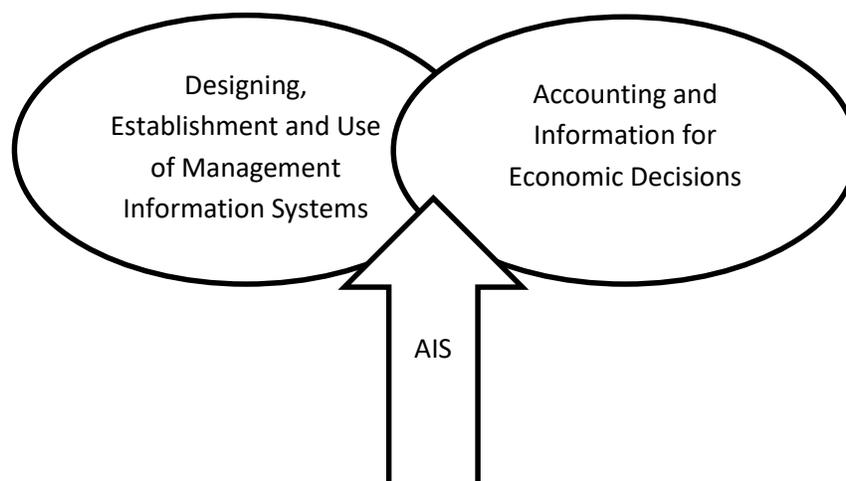
Recently, managers want to use computer tools which are capable of predicting or structuring information and initial data. Nowadays, using the "automatic decision making" system is easy which is done by the intelligent systems help. Accounting faces additional information loads, as well as internal audits and controls that have large amounts of information and complexity. So, when there is a lot of information, it needs to be checked and controlled. In accounting management when there is timely information, the need for an information system with such a reaction is essential. And this is while in some sectors, the preparation of such information will be very complicated. Therefore, the use of intelligent accounting systems which support decision-making management will be necessary. On this basis, in many sectors a series of different reactions has been made by the companies as follows. First, those who have successfully implemented the intelligent system, their competitors have been looking for such a situation. The most famous accounting companies are adopting such a new technology and trying to win and achieve a better position on the market. (Jennifer shang, 2016).

Figure 2- Research Model
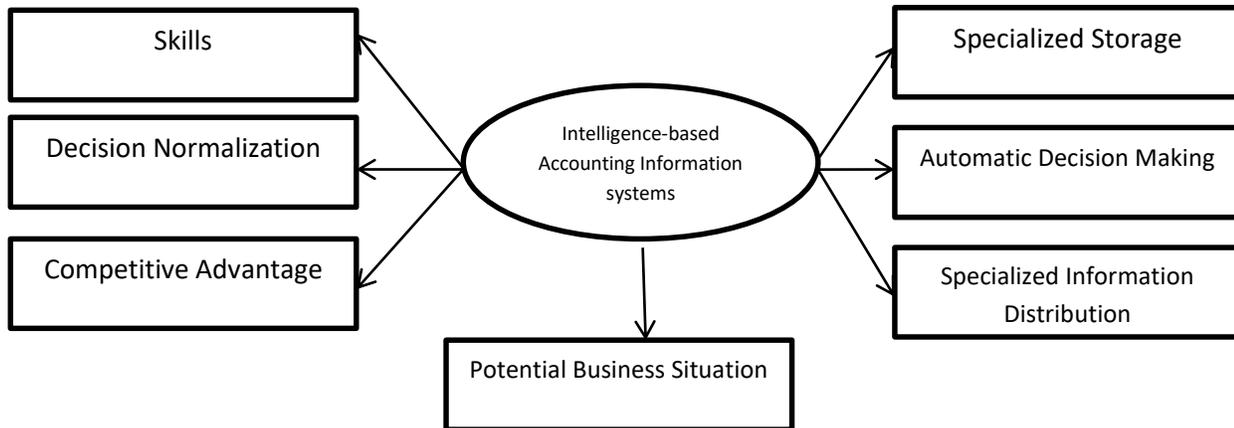
Most researches are based on previous studies about the graphical profiles appropriateness on data and cognitive appropriateness theory. Studies were based on one or more of the following characteristics: How information is introduced means that in tabular or graphical form, Communication level in terms of ability to choose, Information navigation and understanding and system feedback type. About cognitive appropriateness theory, many studies have concluded that the decision quality is developed when there is a correlation between the presentation format, the duties and the user's knowledge. While data visualization and communication reinforce decision-making, these characteristics only provide predilection which is not carefully designed.

Modern business intelligence solutions provide more flexibility levels that rely on the designer. This creates a challenge because managers pay attention to good behavior when they are not able to use multi-dimensional hierarchical data based on their effort reduction. In the absence of a appropriateness between the presentation format and the duty type, the training paths are converted to optimal decisions. While the graphical representation and communication show that the trust development and grading (the difference between the idea that the best decision is made and the decision quality is important) is achieved in the absence of one or two characteristics. All studies do not obtain the quality in the presentation format. For example, Luck concluded that there is no difference in mutual data for the Establishment and integration of data to develop investment decisions. Therefore, the business intelligence value is determined by the decisions and duties forms. Choice rate is a factor that increases the user trust and increases the control level.

developed business intelligence systems focus on patterns or correlations, that is, the internal and external data costs which is related to the duties or budgeting, and defines the predilection based on specific processes. On the other hand, sequential dialogues can change the user's decision space for low-structured duties. Therefore, Business Intelligence designers pay more cautious to combinations of system feedback and use decision support systems based on user behavior. Seo suggests that limited communication with decision support systems can be recommended. It is recommended that system feedback be understood based on the duty type and user knowledge. Masha and Smadelly report that more feedback is more useful when combined with simple duties, conversely, it is true for more complex duties; because it can end to the accountants' debacle. System recommendations that are opposed to the user can end the accounting recommendations and consider the system as a threat. Final users will benefit from recommendations in the form of reason-based recommendation because they choose the appropriate presentation format that suits their duties and skills. Final users need duty-related guidance while performing specific activities through the system. A system can warn the user to see satisfactory behavior so that important data can be detected.

Jennifer (2016) says that skill also plays an important role in the relationship between users and business intelligence. Yensen described the differences between professional users in using the skill systems. Users focus on system recommendations. And they make the right decision when they use the system. Contrary to the technology superiority theory, professionals and beginners do not have a different relationship with the system, and both groups recommend. Fast development through artificial intelligence makes these systems challenge the skilled users. Better training, design, and approval can develop objectivity based on expert systems and reduce the threat.

Coffins (2017) states that even if business intelligence is to develop decision-making, its characteristics introduce predilection and it is converted to optimal decision. Chen and Coffins found that the choice rate is presented by the system and familiarity with the system through user training reinforces high-risk behavior. Moreover, choice rate increases the excessive trust in the individual decisions which determines the success chance in the duty by objective analysis. Therefore, Business Intelligence designers are more willing to reinforce the system characteristics and how to introduce data to reduce the user troubles. Other characteristics accelerate or develop decision-making. Modeling data are useful or superior. This can enter modeling based on the benefits of providing a more realistic business view that is better for investing in these characteristics.

These findings have some requirements to design the functional dashboards which is an emerging field that can display badge card design and visualize financial and non-financial data. Since managers review non-financial criteria of badge card, Cardinals and Vienna investigated the use of functional indicators to reduce predilection to financial performance criteria. On the other hand, Chen emphasized that managers' self-awareness is more important than balanced badge card format for better decision making. As a result, functional dashboards are more effective when their goals are related to the practical and objective design and result in a particular type of user.

Chen (2015) states that while until now, research on the use of tables relied on numerical data charts, the use and effectiveness of other visualization techniques in the MA tasks ends in complex data. Are these techniques ending in the qualitative data that are required for planning and control? What techniques or dashboards are needed for possible forecasting? What techniques are needed to use clustering and correlation analysis? There is the lack of knowledge and empirical evidence about visualization techniques in management accounting. Therefore, the case studies show the use and effectiveness of business intelligence visualization techniques in management accounting.

Ismail and King (2016) in a study as "Effective Factors on Accounting Information Systems in Small and Medium Sized Manufacturing Companies", investigated the correspondence between requests for accounting information and the accounting information system capacity to produce information in small and medium sized companies. This study is conducted based on previous studies and accepting that the accounting information system alignment has a positive effect on the corporate performance of small and medium-sized companies in Malaysia. It seeks to identify alignment different levels, and in the next stage, find the factors that affect this alignment. The findings show that accounting information system alignment is related to the information technology evolution level, accounting level and IT knowledge of owners and managers, , The use of specialists from government institutions (outside the institution) and internal employees in the IT department. This is while there is NO significant relationship between the company size and managers and owners responsibility and accounting information system alignment.

The implementation of business intelligence analysis techniques has been used to support management accounting techniques which results in crises that affect success. For example, does management accounting need to include external data or emphasize on internal data? Can complex statistical analysis not be understood by business users, or should it focus on management accounting techniques? Is the domain of other applications determined by using marketing or human resources data in decision making or should it be related to the accounting domain? Management accountants benefit from the empirical and theoretical guide.

Soca (2012) conducted a study about decision issues and information using which include broad fields with specific views on this field. So, it's not surprising that there is a lot of way to achieve a comprehensive agreement. This study focuses on the role of financial accounting information in management decisions. The findings show that financial accounting information helps managers to understand the events of past years and the current position of the company, identifies events that are not appropriate for the company's current circumstances, and has a quantitative review about the company and will prepare managers for future activities and decisions. In order to make financial accounting information useful in decision making, this information should be intangible, appropriate, reliable and comparable. The decision reality is that not only in terms of access to real data, the probability of working with population data instead of sample data, increasing the processing power, technical and analytical development tools in visualization methods means that managers are looking for new data patterns and relationships. This affects the managers' decision making to access technologies. In the decision-making theory, information searching, decision-making and action are sequential. When access to information is simultaneous, options are evaluated and actions are tested and options are compared. Organization management requires a specific integration of decision making and action.

Moreover, large data has organizational change potential of accounting management. This factor results from the long-term potential effect on the organization decision-making. Decision-making is based on identifying the reasons of events to

connect or predict future events. Focusing on relationships makes data-based decision making and emphasizes on data relationships and patterns that support actions where the reasons are secondary. If the pattern is constant over time, then managers can decide on it. An example is a buying (purchase) behavior that shows a constant pattern during this time. The company can identify sales activities without considering its implicit reasons, while making sales information and initiatives determined by it and eventually identifying the elements related to the decision making. This illustrates the organizational role in analyzing profitability to share responsibilities and analyze traditional accounting and finally analysis results in product and customer combination and can accompany incentive systems with other functions. Decisions in other functions are achieved by the accounting data availability and by business intelligence solutions. Therefore, decisions on marketing campaigns, employee development, and production preservation are beneficial, and the management accounting function can be described in a broader analysis and obtained through customer analysis.

In some large data literature, data quality varies; because when the data gets bigger, their erasing is impractical and the importance of data current recording is reduced in comparison with the others. This is against the accounting principles where data quality is at the center of internal control and management reporting. The objective analysis tools focus directly on the database and do not need a data storing. There is no data staging or clearing it before the analysis. It is at the center of the technologies that have been upgraded and emphasized to those responsible for management reporting. Raw data in reporting means that data quality is more important, and this is when the people responsible for management reporting are determined. It has not been found in accounting format. The related issue is the change from data ownership to data access and its success. The main issue of analytical success is that managerial accountants can be more successful in accessing and helping to data combination.

Finally, large data has a potential effect on the accountants' skills, although some people think that accountants only need to understand data potential and data analysis and do not need to develop technical skills. Others consider large data as a model change in which accountants obtain new skills to support decision making.

Large data provides a new opportunity for management accountants to play an active role in data creation and decision support. Management accountants, who have business post, have a good position to identify and select data to upgrade and repair, while emphasizing particular correlations in large data. If correlation is disrupted, knowledge is converted to the expert idea. And the algorithm suggestions and predictions have a significant effect on the behavior of managers and the customers and then the decision making will require human judgment. But accountants must incorporate these roles and have new skills and capabilities. This is an important field of research that has not yet been introduced.

With large data and better analytical techniques, organizations can better evaluate the employee performance through exploring process and investigate other behaviors through various sensors. How much these new capabilities affect performance? This is associated with large data studies and change digitization to new forms of social structures. Moreover, large data investigation is to predict and modify human behavior through social media communication and market and capital controls. There is a need for studies about the negative and potential aspects of artificial intelligence and algorithms and result in automation use in production and it causes disruption and includes the agricultural and industrial evolution.

In order to study the management accountants' role and decentralize their functions, they need to be investigated. How do reporting capabilities affect the future role of management accountants? How do management accountants achieve new probabilities and analytical techniques? What are the capabilities of accountants and how do they engage in business intelligence implementation?

Research efforts use more focus on large data-based analytics, which is opposed to descriptive analyzes. Forecast analyzes have many uses, including theoretical test, and comparison of competitive models and predictions of future outcomes. Most researches about SI are in the form of models with descriptive ability that are not correct.

Finally, using different theoretical lenses for large data changes and digitization is needed to understand the effect and direction of change. This includes consumption theories in management accounting, such as organizational theory and dynamic capabilities, and more specific theories, such as IT governance theory.

According to the reviewed studies, the user's skill level, satisfaction, and technical issues affect the system use and the decision quality.

The researches show that experts, who implement their duty more effectively than ordinary users, use strategies that are more accurate and require less information processing. So Lee finds that users of the Business Intelligence system understand the system based on their skill level, although the system skill level does not affect performance. It has some requirements to design business intelligence in accounting management. Users with a high level skill system are opposed to other users and understand the system in a very limited way. Ordinary users are better than others who indicate that ordinary users are more limited to the system. Although skilled users have more focused planning and problem solving, and this is the skill which supports decisions and affects the quality.

An important structure in the information system is the user satisfaction; because it introduces success and includes the system use. There is a positive mutual relationship between business intelligence tool and user satisfaction and its frequency and duration. In addition, business intelligence tools have a positive effect on user performance in terms of decision-making efficiency and effectiveness that includes users of business intelligence technologies in management accounting. The

business intelligence success is affected by the availability quality, although the effect of data quality on the use and success of business intelligence is less understood.

That is why the system ownership by non-accountants affects the system use. Therefore, when non-accountants participate in the design and implementation of the information system, they pay more attention to the system. This will result in better system use and its success based on the resources assignment.

Many issues relate to the implementation of a new information system which includes business intelligence. In a case study by Dang and Chi about using the business intelligence in the financial sector and supply chain management, they identify seven issues, including reporting, data flow, role credibility, lack of user knowledge, system error and user system relationship. Reporting and data issues are in superior phases and suggest that familiarity with the system function is important in solving these problems.

Finally, the new system use such as business intelligence is not enough. Organizations must ensure that the system is used effectively and it integrates into decision-making processes. There is no guarantee that business intelligence will be implemented successfully because resource owners are not involved in this process. Therefore, BI-supported strategies require new governance structures and roles to better coordinate resources. Business intelligence is criticized for being passive. Decision support systems are the complete solutions that are active. They constantly understand environmental practices. The study by Vahidou and Hey provides a reason for the superiority of these solutions compared to financial management decision-making systems. Management accountants can succeed in promoting the integration of business intelligence in decision making.

First, business intelligence solutions are guided by a cloud computing infrastructure that requires fast connection and disconnection to facilitate secure communication between executives. Cloud computing is an effective field for future research, especially about accessibility and usability; because business intelligence success depends on the user accessibility quality, the integration level of business intelligence with other applications and analytical capabilities. Usable and practical services facilitate the sharing of information and analytical models in organizations that include the sharing of accounting models and analytical tools. The business intelligence challenges in cloud computing can be related to safety risks, integration, error and cheapness.

The discussion about accounting quality can be divided into three parts: Governance, Performance and Technology. Data governance is very important when organizations integrate external and internal data into planning, control and decision making. Data and information governance requires plans, policies and procedures to ensure legal ethics. This includes personnel management, based on self-awareness, data issues and employee training. By cloud computing adoption, Safety and compatibility risks are much more prominent, because more vulnerability is created by data changing. The second category of data quality is related to data production, distribution and ensuring functions.

Methodology

This study is practical study in terms of purpose; in terms of data collection is library study and is descriptive-survey in terms of methodology.

In order to conduct this study, these steps are taken: Initial and preliminary investigation, Literature review on main factors of decision supporting and business intelligence in management accounting information system, Asking managers' view about business intelligence of management accounting information systems to identify and solve possible problems, Initial Identification and determination of the main decision support field and business intelligence of management accounting information systems and Elements related to decision making in economic units and collecting and analyzing data including:

A) Designing a questionnaire and a survey of managers and users of accounting information systems in economic entities management about main decision support factors and business intelligence of management accounting information system in order to use in decision making process and priority from their point of view in their business units.

B) Statistical analysis of the collected data by using Spearman correlation coefficient.

The explanation is that where significant parametric method of r is cumbersome, We can use nonparametric methods based on more conventional conditions. In this test, null hypothesis is based on No correlation.

$$r_s = 1 - \frac{6 \sum_{i=1}^{k} d_i}{n(n^2 - 1)}$$

The final step is to determine the main factors in economic units from the financial managers' views in Tehran Stock Exchange in order to investigate the presentation of appropriate information in decision making of managers based on each of the decision variables.

The statistical population includes companies accepted in Stock Exchange in 2017. According to the Stock Exchange information, 40 industries and 468 companies accepted in Stock Exchange are reported. Sampling method in this study is simple random sampling and sample size based on the sampling computational formula is Cochran formula as follows:

$$n = \frac{N * \frac{Z^2 a}{2} * Q}{N * d^2 * P * Q}$$

In which, N is population size, n is sample size, d is error, Z, Q=1-p. Based on this, statistical sample number is equal to:

$$n = \frac{468(1.64^2) * 0.25}{468(0.1^2) + (1.64^2) * 0.25} = 59$$

59 financial managers were selected in economic units and 59 questionnaires were sent for all these managers of Stock Exchange companies. Some of the sent questionnaires were invalid. Some of the questionnaires were NOT investigated because of the illegibility of the questionnaire and some questionnaires were NOT returned by respondents. So, 42 questionnaires were collected. Since this questionnaire is based on a detailed and comparative study on the decision support factors and the business intelligence of accounting information systems from researchers and authors' view and it is made by financial managers' view ; therefore, it can be claimed that it has a good content validity. Also, about the reliability of this questionnaire, internal stability analysis was done for all factors, which resulted in Cronbach Alpha coefficient equal to 0/711. It shows that all factors have high coefficient reliability and therefore there is no need to remove any factors.

Research Hypotheses
Considering the conceptual model obtained as a result of literature review, the following hypotheses are proposed:
Main Hypothesis
There is a significant relationship between management accounting information systems based on decision support model and business intelligence in the form of systems based on communication and inference, analysis tools, warning systems and effective decision making and its components in companies accepted in Tehran Stock Exchange.
Secondary Hypotheses
1st Hypothesis: There is a significant relationship between management accounting information systems and business intelligence and timely decision making in companies accepted in Tehran Stock Exchange.
2nd Hypothesis: There is a significant relationship between management accounting information systems and business intelligence and effective decision making and achieving optimal returns in companies accepted in Tehran Stock Exchange.
3rd Hypothesis: There is a significant relationship between management accounting information systems based on decision support model and business intelligence and risk taking level in companies accepted in Tehran Stock Exchange.
4th Hypothesis: There is a significant relationship between management accounting information systems based on decision support model and business intelligence and environmental conditions in companies accepted in Tehran Stock Exchange.
Data Analysis
Based on the purpose of this study and the obtained model as a result of literature review to investigate the effect of management accounting information systems based on business intelligence in timeliness, achieving optimal returns, risk taking and environmental conditions of decision making in economic units managers, to prove 1st, 2nd, 3rd and 4th hypotheses, the results of the Spearman nonparametric test are obtained as Table 2.

Table 2- Dependent Variable of Timely Information in Decision Making

		Web and Mobile	Spearman Correlation Coefficient	Significance Level	No.
1	**Communications**				
2		Communication with Other Systems	-0.223	0.078	42
3		Advanced and Backward Knowledge Reasoning	-0.06	0.484	42
4	Analysis Tools	Analysis	0.042	0.395	42
5		Data Analysis	-0.33	0.418	42
6		Data Storing	0.045	0.388	42
7		Phase Decision Making	0.036	0.390	42
8		Simulation	-0.144	0.412	42
9		Prototyping	0.108	0.181	42
10	Warning and Reporting Systems	Smart Factor	0.148	0.248	42
11		Informing	-0.080	0.307	42
12		Reporting	-0.131	0.204	42

13	Effective Decision Making	Decision Making	0.200	0.103	42
14		Flexibility	-0.195	0.107	42
15		Briefing	-0.083	0.300	42
16		Optimization	-0.015	0.462	42

In decision making process, timely information of managers have NO role in communication and inference, analysis tools, warning systems and effective decision making. There is a significant relationship between management accounting information systems based on decision support model and business intelligence in the form of systems based on communication and inference, analysis tools, warning systems and effective decision making and its components in companies accepted in Tehran Stock Exchange. According to the regression coefficients obtained from the Spearman test as Table 3, it can be claimed that there is NO significant relationship at 95% level between management accounting information systems based on business intelligence including web and mobile services, communication with other systems, real time analysis, data analysis, data storing, phase decision making, simulation, prototyping, smart factor, informing, graphic reporting, group decision making, flexibility and briefing and achieving optimal returns. But other components of management accounting information systems based on business intelligence including Advanced and Backward Knowledge Reasoning and Optimization have significant relationship at 95% level with achieving optimal returns in decision making. Also, the negative correlation coefficient between this variable and Advanced and Backward Knowledge Reasoning equal to -0/308 and Optimization equal to -0/268 indicates reverse relationship between these variables and achieving optimal returns in decision making. According to the regression coefficients obtained from the Spearman test as Table 4, it can be claimed that there is NO significant relationship at 95% level between management accounting information systems based on decision support and business intelligence including web and mobile services, communication with other systems, advanced and backward knowledge reasoning, real time analysis, data analysis, data storing, phase decision making, simulation, prototyping, smart factor, informing, graphic reporting, flexibility and optimization and risk taking in decision making. But other components of management accounting information systems based on decision support and business intelligence including group decision making and briefing have a significant relationship at 95% level with risk taking in decision making. Also, the positive correlation coefficient between this variable and group decision making and briefing indicates the direct relationship between management accounting information systems based on decision support and business intelligence based on two above variables and risk taking in decision making.

Table 3- Dependent Variable of Achieving Optimal Returns

1		Web and Mobile	Spearman Correlation Coefficient	Significance Level	No.
2	**Communications**	Communication with Other Systems	0.068	0.344	42
3		Advanced and Backward Knowledge Reasoning	0.035	0.413	42
4	Analysis Tools	Analysis	-0.308	0.024	42
5		Data Analysis	0.114	0.235	42
6		Data Storing	-0.045	0.390	42
7		Phase Decision Making	-0.30	0.426	42
8		Simulation	0.164	0.150	42
9		Prototyping	0.208	0.094	42
10	Warning and Reporting Systems	Smart Factor	-0.30	0.425	42
11		Informing	0.135	0.196	42
12		Reporting	0.077	0.313	42
13	Effective Decision Making	Decision Making	0.097	0.388	42
14		Flexibility	-0.045	0.465	42
15		Briefing	-0.014	0.292	42
16		Optimization	-0.268	0.042	42

Table 4- Dependent Variable of Risk Taking in Decision Making

1	**Communications**	Web and Mobile	Spearman Correlation Coefficient	Significance Level	No.
2		Communication with Other Systems	0.106	0.252	42

3		Advanced and Backward Knowledge Reasoning	0.123	0.468	42
4	Analysis Tools	Analysis	0.213	0.218	42
5		Data Analysis	0.194	0.087	42
6		Data Storing	0.098	0.109	42
7		Phase Decision Making	-0.037	0.269	42
8		Simulation	0.106	0.407	42
9		Prototyping	0.123	0.252	42
10	Warning and Reporting Systems	Smart Factor	-0.180	0.219	42
11		Informing	-0.126	0.127	42
12		Reporting	0.120	0.178	42
13	Effective Decision Making	Decision Making	0.308	0.024	42
14		Flexibility	-0.159	0.465	42
15		Briefing	0.260	0.048	42
16		Optimization	-0.104	0.255	42

Table 5- Dependent Variable of Environmental Conditions in Decision Making

1	Communications	Web and Mobile	Spearman Correlation Coefficient	Significance Level	No.
2		Communication with Other Systems	0.023	0.441	42
3		Advanced and Backward Knowledge Reasoning	-0.095	0.275	42
4	Analysis Tools	Analysis	-0.247	0.057	42
5		Data Analysis	0.049	0.171	42
6		Data Storing	0.150	0.447	42
7		Phase Decision Making	-0.021	0.234	42
8		Simulation	0.051	0.374	42
9		Prototyping	-0.228	0.074	42
10	Warning and Reporting Systems	Smart Factor	0.298	0.028	42
11		Informing	0.126	0.214	42
12		Reporting	0.312	0.022	42
13	Effective Decision Making	Decision Making	-0.580	000	42
14		Flexibility	-0.188	0.117	42
15		Briefing	-0.350	0.012	42
16		Optimization	0.001	0.497	42

Although the external auditors understanding is more evident rather than cloud computing and risks, it is less relevant to its requirements for data quality and its assumption is based on the business intelligence use. By reinforcing business intelligence solutions through new patterns such as cloud computing, data quality becomes an important subject for research. When data size is increased and more data types are placed in business intelligence systems, challenges are created from accuracy, validity, sustainability, completeness and verification, and new methods are achieved to evaluate and improve the data quality for decision making.

When we arrive at business intelligence and management accounting, it is evident that data quality should use the Nielley and Coke's terminology that has two dimensions. First refers to management accounting tasks, which include performance and compliance estimates, where the criteria for data accuracy, reliability, completeness and validity are used. Others point to the decision support, where use timing and appropriateness are important. Decision makers need real-time information and a brief framework for decision-making. In addition, data based on extensive data in different formats comes from many sources. In this format, we cannot ensure that the data is consistent with the quality criteria. It is important to ensure that the data is accessible and patterned and the analytical models and tools should be taken into account and the results of the whole process should be visualized. The important research subject is how this development emphasizes the role of management accounting. Will account managers replace data scientists who support decision making? How does this development affect the accounting management organizational function? How do management accountants focus on developing new accounting techniques that include statistical analytical methods? In addition, about the previous accounting research, Nielley and Coke suggest that accounting research should be based on the appropriateness of information use for effective decision making, including fields such as data visualization. Management accountants should focus on evaluating the data quality in terms of defining the low-quality data cost in order to evaluate the organization DQ. Based on this, this study is based on how to visualize DQ for users in order to develop decision making.

Discussion and Conclusion

While business intelligence is potentially affected by the general role of management accounting techniques and practices, the result is that relatively fewer articles focus on the use of business intelligence. Many articles are conceptual and do not introduce key functions in management accounting. With a few exceptions, there is limited interest in accounting management in creating knowledge on this field. The results of this study must be Gran Land's observation in which our current understanding of these advances is very limited. This is worrisome because the potential impact of business intelligence on technology and decision-making support in organizations is important. Among conducted studies, none of the major perspectives were investigated. The articles about large data have an optimistic view and focus more on existing opportunities. Some of the descriptions of these articles in the form of large data are worrisome and include negative behavioral effects and creativity. One of the potential effects of digitization and increased automation is the loss of accounting profession. How do these tendencies affect the management accounting professions? These issues should be investigated by using main theories and methods and should be in the ERP field. It is corporate accounting systems that provide financial decision-making information to financial decision-makers and information system users by processing financial events. Accounting can be considered a logical intersection of the two broader information systems: Accounting and Management. What is common in both accounting disciplines and management information systems is the focus on information.

Business intelligence also refers to a philosophy and management tool that helps organizations manage and refine business information in order to make effective decisions. The intelligent information systems use in competition is a new accounting approach based on the accounting practice advantage. There are fewer systems which are performed by decision making normalization and by structural analysis and logical analysis and scientific methods. It is obvious that some of the situations reflect magical imagination. Management decisions can be made and processed by accountants but such capabilities are merely an imagination. But this kind of approach can be appropriate for accounting science. Accountants face complex, unconfined, impossible to structure problems and the only solution can be using artificial intelligence and solving them by traditional optimization methods.

Another aspect of this study is that a certain pattern can be found in the existing theory. There are several theories that are effective in the study of business intelligence in management accounting. An old organizational theory is used to study management accounting change. This theory is used in the ERP systems form with interesting results and used to study the business intelligence organizing in accounting tasks of organizations. In fact, due to the relationship between business intelligence and decision support with the competitive advantage of organizations as an ongoing organizational activity, the innovation of this issue is to strategize management accounting information systems in order to determine the effect on the decision-making process of managers. Therefore, according to the researches, the results of this study show that in order to evaluate the effect of accounting intelligence system based on the business intelligence management on the decision making process of Stock Exchange companies, we propose:

Managers in Tehran Stock Exchange companies can NOT use accounting system based on the business intelligence including web and mobile services, communication with other systems, advanced and backward knowledge reasoning, real time analysis, data analysis, data storing, phase decision making, simulation, prototyping, smart factor, informing, graphic reporting, group decision making, flexibility, briefing and optimization to make timely decisions in the decision-making process.

Managers in Tehran Stock Exchange companies can NOT use accounting system based on the business intelligence including web and mobile services, communication with other systems, advanced and backward knowledge reasoning, real time analysis, data analysis, data storing, phase decision making, simulation, prototyping, smart factor, informing, graphic reporting, group decision making, flexibility and briefing to achieve optimal returns.

Managers in Tehran Stock Exchange companies in the risk taking process of decision making can NOT use accounting system based on the business intelligence including web and mobile services, communication with other systems, advanced and backward knowledge reasoning, real time analysis, data analysis, data storing, phase decision making, simulation, prototyping, smart factor, informing, graphic reporting, flexibility and optimization.

Managers in Tehran Stock Exchange companies in the decision making process based on environmental conditions can NOT use accounting system based on the business intelligence including web and mobile services, communication with other systems, advanced and backward knowledge reasoning, real time analysis, data analysis, data storing, phase decision making, simulation, prototyping, informing, flexibility and optimization.

Managers in Tehran Stock Exchange companies can use accounting system based on the business intelligence including advanced and backward knowledge reasoning and optimization to achieve optimal returns.

Managers in Tehran Stock Exchange companies in the risk taking process of decision making can use accounting system based on the business intelligence including group decision making and briefing.

Managers in Tehran Stock Exchange companies in the decision making process based on environmental conditions can use accounting system based on the business intelligence including smart factor, graphic reports, group decision making and briefing.

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