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Investigation of the Influence of Business Intelligence on Improvement of Customer-Oriented and Competitive Processes (Case Study: SAIPA Company)

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ABSTRACT

Organizations will not be able to survive without paying attention to customers' expectations in the present era. Business intelligence is a new solution for superiority of companiesand improving their competitiveness. The present research tries to investigate the influence of business intelligence in improving customer-oriented and competitive processes. This is a correlation descriptive study. Statistical population of the research included all managers and staff employees of Saipa Automotive Group whose minimum educational degree was bachelor degree. They were 750 people in number. Cocheran's formula was used to pick 187 sample members using stratified random sampling. A 45-item questionnaire was used for gathering data. Structural equations modeling techniquewas used for data analysis. The results showed that business intelligence has a significant and positive impact on improvement of customer-oriented and competitive processes. Furthermore, business intelligence components including data integration, analytical capabilities, information content quality, access to information, use of info in business space and analytical decision-making culture affect improvement of customer-oriented and competitive processes considerably.

KEYWORDS: business intelligence, customer-oriented processes, competitive processes

INTRODUCTION

Today, abilities of companies to produce satisfaction in customers and maintain them and attracting new customers is based upon their processes quality and not purely on their products and services (McMaster, 2011). Therefore, companies require good processes in order to be able to provide customers with high quality products and services in order to improve satisfaction and loyalty. Business intelligence is a new managerial instrument which helps companies with achieving their targets. In the existing competitive markets, customers do not seek only for better services (Mason, 2009). Especially, emergence of social awareness instruments has increased customers' expectations and they have concluded that organizations should use their widespread resources and financial abilities to eliminate social problems like poverty, violence, environmental protection and … (Rahman Seresht et al, 2009). Considering changes in customers' expectations in different time periods, companies should improve their processes which lead to product or service production continuously (Ilka and Mighi, 2013). Process orientation is a philosophical pillar of total quality management in which processes are considered as pivot of all changes and amendments in a system and improvement of an organization is based on improvement of its processes (Gupta, 2011). Companies require effective and useful information and knowledge in order to improve their processes continuously (Eckerson, 2011).

Business intelligence

Business intelligence is an umbrella-like concept which embraces items like architecture, instruments, database, applications and methodologies. Business intelligence process is based upon conversion of data into information and then making decisions and finally taking actions (Raisinghani, 2004). The main target of business intelligence is to provide on-time access to data and allows managers and analysts to conduct analyses. Decision-makers acquire good viewpoints by analyzing historical data, situations and processes and can make better decisions (Zaman, 2005).

Improvement of customer orientation process

Traditionally, a customer is one who purchases corporate products or is a person who receives products or services. This definition is no longer complete. A better definition for customer is as follows: "a person on whom a company wants to influence by creating values." (Tener and Ditoro, 2008). It is believed that customer

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satisfaction is future responses with respect to the organization (including preparation and eagerness for re-use, tendency to propose to others and inclination for paying without haggling or finding new suppliers of similar products with lower prices) (Kavousi and Saghayee, 2008).

Customer orientation is achieved when corporate performance can satisfy purchaser's expectations. If performance is weaker than expectations, the customer will be unsatisfied and if performance is equal to expectations, the customer will be satisfied. Moreover, if performance is beyond expectations, the customer will be satisfied (Kotler and Armstrong, 2006). Customer satisfaction is the level of utility which is received by a customer from different features of a product and is a source for profitability and a reason for continuing organizational activities indices like return on investment, sales profit, market share growth, costs reduction, stock price growth, reduction in customer loss and maintenance of loyal customers are very different in customer-oriented organizations and ordinary organizations. All human interactions are transactions and one cannot find a relationship which is not actually a transaction. This is true even for spiritual acts (paoulin, 2009). Now, because we always do transactions with each other, we should not forget that we are sometimes suppliers and sometimes receivers of products and services. In other words, we are customers in most cases. Therefore, understanding customer expectations and feeling empathy is not that difficult. Because we are customers of others' products and services. For instance, we always ride vehicles and go to our work. We are customers and driver is service provider. Moreover, we go to stores for making purchases and go to different organizations and departments for doing administrative affairs. Statistics show that indices like return on investment, sales profit, market share growth, costs reduction, stock price growth, reduction in customer loss and maintenance of loyal customers are very different in customer-oriented organizations and ordinary organizations (Pour Hosein, 2009). Therefore, improvement of customer-oriented processes in every organization is an advantage of improvement of organizational performance.

Relationship between business intelligence and improvement of customer-oriented and competitive processes

Investigation of relationships among individuals and information and trend of implementation of processes is necessary for proper performance of business intelligence. Business intelligence considers all relationships among employees and covers value chain. Implementation of business intelligence also requires high level of precision like implementation of any other organizational process (Nasirzadeh, 2011). Business skills include business trend and relationship with organizational strategy along with transformation process which is of great importance in determination of organizational direction. IT skills which help management technically and supports analyses methodologies should also be present. Another skill called analytical skills includes summarization of analyses and proper investigation of data. These three skills have an intersection point which is the very center of improvement of business intelligence. Of course, these skills do not have intersection point in organizations which are performing like separated islands and implementation of such plans (business intelligence) does not have any definition in such organizations and island-performingorganizations cannot implement business intelligence (Ben, 2008). Application of business intelligence in strategic level can be used for contribution to increasing organizational efficiency and optimization of processes. These systems emphasize on some important financial features and other important parameters. It is obvious that a system in this level should embrace organizational external processes. Different features of applications can cause differences in instruments, techniques and infrastructure required for each of them (Daft, 2009). As business intelligence can cause organizational performance a lot, many factors can cause business intelligence. These factors include customers, competitors, partners, economic environment and employees. Considering the fact that business does not have meaning without customers, monitoring customers' behaviors can be effective in predicting supply and demands exactly. Therefore, smart decision support systems and CRM techniques which are embedded in business intelligence architecture can help synchronize organizational movement with customers' interests. Absence of enough information about customers like: who are real customers? What products and when they purchase? How can we extract customer purchase models? How can we increase customer loyalty? (Christopher, 2010). Considering the impacts of business intelligence on an organization, we should study the impacts of different internal and external factors on business intelligence such that the output of business intelligence is useful and the company is not damaged because implementation of basic and strategic decisions is far different from partial amendments (Albercht, 2010). Strategic decision change organizational movement and thought trend and it is not possible to return to the starting point in case of failure because changing organizational culture and individuals' attitudes requires taking long and preplanned steps. Therefore, underestimating the impacts of small factors may end up in failure. Organizations may be similar in some aspects but they do not have similar performance and even if their performance is similar, their activity environment may be different and such basic architectures should be designed, planned and implemented according to organizational infrastructure and features (Asemi, 2003).

Research conceptual model

The present study tries to provide some solutions for effective use of business intelligent systems so that we can pave the way for managers by determining key performance indices and investigation of work steps in business intelligent system. Research conceptual model has been presented in figure 1.

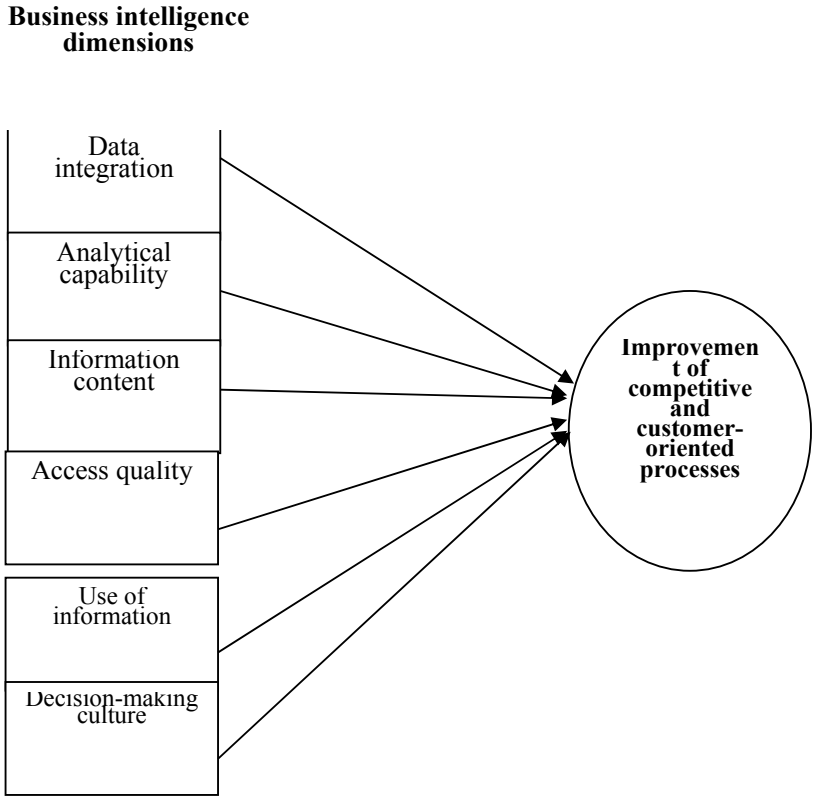

Figure 1.Research conceptual model (popus et al, 2012)

Research hypotheses

Considering the research conceptual model, the hypotheses are as follows:

1. data integration in an organization has an impact on improvement of customer-oriented and competitive processes.
2.analytical capabilities in an organization has an impact on improvement of customer-oriented and competitive processes.
3. info content quality in an organization has an impact on improvement of customer-oriented and competitive processes.
4. info access quality in an organization has an impact on improvement of customer-oriented and competitive processes.
5. use of info in business process in an organization has an impact on improvement of customer-oriented and competitive processes.
6. analytical decision-making culture in an organization has an impact on improvement of customer-oriented and competitive processes.

RESEARCH METHODOLOGY

In terms of goal, this is an applied study because the results will be used in Saipa Automotive Group and also the results can be used by other companies' management. Furthermore, in terms of data gathering, this is a descriptive and correlation study because it explains business intelligence and customer-oriented and competitive processes in a company and also it tries to investigate and identify causal relationships between research variables.

Statistical population

Statistical population of the research included all staff managers and employees who worked for Saipa Automotive Group who had bachelor degrees at minimum. They were 750 people in number. Cocheran's formula (in a restricted population) was used for determination of sample size:

$$n = \frac{N.Z^2_{\alpha/2}.\delta^2}{\varepsilon^2(N-1)+Z^2_{\alpha/2}.\delta^2} = \frac{750\times(1.96)^2\times(0.404)^2}{(0.05)^2\times(750-1)+(1.96)^2\times(0.404)^2} = 187.43 \cong 187$$

Therefore, sample size is equal to 187 people. Stratified random sampling was used for picking sample members. In this research, managers included 15 senior managers/deputies and 32 unit chairmen and 43 supervisors; totally 90 people and employees included 275 marketing and sales employees and 385 PR, finance and … specialists; totally 660 people.

Data gathering instrument

A questionnaire was used for data gathering. The questionnaire contained 55 items. First, we investigated research literature and extracted research variables. then, we extracted indices for operational measurement of business intelligence as independent variable from Popuos et al (2012) model. the dimensions of business intelligence included: data integration, analytical capabilities, info content quality, info access quality and use of information in business process and analytical decision-making culture. We used standard 33-item questionnaire developed by Popuyos et al (2012). Furthermore, operational indices of customer-oriented and competitive processes as dependent variable of the research were extracted from Ketinger model (1997). These included: vision, primary actions, recognition, re-design, renovation and revival and evaluation which were supported by experts. A researcher-made 22-item questionnaire was used in this regard. After preparation of the questionnaire, Cronbach's alpha was used for investigation of reliability. 25 respondents took part in this regard. Results of reliability investigation have been presented in table 1.

Table 1: results of reliability test of questionnaires by means of Cronbach's alpha

Test area	Number of questions	Cronbach's alpha coefficient
Data integration	4	0.875
Analytical capabilities	6	0.898
Info content quality	7	0.884
Info access quality	4	0.827
Use of info in business	9	0.906
Analytical decision-making culture	3	0.843
Business intelligence	33	0.927
vision	4	0.814
Primary actions	5	0.817
recognition	3	0.796
Redesign	4	0.803
renovation	3	0.807
evaluation	3	0.817
Improvement of customer-oriented and competitive processes	22	0.921

Table 2 indicates distribution of demographic variables.

Table 2: distribution of demographic variables

Variable	Frequency	Valid percentage	Cumulative percentage	Freq.
Gender	Male	123	72.35	72.35
	Female	47	27.64	100.0
Age	20-30	56	32.94	32.94
	31-40	70	41.17	74.11
	41-50	30	17.64	91.75
	51 and above	14	8.23	100.0
Organizational post	Senior manager/deputy	2	1.17	1.17
	Unit manager	4	2.35	3.52
	Chairman	6	3.52	7.04
	Supervisor	10	5.88	12.92
	Employee	148	87.05	100.0
Experience	Below 5 years	36	21.17	21.17
	6-10 years	51	30.0	51.17
	11-15 years	47	27.64	78.81
	16-20 years	27	15.88	94.69
	21 and above	9	5.29	100.0

Research hypotheses test

In order to investigate research hypotheses, we used structural equations modeling technique. It is a statistical technique which embraces other techniques like multivariate regression, factor analysis, and path analysis and its main concentration is on latent variables which are defined my measurable and observable indices. Structural equations model has two sections: measurement model and structural model. measurement model links a collection of observed variables to latent variables and in contrast, structural model links latent variables via a collection of direct and indirect relations. Amos software was used for doing structural equations modeling technique calculations. Fitness of research model is very important in this technique. This can be investigated via fit indices which are presented in the output of Amos. Table 3 presents fit indices for the present research model.

Table 3.model fit indices

index construct /	X^2/df	P	RMSEA	CFI	CMIN	RMR	GFI
Allowable value	<0.3	<0.05	<0.07	>0.9	---	<0.05	>0.9
Research model	2.925	0.000	0.059	0.922	4176.57	0.039	0.979

As it can be seen in table 3, all model fit indices are in allowable range and this is indicative of fitness of the model. figure 2 presents research tested model in Amos software.

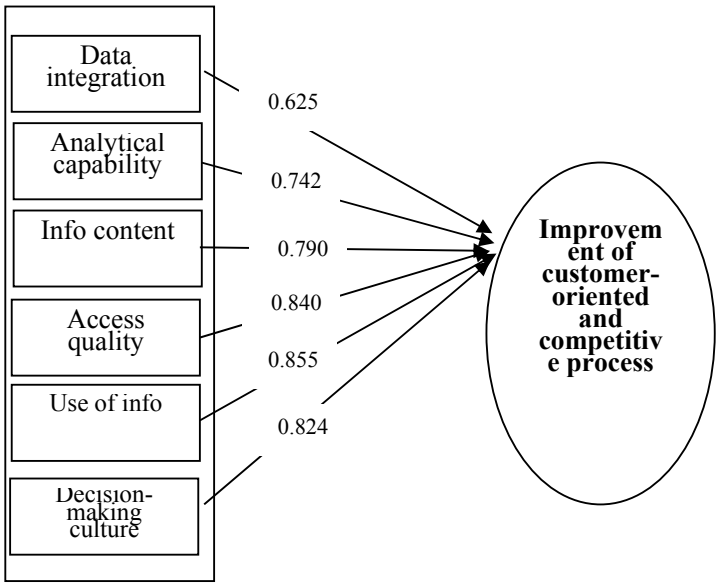

Figure 2.Hypotheses tested model

We deal with research hypotheses in the subsequent sentences.

Hypothesis 1.data integration has an impact on improvement of customer-oriented and competitive processes.

Because direct impact coefficient is equal to 0.625 in relationship between the variables and because t value is equal to 8.745 which is greater than 1.96, it can be said that data integration has a positive and significant impact on improvement of customer-oriented and competitive processes.

Hypothesis 2.Analytical capabilities have an impact on improvement of customer-oriented and competitive processes.

Because direct impact coefficient is equal to 0.742 in relationship between the variables and because t value is equal to 10.554 which is greater than 1.96, it can be said that having analytical capabilities has a positive and significant impact on improvement of customer-oriented and competitive processes.

Hypothesis 3.Info content quality has an impact on improvement of customer-oriented and competitive processes.

Because direct impact coefficient is equal to 0.787 in relationship between the variables and because t value is equal to 10.673 which is greater than 1.96, it can be said that info content quality has a positive and significant impact on improvement of customer-oriented and competitiveprocesses.

Hypothesis 4.Info access quality has an impact on improvement of customer-oriented and competitive processes.

Because direct impact coefficient is equal to 0.840 in relationship between the variables and because t value is equal to 7.385 which is greater than 1.96, it can be said that info access quality has a positive and significant impact on improvement of customer-oriented and competitive processes.

Hypothesis 5.Use of information in business process has an impact on improvement of customer-oriented and competitive processes.

Because direct impact coefficient is equal to 0.855 in relationship between the variables and because t value is equal to 10.126 which is greater than 1.96, it can be said that use of information in business process has a positive and significant impact on improvement of customer-oriented and competitive processes.

Hypothesis 6.Analytical decision-making culture has an impact on improvement of customer-oriented and competitive processes.

Because direct impact coefficient is equal to 0.824 in relationship between the variables and because t value is equal to 7.655 which is greater than 1.96, it can be said that analytical decision-making culture has a positive and significant impact on improvement of customer-oriented and competitive processes.

Table 4 summarizes the results of testing research hypotheses.

Table 4. summary of the results of research hypotheses test

hypothesis	Factor loading	T value
data integration has an impact on improvement of customer-oriented and competitive processes.	0.625	8.745
Analytical capabilities have an impact on improvement of customer-oriented and competitive processes.	0.742	10.554
Info content quality has an impact on improvement of customer-oriented and competitive processes.	0.79	10.673
Info access quality has an impact on improvement of customer-oriented and competitive processes.	0.84	7.385
Use of information in business process has an impact on improvement of customer-oriented and competitive processes.	0.855	10.126
Analytical decision-making culture has an impact on improvement of customer-oriented and competitive processes.	0.824	7.655

Conclusion and recommendations

Considering the verification of research hypotheses and the role of business intelligence in improvement of customer-oriented and competitive processes in the company and business intelligence importance in improvement of position of the company among competitors, it seems that managers of Saipa Company seek for improvement of customer-oriented and competitive processes and this can be achieved by paying attention to intelligent processes of business space and its promotion. Considering the research results, we present the following recommendations for improvement of customer-oriented and competitive processes in Saipa Company;

- Since data integration plays an effective role in improving customer-oriented and competitive processes, we propose managers to improve their competitive status and be successful among internal and external automakers by preventing from scattering data in different spaces like spreadsheets, computers and …, collecting different sections' data in one spot, compatibility of different data and elimination of possible contradictions, provision of possibility for taking reports from different sections status using integrated data, making it possible for data analysis and acquisition of useful information for using them in decision-making and planning in organization and other similar actions.
- The results showed that have analytical capabilities are another effective factor in improvement of customer-oriented and competitive processes. Therefore, managers of Saipa are proposed to conduct actions like reducing paper reports in organizational corresponding, using data online analysis process in different levels, sending interactive reports in widespread level, use of analytical process (including trend analysis, and why-if scenario), use of data mining in different stages of organizational processes, designing performance dashboards (including criteria, key performance indices and alerts) and its usage in organization in order to improve customers' satisfaction and excel other internal and external companies.
- Info content quality is another effective factor in improving customer-oriented and competitive processes. Therefore, corporate managers are proposed to take actions like spreading information domain whichsuffices needs, increasing info exactness and making information understandable for target group, creating information which refer to target, eliminating contradictions in information and purifying information from complexities and errors and updating information continuously in order to increase customer satisfaction and excel other internal and external automakers.
- Info access quality is another important factor which is effective in improvement of customer-oriented and competitive processes. Therefore, managers are proposed to conduct actions like providing information consistent with users' needs and habits, rapid and on-time processing of information, displaying background of data (like writer, history,…) for all users, facilitating info consumers' access to required info in order to improve their customers' satisfaction and excel other internal and external automakers.

- Since use of information plays an important role in improving customer-oriented and competitive processes, managers are proposed to take actions like use of information for specification of problematic aspects of existing business process and alerting shareholders with them, using existing business information for designing continuous improvement programs and business process change projects, use of business information for creating creativity in internal processes and presenting external services, use of organizational data for reducing uncertainties in business decisions-making and improving productivity, managing of information for rapid responding to events and dynamic programming, use of information for changing strategies and corporate programs, reforming key performance indices and analysis of newer key performance indices, use of information in order to present higher added values to customers and reducing business risks and use of information for reducing business processes costs and provision of services in order to improve their customers' satisfaction and excel internal and external automakers.
- Another factor which is effective in improving customer-oriented and competitive processes is having an appropriate decision-making culture. Therefore, managers are proposed to take actions like implementing decision-making process and its exact introduction to organizational employees and shareholders, existing policies for sharing information for all employees and shareholders, intervention of presented information in decision-making regardless of the type of decision and other similar actions in order to improve their customers' satisfaction and excel other internal and external automakers.

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