Providing a model for using business intelligence to implement a customer-based management approach

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Abstract

Business intelligence and organizational information management is defined as a means to gain a comprehensive and analytical view of the information and data collected from current operational processes at the organizational level stored in operational databases. The choice of business intelligence approach and information management of the organization is done in accordance with the organizational structure and the characteristics and conditions of operational and information distribution in the organization. Commercial intelligence and organizational information management, by collecting relevant data from various operational processes at the organizational level, make it possible to analyze events and make the right decisions. This paper provides a model for applying business intelligence to implement a customer-based management approach. For this purpose, after interviewing the experts, the questionnaire tool was used to collect information based on Delphi method. The questionnaire was then analyzed using SPSS software and after confirming the components of the model, the practical details of each part were described. It should be noted that Cronbach's alpha coefficient was 0.81. Finally, the proposed model for using business intelligence to implement a customer-based management approach is presented.

Keywords: Customer-based management, business intelligence, customer orientation, business intelligence.

Introduction:

Over the past decade, all top organizations have invested heavily in business intelligence and information technology, both software and hardware (Ye, and Ma, 2017). In the information age, the one who has the information has the power (Li et al., 2019). Every organization and company that has this power in its industry and profession is distinguished and distinguished compared to its competitors. Organizations, companies and their environment are moving and changing rapidly today (Rabbani and Khalesi Ardakani, 2009). Getting the right information at the right time is the key to success and perhaps the survival of the organization, but there is always a deep gap between the information needed by business executives and the vast amount of data that is collected during the company's day-to-day operations. At the same time, some information must be provided from outside the operating systems (Varasteh and Delkhah, 2009).

Business intelligence is a term coined in the mid-1998s to refer to the transformation of data from its original form into something on which business decisions can be based. Business intelligence is defined as the process of increasing the profitability of an organization in a competitive market by intelligently using the information available in the organization in the decision-making process (Mandhachitara, and Allapach, 2017). The greatest benefit of business intelligence is the ability to make direct access to data by decision makers at all levels of the organization. In this way, these people will be able to interact with the data and analyze it, and as a result, be able to manage the business, improve performance, discover opportunities, and perform their work with high efficiency (Chung, 2019). In the simplest case of business intelligence, it delivers information about the current state of the business to managers. Using business intelligence, information is provided to managers at the right time and with more flexibility (Varasteh and Delkhah, 2009). If one of the indicators of the business is missed or out of schedule, business intelligence allows users to break down the details and find out why and make the right decisions to make up for the current situation. By creating a comprehensive and parametric database and an integrated organizational approach, organizational software provides the full ability to support the process of establishing both BI and EIM approaches in organizations (Hermawati et al., 2019). Customization of these systems enables maximum compliance with the information needs of each organization and business, as well as significant improvement of accuracy and accuracy in the collected information and calculation of applied indicators (Rabbani and Khali Ardakani, 2009). . This

paper provides a model for applying business intelligence to implement a customer-based management approach.

Statement of the problem:

Due to the constant changes in business systems, in order to improve the performance of companies, continuous changes are needed in the way of performance and the way of doing business processes in the organization (Priporas, 2019). Today, in order to deal with these changes and dynamic and unstructured issues, in organizations, the business management system alone cannot be the answer. This system is generally used for structured conditions and systems. In order to respond to the changes needed and optimize the processes available in companies, a self-employed system is needed, which has become the smart business management system and seeks to automate organizational processes as much as possible, with the help of technology. Information (Baloch and Yellow Nalusi, 1397). Information technology defines the database by which it is effective in calculating and increasing speed and improving process performance (Lim, and Teoh, 2020).

Given the modern business world, organizations must adapt to a wide range of developments and changes. These changes have permeated the structure and behavior of processes, which in fact represent changes in the work and business management system (Hellström, and Ramberg, 2019). The business management system has changed a lot from two decades ago, which has made business processes smarter. Managing Smart Business Processes as an organizational transformation guides organizations to achieve their strategic goals (Rabbani and Khalesi Ardakani, 2009). According to researchers, earlier and during the development of technology, since the mid-1990s, business process management has been a repetitive sequence of software and hardware activities for a specific set of planned processes or one-piece resource planning systems. It was limited (Ye, and Ma, 2017). In the late 1990s, business process management was recognized as a recognizable piece of software, as a workflow super management. So that allowed the process management to be done independently of each program. Processes can therefore be defined without limitation to a single application as well as through support for different paths.

The necessity of research:

Business and information technology have been involved in a conflict for several years, because technology has traditionally not done what business wanted because of this haste (Rabbani and Khalesi Ardakani, 2009). Organizations have to change the way they approach their thinking; So that they can be successful in their projects (Ratia et al., 2019). They have to be smarter and manage their processes in the same way. This transition is in line with the evolution of business process management to what Gartner defines as business process management intelligence. Smart business process management system has become a new way to create customer-centric software and agile business solutions. This system separates challenges and silos as well as business units. The real smart business process management system completes continuous improvement through continuous automation, in fact, it has expanded the new levels of cooperation between business and information technology (Varasteh and Delkhah, 2009; Caseiro, and Coelho, 2018). The field of business right now is to turn it into action, and to turn it from potential to actual. The intelligent business process management system not only uses the key tasks of appearance and business methods automatically, but also uses knowledge in line with its goals (Farsi and Jafari, 1397). In principle, if today's businesses do not have the intelligence and ability to accelerate adaptation, then they will lose the possibility of the next success of the business. As the intelligent process management system works automatically, it both learns and adapts (Baloch and Zardeh Nalousi, 1397). In other words, it's like a platform that manages structured and predetermined processes, as well as dynamic, non-structured collaboration between teams. This is a smart approach that guides people and makes them more efficient. It can even be a social network, and through familiar web browsers or mobile devices, it can be integrated with customer experiences across channels at any time and in any case (Rabbani and Khalesi Ardakani, 2009). The intelligent business process management system is simple and transparent about running a business and is always optimistic about responding to the situation of each customer and with the efficiency of dynamic automation (Vandad and Hashemi, 1397).

Theoretical foundations of research

Business intelligence process management is a transfer order that helps organizations achieve their strategic goals. This system includes several repetition steps from design to

implementation and continuous monitoring and improvement, which plays a key role in improving the process and organizational architecture (Baloch and Zardeh Nalousi, 1397). Perhaps most importantly, smart business process management helps organizations strengthen their customer focus by automatically creating their policies and procedures (Caseiro, and Coelho, 2018). In smart business process management, not only policies and events are recorded as modeling, but also automation, operation, monitoring and continuous improvement are done, and this is a positive advantage over its traditional method. (Lim, and Teoh, 2020). The first wave of business process management implementation was typically targeting the island of automation, such as closing gaps in the existing one-piece planning system (Suša Vugec et al., 2020). Early solutions for business process management varied through integration-oriented capabilities, such as application adapters, data conversion capabilities, and product specific process definitions. In order to improve the performance of processes, a solution to help the business management system was proposed, which introduced standards such as web services and advances in development tools in business process management complexes reduced the cost and complexity of data integration. This began to change the fundamental value of business process management from discrete capabilities, causing the management of business logic by business process managers to change the logic of the program without the threat of integration (greasy and clumsy, 2009). In the following, we will talk about the importance of this intelligent business system around this system and its importance, and we will have a brief overview of its impact on improving business processes (Ahmadi et al., 2020).

Smart business process management is the next generation of business management system. Using the latest technology to achieve a degree of operational response, which is not possible with yesterday's business process platform. Today, companies want to get any kind of information about themselves (Khodabandeh Lou; Afrooz; Nouri; Naqdi and Souri, 2009). This growing demand for operational information has led to the creation of a smart new business process management system suite. The Intelligent Business Process Management System suite provides capabilities to support smarter business operations. These include real-time analysis of complex event processing, monitoring of business activities, increasing social mobile capabilities, and the ability to collaborate to improve business processes with change and innovation. Changes in the process of organizational processes can be the beginning of improving processes (Ahmadi et al., 2020). Improving business processes plays an important

role in customer satisfaction. Thus, the issue is very important. These changes must be made continuously in order to be effective (Ye, and Ma, 2017). Smart Business Management System is a new generation of business management that has been able to help organizations to innovate and create new models. Help to run your business and achieve better results (Agoshi and Najafi, 2009). Processes are derived from a number of key capabilities in an intelligent business process management system that includes a rich set of business rules for analyzing and predicting and deciding and adapting rules and events and data exploitation. Great (Lim, and Teoh, 2020). Reengineering business processes is not a separate point from the goal, but a move to continuously improve the process, which is made possible by the intelligent business process management system (Fat and Talking, 2009; Vandad and Hashemi, 1397) . With the help of the methodological cycle, any business can automate the management of its smart business process in a way that suits it. This system is able to create this automation by using repetitions and by continuous improvement cycle, and it accelerates this work and observes the efficiency of automated processes more than before, then it is able to detect through continuous improvement cycle. You will see incremental changes in the direction of progress and improvement (Ranjkesh and Sameni, 1397).

Ways to use business intelligence

In the first step, it is necessary to facilitate the process of accessing information. In such a way that decision makers can refer to the relevant information at any time and in any place without the need for it and perform the various analyzes they want (Pirayesh and Safarkhani, 1397). Also, the information should be displayed in such a way that it is possible to conduct surveys from different dimensions so that managers can easily observe the impact of each factor if necessary and search and analyze the cause of organizational damage. Thus, business intelligence can have a significant impact on the competitive advantage of organizations (Ratia et al., 2019).

To facilitate access to information, you need to first automate and mechanize the organization's processes and finally electronicize the flow of your correspondence and services. In order to achieve business intelligence, it is necessary to first identify the processes in your organization. This requires a lot of experience and knowledge in business process management (Ahmadi et al., 2020).

After this step, there will be a need to design a process and data model in the organization. After implementing and implementing the organization's processes, one of the ways that will always increase the efficiency and profitability of the organization will be to analyze and improve the organization's processes.

1. Business intelligence software: In order to automate things in your organization, you first need to use an office automation system. This is the first step in implementing business intelligence and improving efficiency in your organization. The second step is to use one of the BPMS software to complete the organization's processes. Implementing process management in the organization lists the set of tasks that need to be addressed and prioritizes each one according to priority. Office automation and BPMS are two complementary ways to achieve business intelligence. Among the most popular software applications for automation and process management in the organization are Fragster, Bezaji, and ProcessMaker office automation (Suša Vugec et al., 2020).

2. Business Intelligence Tools: In a 2008 report, TDWI reviewed and compared existing tools in the field of business intelligence. The results of this research are as follows. In this view, the classification of technology is presented in the framework of a process for the realization of a solution based on artificial intelligence. The sections focused on BI tools have the following common functional characteristics. It is worth noting that all the tools produced in the field of artificial intelligence do not fully provide all these 8 modules and the degree of meeting the needs in different tools is different (Caseiro, and Coelho, 2018).

• Production Reporting: This module enables system developers to create high-resolution reports or complex management reports that require programming with SQL-related programming.

• Business Reporting and Questioning: This module enables powerful users to create interactive, formatted reports for their workgroup or related units without the need for coding.

• Online Analysis Process (OLAP): To allow users to analyze data in multiple dimensions and levels in a variety of interactive ways; Enables. In this case, the user can use Down Drill to achieve different dimensions and levels of data using the mouse.

• Dashboard: Allows users to select and view business metrics graphically from multiple sources of information.

• Advanced Illustration: This module allows users to analyze a large amount of data intuitively. This tool is commonly used by analysts to identify hidden trends.

• Integrate with Microsoft Office: This module enables users to view artificial intelligence reports live and online in Microsoft Office applications such as Word and Excel.

• Predictive Analysis: This module enables users to perform advanced algorithms to report data and predict the future, or to express the relationship and correlation between data.

• Business Intelligence Search: This module uses a search paradigm to help BI users produce dynamic and dynamic related reports.

Customer-based business intelligence

A key success factor for companies is their level of innovation in the use of technology, which is related to the ability of each company to use innovation; Introducing new processes, products and ideas in the market and the organization. Innovative activities are generally important for the success of companies (Ratia et al., 2019). Due to the high customer satisfaction ratio compared to customer orientation and marketing, it is recommended that companies focus more on innovation in their services, such as adding options to customer relationship management software, new advertising programs. Because at the level of quality is equal to what causes competition, innovation in product or service (Suša Vugec et al., 2020).

Due to the high coefficient of innovation and organizational performance compared to marketing coefficient and organizational performance, it shows that innovation affects performance more than marketing (Ranjkesh and Sameni, 1397). Due to extensive systematic advertising and close competition in providing high quality services, it leads customers to choose between them based on their innovations. Innovation presents companies with a large market, the outcome of which affects the company's performance (Ahmadi et al., 2020). In order to improve performance and effectiveness, it should be noted that companies, in addition to communicating with their customers, also communicate with their business partners or suppliers. The management of these communications is important because if it is disrupted, the whole business will be challenged (Ahmadi and Jafari, 2009). Business partners may be service suppliers or sales representatives or individuals and companies whose products and services the organization needs to sell its products. Therefore, it is very important that this type of communication is managed so that the organization is most effective and efficient. Therefore, empowering the organization in its business

communications in order to increase efficiency and effectiveness is important (Caseiro, and Coelho, 2018).

Research hypotheses:

H1. Organizational strategies affect the effectiveness of business intelligence systems.

H2. Organizational structure affects the effectiveness of business intelligence systems.

H3. The organizational process affects the effectiveness of business intelligence systems.

H4. Organizational culture influences the effectiveness of business intelligence systems.

H5. Business intelligence systems affect organizational effectiveness.

The method, target population and sample:

The statistical population of the study includes managers and economic experts in one of the state-owned banks in Tehran. The sample size formulas and procedures used for categorical data are very similar, but some variations do exist. Since the data are qualitatively and the number of statistical community is unlimited, so the sample size calculation formula is as follows:

$$n = \frac{Z\alpha_{/2}{}^2 p_0(1-p_0)}{\varepsilon^2} \qquad (1)$$

In this study, researcher has set the alpha level a priori at .05, plans to use a proportional variable, has set the level of acceptable error at 5%, and has estimated the standard deviation of the scale as .5. Cochran's sample size formula for categorical data and an example of its use is presented here along with explanations as to how these decisions were made.

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.1^2} = 96.04 \qquad (2)$$

Where $Z\alpha_{/2}$ = value for selected alpha level of .025 in each tail = 1.96.

(The alpha level of .05 indicates the level of risk the researcher is willing to take that true margin of error may exceed the acceptable margin of error).

Where (p)(q) = estimate of variance = .25.

(Maximum possible proportion (.5) *1-Maximum possible proportion (.5) produces maximum possible sample size).

Where ε = acceptable margin of error for proportion being estimated = .1

(Error researcher is willing to except).

According to the formula at least 97 samples are needed. Therefore, 100 questionnaires were sent between experts and were collected.

Analysis of information

The statistical sample in this research includes 100 experts based on questionnaires with complete and usable answers. 28% of these experts have a master's degree, 17% have Ph.D. degrees and 55% have a bachelor's degree. 67% of these experts are male and 33% are female.

We used SPSS 19.0 to analyze the data. In following the results of test hypotheses are offered:

Testing Hypothesis H1. Organizational strategies affect the effectiveness of business intelligence systems.

The results of SPSS are shown below:

Table. 1. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H1	100	6.8443	1.01973	.17362

Table. 2. One-Sample Test

	Test Value = 5					
					95% Confidence Interval of the Difference	
	T	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
H1	16.844	99	.000	1.4721	1.09443	1.6832

Testing Hypothesis H2. Organizational structure affects the effectiveness of business intelligence systems.

The results of SPSS are shown below:

Table. 3. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H2	100	6.8426	1.0964	.17031

Table. 4. One-Sample Test

	Test Value = 5					
				Mean	95% Confidence Interval of the Difference	
	T	df	Sig. (2-tailed)	Difference	Lower	Upper
H2	16.8443	99	.000	1.6843	1.6385	2.0591

Testing Hypothesis H3. The organizational process affects the effectiveness of business intelligence systems.

The results of SPSS are shown below:

Table. 5. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H3	100	6.7392	1.0793	.19831

Table. 6. One-Sample Test

	Test Value = 5					
				Mean	95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Difference	Lower	Upper
H3	15.0946	99	.000	1.7931	1.0588	1.7692

Testing Hypothesis H4. Organizational culture influences the effectiveness of business intelligence systems.

The results of SPSS are shown below:

Table. 7. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H4	100	6.7593	1.0658	.19643

Table. 8. One-Sample Test

	Test Value = 5					
				Mean	95% Confidence Interval of the Difference	
	T	df	Sig. (2-tailed)	Difference	Lower	Upper
H4	17.7443	99	.000	1.9653	1.6883	1.9752

Testing Hypothesis H5. Business intelligence systems affect organizational effectiveness.

The results of SPSS are shown below:

Table. 9. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H5	100	6.7593	1.0658	.19643

Table. 10. One-Sample Test

	Test Value = 5					
				Mean	95% Confidence Interval of the Difference	
	T	df	Sig. (2-tailed)	Difference	Lower	Upper
H5	17.7443	99	.000	1.9653	1.6883	1.9752

Conclusion:

Business intelligence is one of the management concepts that help managers in the field of information management and realistic decision making. Some call business intelligence a process of turning information into information and then into knowledge. Today, business intelligence has become a valuable concept for organizations and companies that want to

increase the value of their decisions and achieve competitive advantage. In addition, the readiness / maturity of business intelligence systems is a vital issue that should be considered. Note In this article, after defining the concepts related to business performance management and business intelligence, the relationship between these two categories is examined. In the next section, the stimuli and obstacles in achieving business intelligence are expressed and the models proposed in Business intelligence are examined. The biggest advantage of business intelligence in customer relationship management is personalization. Business intelligence helps the company to know the customers better and more and leads to the appropriate response to the needs of the customers. This method specifies exactly what each customer wants at what time. The combination of customer relationship management systems and business intelligence provides a comprehensive approach to recognizing customers, including: improving customer profiles, identifying customer value, and assessing a company's success in creating customer satisfaction. Utilizing customer relationship management with business intelligence solutions creates comprehensive management that is not limited to meeting the passive needs of customers and can predict and visualize their behavior, which leads to increased sales and revenue: Convert potential customers to actual, reduce lost and dissatisfied customers, and increase sales to existing customers. The combination of customer relationship management and business intelligence leads the company to anticipate their customers' decisions and behaviors and to build long-term, profitable relationships with them.

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