

# “Enhancing organizational effectiveness and efficiency through balanced scorecard application”

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## SECTION 2. Management in firms and organizations

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### Enhancing organizational effectiveness and efficiency through balanced scorecard application

#### Abstract

The aim of this paper is to present scientific research as well as findings on effects of applying the main aspects of balanced scorecard model conducted in the B&H companies in the past two years. In the used research model familiar operational managerial concepts are linked to fit every balanced scorecard concept perspective. Desired outcome of the research is to measure balanced scorecard model variables impact intensity to the effectiveness, efficiency as well as financial impact of B&H companies. As a model rationale it is presumed that knowledge management, total quality management and customer relationship management are representing the main elements of first three balanced scorecard customer perspectives and that the intensity of using its postulates has a positive influence to the other balanced scorecard perspectives and specially to the strategy implementation and better financial results in general.

**Keywords:** balanced scorecard concept perspectives, strategic management, strategy cause-effect map, organizational performance system, partially mediated model.

**JEL Classification:** M10, M16, M21.

#### Introduction

In today's dynamic, highly competitive environment, organizations must devote significant time, as well as human and financial resources, to measure their performance in achieving strategic goals. In order to capture the value of intangible assets such as employee satisfaction, innovation, customer and supplier relationship, organization must implement an appropriate strategic management concept and performance measurement system. The importance of strategy, in particular strategy implementation, has become more important today than it was ever before. The balanced scorecard has emerged as a proven and effective tool in organization's quest to capture, describe, and translate intangible assets into real value and allow organization to successfully implement differentiating strategies (Niven, 2002). Strategic feedback has to present the current organization status from different perspectives with intention of creating efficient future business decision-making process. Diagnostic feedback into various processes has to guide organizations to further improvement of its non-financial and financial results on permanent basis. Quantitative inputs to forecasting methods and models for decision support systems represent the platform for using management by objectives systems.

Robert Kaplan and David Norton defined the balanced scorecard concept in 1992 and, in that way, defined platform for a new generation executive strategy systems. A balanced scorecard measures and companies performance system is not created to focus only at the current financial results, but also at what can influence future company results, which is of great importance for all modern organizations. It

is well known that management cannot improve what management cannot measure. It means that metrics must be developed in accordance with priorities of the strategic plan, which provides the key business drivers and criteria for metrics that managers most desire to watch. Measurement processes should be designed to collect information relevant to these metrics, and express it in numerical quantitative form for storage, display and analysis. Decision makers and especially business decision makers examine the outcomes of various measured processes, track strategy implementation and results in order to guide the company and provide feedback.

Most of strategic management authors agree that implementation of an organization strategy is more difficult than its formulation, which numerous researches has also proven. Thus, for example, 35% of strategy implementation improving in a company means 30% grows of company value for various stakeholders especially shareholders, but only 10% companies succeed to implement their strategy in the right way. By 2006, more than half of the Fortune 1000 companies in the United States have implemented the balanced scorecard concept (Niven, 2002). It means that if management wants to measure company performances and drive value, the balanced scorecard concept is possibly the best strategic management system that could be implemented (Niven, 2005). All these facts, mentioned above, were the key reasons and inspiration for the research, conducted in B&H and described hereafter.

#### 1. Balanced scorecard measurement system

The main goal of this paper is to present the possibilities of understanding method of developing a measurement system which will allow managers in B&H to evaluate their companies more clearly, from

many perspectives, and hence to make wiser long term business decisions. Business measurements and metric systems must be derived from the company's strategy and provide critical data and information about key processes, outputs and results (Morisawa, Kurosaki, 2003). Data and information needed for performance measurement and improvement tracking are from different categories, including customers, product and service performance, operations, business, competitive advantages, supplier, employee relations and cost and financial aspects of the business.

Analysis of these informations, support a variety of company purposes, such as strategic planning process, reviewing company performance, improving operations, and comparing company performance with competition or with best practices, using benchmarking concept (Cobbold, Lawrie, 2003). A major consideration in this work is to steer B&H managers to perform improvement, involve the creation and use performance measures or indicators in their organizations, which present measurable characteristics of products, services, processes, and operations the company uses to track and improve performance of every organizational unit and its every employee. The measures or indicators should be selected to represent the factors and features that will lead to improvement of overall organization performance. The balanced scorecard approach is a conceptual framework, which allows an organization in clarifying its vision and strategy, thus effectively translating them into concrete actions and metrics (Kaplan, Norton, 2004). A comprehensive set of measures or indicators tied to customer and/or company performance requirements represents a clear basis for aligning all activities with the company's goals.

At the start, it is essential to emphasize the problem, defined through strategy implementation activities following some regular logic. Since strategy is a complicated issue, management uses the balanced scorecard methodology to map the key drivers and consequences of doing business and set the cause-effect relationships between those elements. Once, when the cause-effect relationship has been established, one can identify correct means to measure those business drivers. The balanced scorecard translates the organization's strategy into clear goals and objectives, which are communicated understandably to everybody in the organization (Kaplan, Norton, 2001). The balanced scorecard provides management with a comprehensive picture of business operations, and their most current performance. The balanced scorecard allows organizations to recognize key areas in their business and assign key responsible persons to maintain the best performance and processes for those areas. Finally, it is very important to underline that the financial perspective metrics elements of balanced scorecard concept in this model does not represent the cause of

performing well, but in fact it represents consequence of well positioned aspects of the first three balanced scorecard perspective.

## 2. Balanced scorecard perspectives

The balanced scorecard concept suggests that management have to observe the organization from four perspectives, and in context of each of those develop metrics, collect data and analyze it. The balanced scorecard methodology is composed of Total Quality Management (TQM), Business Process Reengineering (BPR), Economic Value Added (EVA), Value Based Management (VBM), Activity Based Costing (ABC), Customer Relationship Management (CRM) and Knowledge Management (KM), including customer-defined quality, continuous process improvement, cause-effect relationships, employee empowerment, and primarily by measurement based management and double loop feedback (Cobbold, Lawrie, 2002). Every of those concepts are related to the balanced scorecard methodology in a special way and double loop cycle feedback is also very important part of this methodology. In traditional industrial activities, "quality control" is most used term specifically related for internal product quality (Shim, Siegel, 1999). The balanced scorecard incorporates feedback around internal business process outputs, as in TQM, but also adds a feedback loop around the outcomes of business strategies and client satisfaction, which creates a "double loop feedback" process.

Although there are different understandings of what makes the balanced scorecard concept and how to define and interpret this phenomena, nevertheless, it is generally possible to confirm, the key characteristics of its potentiality harmonized definition pertaining to four perspectives: strategy focused organization, knowledge management aspect, operational efficiency, cause-effect linkages and strategy map (Morisawa, Kurosaki, 2003). The main perspectives from which balanced scorecard concept is consisted are: the learning and growth perspective, the internal business process perspective, the customer perspective, the financial perspective and the strategy implementation. Each of these perspectives were connected with some definite partial managerial concept, which is part of the big picture called balanced scorecard concept.

## 3. Research conducted in Bosnia and Herzegovina

In recent years, questions related to better understanding impact of strategy implementation on organizational success, have been discussed very often. In order to understand what drives organizational success, managers have to develop strategic management systems designed to capture information on all aspects of the business. Many organizations, especially business companies, are harnessing the balanced scorecard strategic management concept

that tracks measures across four or five hierarchical perspectives mentioned above. Research questionnaire has built according to perspectives of the balanced scorecard concept and has comprised of 102 organizations in B&H. The model have posted so that strategy implementation is a dependent variable of first three balanced scorecard perspectives with presumption that there is their significant impact on strategy implementation quality and financial position in B&H companies.

**3.1. Conceptual framework and researching questions.** At the only start, it is important to emphasis problem, which has defined through strategy implementation activities in the organizations following some regular logic. After that come up to formulate the hypothesis, this investigation should be direct to the cause of the problem with the main goal to solve problem with giving recommendations for their overcoming. Formulation of the null and the researching hypothesis can be post in the following way:

*H0: The application intensity of the «balanced scorecard» concept logic have not influence to the strategy implementation and effectiveness, efficiency and the financial position of a company.*

*H1: The application intensity of the «balanced scorecard» concept logic has positive influence to the strategy implementation and effectiveness, efficiency and the financial position of a company.*

In other words said, the null hypothesis ( $H_0$ ;  $\mu_1 \neq \mu_2$ ) in this researching process represent situation when Pearson coefficient of correlations  $r$  equal null, or there is even no any correlation between variables mentioned above. The researching hypothesis ( $H_1$ ;  $\mu_1 > \mu_2$ ) which should be proven during this study assume that Pearson coefficient is not equal null, with reference to existing positive correlation between independent variables and dependent and because this assumption it is possible to use one-tailed upper T-test for hypothesis confirmation.

Main objective of this study is to analyze how contemporary business system could have been implemented and used in the various companies in Bosnia and Herzegovina. In order to conduct the study in an effective way, the general objective is separated further into next specific research questions.

**Research question 1:** How to recognize the main principles of using the balanced scorecard concept and what effect generates application of balanced scorecard concept logic on strategy implementation and business organizational performance in the companies doing business in B&H?

**Research question 2:** What effects balanced scorecard concept application intensity has on profitability and the other business and financial performances of the companies and what are the most important activities that managers in Bosnia and Herzegovina have to undertake in accordance to improve strategy implementation questions?

**Research question 3:** Which recommendations could be given to the managers in order to improve their managerial business concepts and how to recognize possibilities of using balanced scorecard concept in their companies in a systematic way and how to measure business effects of strategy implementation?

**Research question 4:** What are the strategic organizational areas within which there exist problems in functioning of the companies in B&H according to the balanced scorecard concept and how to find the answer to the question such as how and what can or must the domestic managers do to increase the balanced scorecard concept using of their companies?

According to the research questions the research process has composed of a few important areas. The research process was focused to background of balanced scorecard perspectives and their belonging metrics in the companies, analyze different kind of business area in accordance of the cause-effect relationships between different business area and their specific indicators and those were the main conceptual framework of this study.

For the study in Bosnia and Herzegovina, a questionnaire was developed based on practical requirement according to the research questions and framework explained above. The questionnaire consisted of the following main sections: background of companies according to the learning and growth perspective and its indicators, background of companies according to the internal business process perspective and its indicators, background of companies according to the customer perspective and its indicators, background of companies according to the financial perspective and its indicators and background of companies according to the strategy implementation and its indicators. Respondents included in this researching process were the different manager's positions in researched companies.

The questionnaire was sent out to more than 140 Bosnia and Herzegovina companies which operate in different business areas. From those sent, 102 usable surveys were sent back in eight month period during 2007-8. It means that a response rate was more than 70 percent, although most of the companies were in private possession and the others were public companies or, minority, some public institutions.

Therefore, the sample was rather small due to the size of Bosnia and Herzegovina economy, but researched companies were good representatives of the general way of business running and offer space for some general conclusions concerning business strategy implementation and possibilities of balanced scorecard harnessing in Bosnia and Herzegovina companies. Finally, it is important to be conscious that there is no precise number of companies because this number changing from day to day, but that can not influence on general analyze and conclusions according to the business strategy implementation of the companies operating in Bosnia and Herzegovina. The characteristics of the sample could be seen from next figures (Figure 1, Figure 2, and Figure 3).

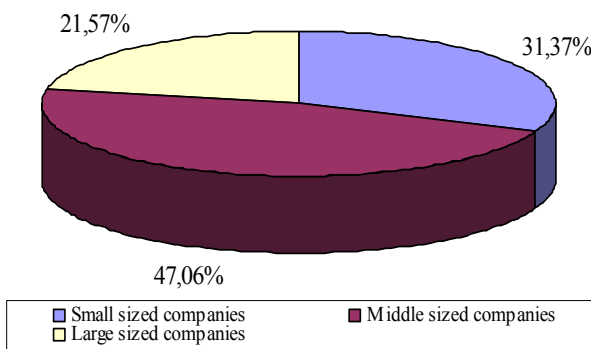


Fig. 1. Size structure of the researched companies

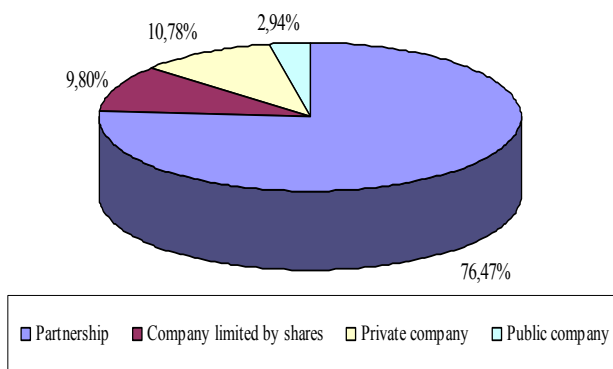


Fig. 2. Legal frame structure of the companies

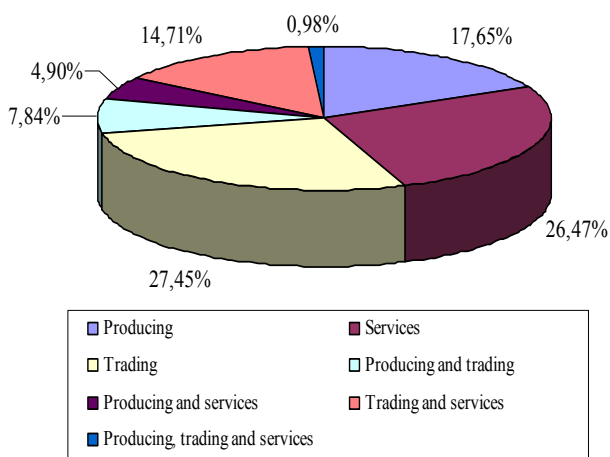


Fig. 3. Kind of business structure of the companies

The content of the questionnaire aimed at determining the fundamental indicators according to the balanced scorecard perspectives, strategic queries of the business, and issues such as the marketing, operating, human resource and finance aspect of the business. It started with some general questions about company and continued with some questions according to the possessing of strategic business plan, the way of its implementation and other specific indicators. Using this questionnaire it has been collected enough data for creating some analyze and generate some general conclusions according to the business strategy implementation and possibilities of balanced scorecard harnessing within Bosnia and Herzegovina companies. The main variables were created from these data in a way that any balanced scorecard perspectives represent the background for a variable which is calculated as a grand mean.

**3.2. Balanced scorecard researching problems in Bosnian and Herzegovinian organizations.** Balanced scorecard concept application's strength represents key determinant of organizations in the economic development of the country itself in its entirety, and its different levels result in more or less evident dynamics in companies' development or their competitive advantages. However, it is already known that many developing countries insufficiently accept and use studies dedicated to the business strategy to develop business performance and define developmental strategies as well as making business decision upon the experience and intuition. Companies in B&H are far from understanding this concept and its advantages as well as the benefits of its implementation comparing to other business concept. Such a situation partially results from the objective circumstances related to the long-time privatization and post privatization processes in B&H and also lack of managers' necessary knowledge and their conformism mental model.

The main goal of the research was to define the intensity of using some aspects of balanced scorecard concept in organizations in B&H and relationship between balanced scorecard model variables (perspectives). As it is evident that strategic management in B&H organizations is not on the satisfactory level, the additional goal was strong promotion of this concept as powerful tool for more efficient management. There are very few organizations from B&H, which state that they use balanced scorecard concept already, exception are some foreign companies branch offices. It is evident that during first phase of researching process very few organizations in B&H introduce and use balanced scorecard concept, advisedly or non advisedly, and they were considered as an extreme which were excluded from this research.

**3.3. The balanced scorecard research model.** The structural equation model called partially mediated model, developed by Norton and Kaplan, was used for testing balanced scorecard using possibilities. The main goal was to research whether better strategy implementation appears as a result of simple mechanism beginning with the employee's education and culminating with better financial outcomes in B&H organizations. This means that used model represents a mix of the partially mediated model and the fully mediated model, which allows us to use complex cause-effect relationships using structural equations system (Morard, Stancu, 2005). The main difference between, two balanced scorecard models is that the first model consider only strict vertical

hierarchy defined cause-effect relationships between balanced scorecard perspectives. The second model considers estimating of multi-perspective impacts so that this model allows existing a positive impact the first perspective not only to the second but also to the third and fourth perspective (Kaplan, Norton, 2001). This later model is more acceptable for modern and contemporary business conditions, which required multi-perspective indicators and their multiple interrelations between them. These models have different names due to different contents and way of working. As a base for this research model, mix of these two models was used and the using research structural equation system can be state in a following way:

$$\begin{aligned}
 SKN_{TQM} &= a_0 + a_1KMG + \varepsilon_1 \\
 QIP_{CRM} &= b_0 + b_1TQM + b_2SKN + \varepsilon_2 \\
 CSF_{SIM} &= c_0 + c_1CRM + c_2SKN + c_3QIP + \varepsilon_3 \\
 SIM_{VBM} &= d_0 + d_1BSC + d_2SKN + d_3QIP + d_4CSF + \varepsilon_4 \\
 &\dots\dots\dots \downarrow \dots\dots\dots \\
 FIN &= e_0 + e_1SIM + \varepsilon_5
 \end{aligned}
 \tag{1}$$

Apropos:

$$\begin{aligned}
 SKN_{TQM} &= a_0 + a_1KMG + \varepsilon_1 \\
 QIP_{CRM} &= b_0 + b_1TQM + b_2SKN + \varepsilon_2 \\
 CSF_{SIM} &= c_0 + c_1CRM + c_2SKN + c_3QIP + \varepsilon_3 \\
 SIM_{VBM} &= d_0 + d_1BSC + d_2SKN + d_3QIP + d_4CSF + \varepsilon_4
 \end{aligned}
 \Rightarrow FIN = e_0 + e_1SIM + \varepsilon_5.
 \tag{2}$$

The model, represented above, is a complex adapted and mixed model. This model works in a way so that every independent variable, no matter if skills and knowledge of employees ( $SKN_{TQM}$ ), quality of internal processes ( $QIP_{CRM}$ ), customer satisfaction ( $CSF_{SIM}$ ), strategy implementation ( $SIM$ ) or as a consequences first four variables, financial aspects ( $FIN_{VBM}$ ), depend successively from some number of variables which correspond to the balanced scorecard perspectives. For example, the learning and growth perspective which, in general, represents knowledge management activities ( $KMG$ ), the internal business process perspective which, in general, represents total quality management ( $TQM$ ), the customer perspective which, in general, represents customer relationship management ( $CRM$ ). Furthermore the way of strategy implementation and strategy frame for organizational managing is defined according to the balanced scorecard concept ( $BSC$ ) and the financial perspective as depend variable of strategy implementation quality is defined by the value based management ( $VBM$ ). Letters  $a_0, b_0, c_0, d_0$  and  $e_0$  represent parameters of

the regression equations of the model or excerpts of the independent variables of the model posted on a vertical axis of coordinate system. The operator  $\varepsilon$  represents the residual of the structural model equations and is not especially explained, while the coefficients  $a, b, c, d,$  and  $e$ , which are more than null, with some index numbers represent intensity of changing dependent variable when some of the independent variables has changed for one. It means that the coefficients mentioned above represent partial coefficients of regression associated to the every independent variable in concrete model and they represent the slant of the regression line. In this way, it has created the structural model of linear equations, which comprehend and using the multiple regression and correlation during analyzing of these variables for proving of researching hypothesis.

Kaplan and Norton describe the balanced scorecard concept as forming a series of causal relations, both within and between perspectives, which result in achievement of financial objectives. There is an assumption that higher organizational and individual knowledge level has a positive correlation to the internal business process perspective in a way to generate innovation processes in a sense of developing

new products, services or even new business operational concepts. They have an impact to performances of the rest balanced scorecard perspective in a way that new business ideas, products and services generate increasing of customer satisfaction and organizational market share growing (Kaplan, Norton, 2006).

As the consequence of the correct setup of the third perspective, there is better organizational strategy implementation, which results in growth of revenue, increase in return of investments, cost reduction and profitability growth as well as increase of cash flow. All those represent main indicators in this model. In order to associate certain well-known managerial concepts to every balanced scorecard perspective, research model is created. Knowledge and human resources management concepts represent the main composite elements of balanced scorecard concept of learning and growth perspectives, which is rationale of this model. The intensity of using these

postulates of knowledge management in an organization defines learning and growth perspective as an integral independent model's variable. Consequently, the same rationale is used for other balanced scorecard concept perspectives, in other words, total quality management defines organizational internal processes, while customer relations management concept defines the customer perspective. All these three perspectives represent independent integral variables of the research model and it is necessary to present all the balanced scorecard perspectives by favor of the strategy map tool. The dependent variable, with the leading indicators, is strategy implementation and finally, it is very clear that the efficient strategy implementation provides better financial results. This can be presented by using specific kind of cause-effect strategy map tool with "double feedback loop", as shown at the Figure 4 (adopted: Kaplan, Norton, 2001).

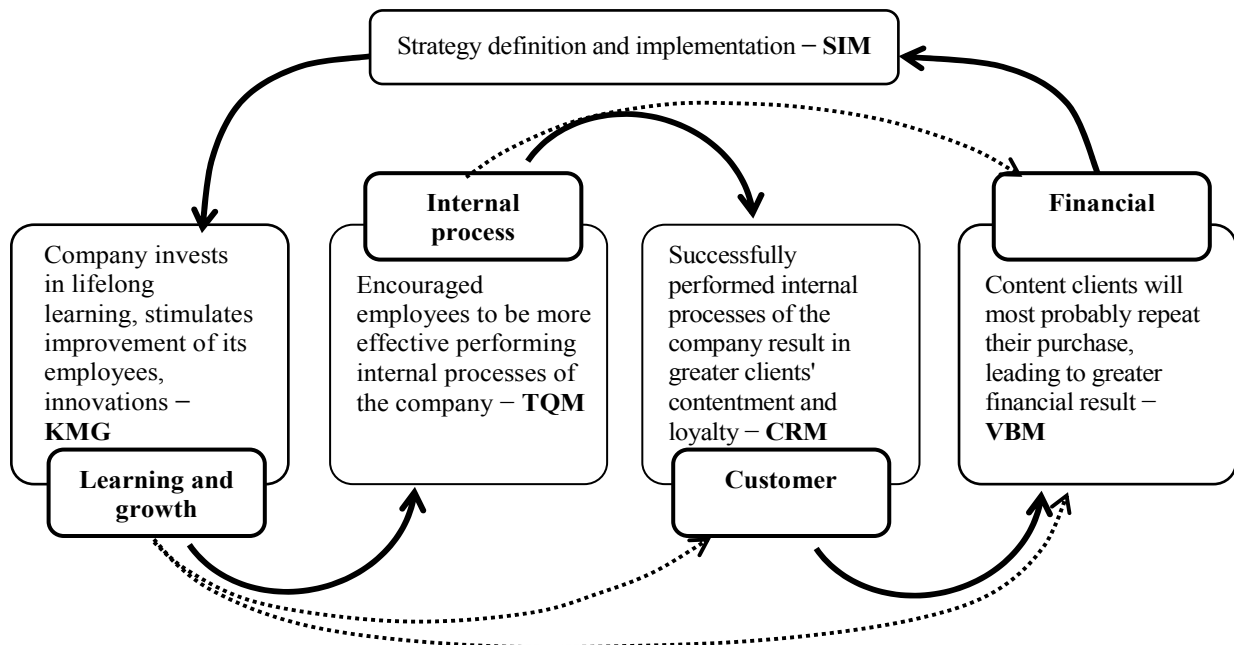


Fig. 4. Cause-effect interactions between perspectives/variables of the BSC model

**3.4. Presentation and explanation of the researching results.** The questionnaire used during research consisted of sixteen questions associated with strategy implementation and other balanced scorecard concept perspectives, excluded general information questions. Most of the questions were closed type, which allowed managers to choose one or more offered answers. The response rate was about 70%, which is acceptable for this kind of research process. Most of examinees were top-managers, middle managers, followed by small number of first line supervisors as shown on Figure 5.

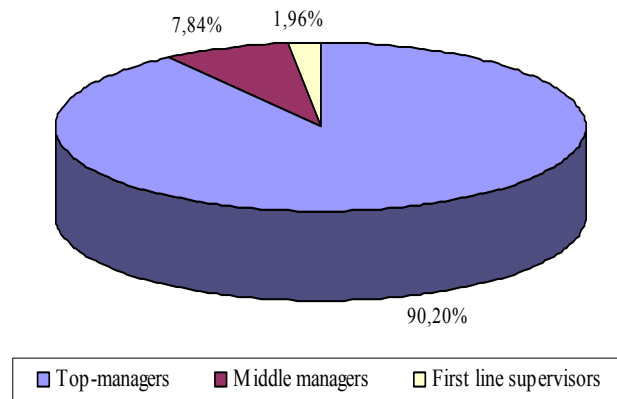
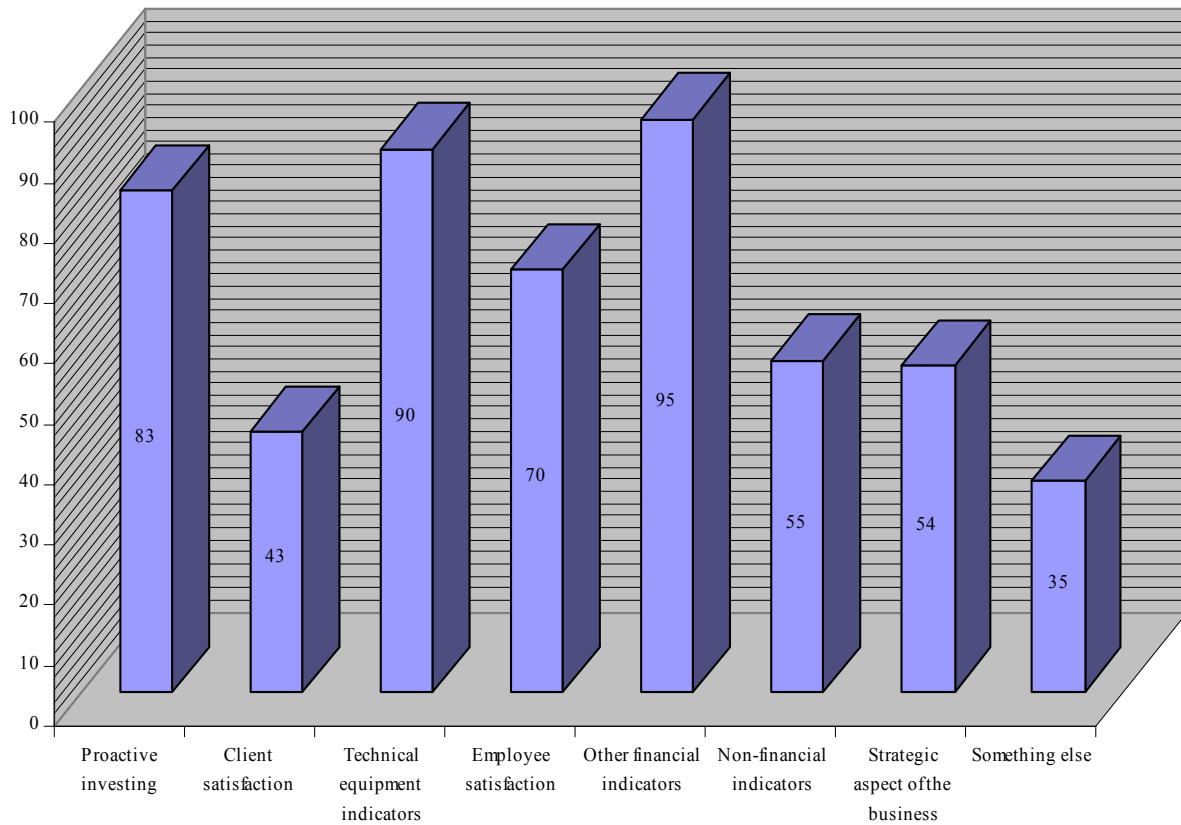


Fig. 5. Hierarchy structure of the examinees (managers)

Deeper questionnaire analysis shows that the majority of the companies track very wide scope of indicators (Figure 6), but they do not under-

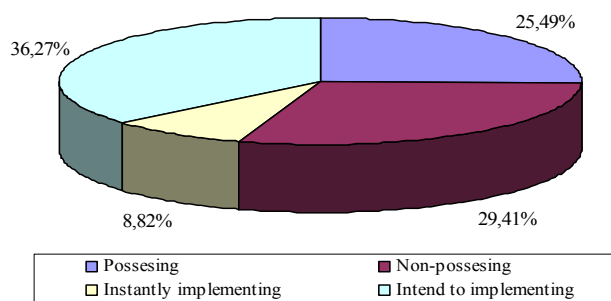
stand enough cause-effect relation among them during business decision-making process.



**Fig. 6. Indicators for performance measurement in B&H companies**

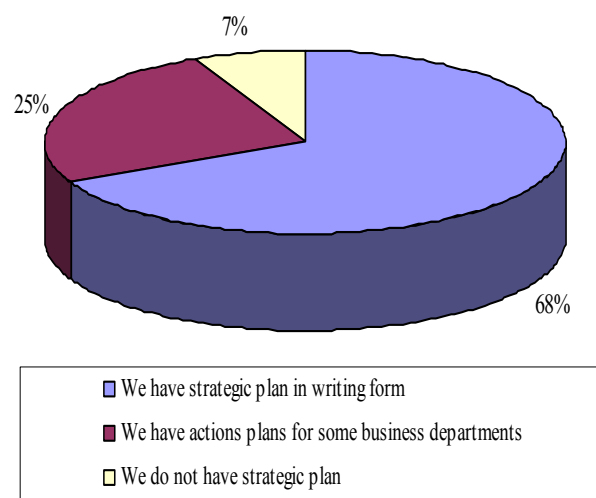
This means that it is possible to implement balanced scorecard in B&H companies and help managers to make better business decisions.

Further analysis describes domestic company's managerial aspects attitude in relation to questions regarding quality in general. The majority of B&H companies have positive attitude according to the questions regarding quality and they instantly implemented some quality control systems, while most of them have a serious encouragement to implement quality control system and standards (Figure 7).



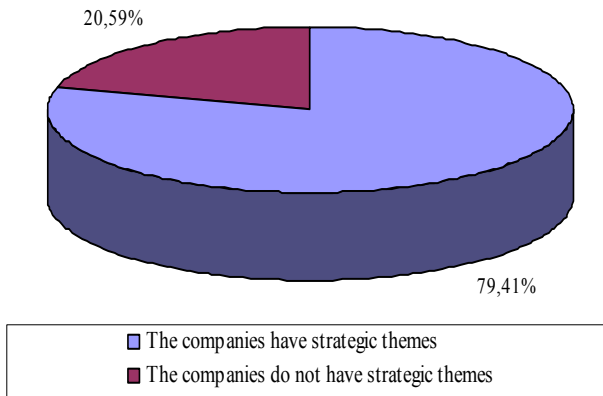
**Fig. 7. The companies referring to the question regarding to the quality**

Therefore, the majority of B&H companies have created strategic plan in writing form and developed some kind of strategic themes, while minority of them have not some aspect of strategic planning and thinking queries (Figure 8, and Figure 9).

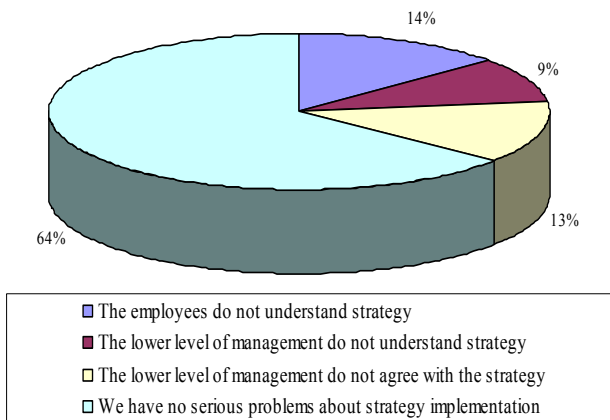


**Fig. 8. The companies referring to the strategic plan possessing**





**Fig. 6. The companies referring to the strategic themes possessing**



**Fig. 9. The companies referring to the strategy understanding**

Further investigation shows that 67% domestic organizations measure their performances in order to define accomplishment of organizational strategy with the ultimate goal of changing their direction. Approximately one third or 31% managers consider their vision and mission widely defined, making their accomplishment difficult to measure. At least 85% organizations measure their performances systematically, but the results of those measurements do not have influence on the strategy implementation, while only 15% organizations do not put in relation measurement of business performance and strategy implementation. During additional analysis, there are direct correlations between balanced scorecard concept using intensity and organizational financial success defined. It means that organizations, which invest more in first three balanced scorecard concept perspectives, i.e. the learning and growth perspective, the internal business process perspective and the customer perspective, implement their strategy more effective and have better financial results. Preliminarily analysis showed some indications of existing relationship between strategy implementation and organizations efficiency. According to the model posted earlier in the text, it is necessary to determine accordance of the variable's variations in the

first equation of the research model. This means that it is necessary to investigate impact of knowledge management (the learning and growth perspective) to the potential and performance of employees related to their knowledge and skills in creating new products, services or new business models, which can be presented by the first equation from the researching model as follows:

$$SKN_{TQM} = a_0 + a_1KMG + \varepsilon_1 \tag{3}$$

According to the researching data, analyzed and tested using statistical software package SPSS, results confirm existing significant impact of knowledge management to the employee and organizational potential, as well as to the quality of internal processes, so the first stochastic equations of the model can be apprehended as a auxiliary hypothesis of this researching process. This relationship is presented on the scatter plot diagram, indicating existing expected linear dependency between variations of the independent and dependent variable with very small standard error of regression and significant value of coefficient of determination and coefficient of correlation<sup>1</sup>. Investigation and tests are showing that there is a linear regression and enough high intensity of correlation, as well as good accordance of two variables variation. The line is positively increasing shape, showing existing positive relationship between knowledge management and skills and knowledge of employees with positive impact on internal business processes. According to the analysis performed during this investigation and testing, it is clear that the first model equation looks as follows:

$$SKN_{TQM} = 1,264 + 0,678KMG + 0,0125 \tag{4}$$

From this equation, one can see that parameter  $a_0$  equals 1,264, while parameter  $a_1$  equals 0,678. This means that every increase of implementation knowledge effort inside the learning and growth perspective, results in improvement by 67,8% of employee potential as well as using of principles of *TQM* and progress of internal business process. Coefficient of determination is  $r^2 = 0,65$  indicates that the variations of the mean, which describes potential of employees and their skills and knowledge, have significant influence to *TQM* and internal business processes, determined by 65%. It is possible to infer that there are enough high coefficients of correlations and it means that there is

<sup>1</sup> See Appendix A.

good stochastic relationship between independent and dependent variable with means that the first researching auxiliary hypothesis assumed existing positive correlation relationship between variables stated before, can be accepted.

Earlier presented partial analysis justifies continuation of investigation in order to prove research presumptions. In the same way, relationship has been established, between knowledge management expressed through skills and knowledge of employees and total quality management apropos quality of internal processes in one organization to the customer perspective elements. Analyzing research data, using the multiple regression and correlation, we can see existence of significant impact of total quality management and knowledge management to the quality of internal organizational processes apropos customer perspective elements of the model, as it can be see through the equation that follows:

$$QIP_{CRM} = b_0 + b_1TQM + b_2SKN + \varepsilon_2. \quad (5)$$

After this analysis, it is evident that indicators are showing linear regression and correlation between independent variables and dependent variable. On the diagram, the almost flat area indicates accordance of the variables variation through three-dimensional coordinate system. In this case, there is an area, not a line, which determine scatter plot diagram<sup>1</sup>. Since the scatter plot diagram had to be tested through three-dimensional coordinate system, three variables simultaneously are analyzed. After data testing, using SPSS statistical program, scatter plot diagram showed the linear relationship between independent variables and dependent variable. This means that there is a positive correlated relationship between quality of internal processes and client satisfaction, which as its consequence and the regression curve, looks as follows:

$$QIP_{CRM} = 0,243 + 0,333TQM + 0,563SKN + 0,0118. \quad (6)$$

From the equation presented earlier it can be concluded that every change in improving of *TQM*, generate improvement in quality of internal processes for 33%, apropos customer satisfaction “ceteris paribus”. Furthermore, every change of knowledge management through skills and knowledge of the employees generate 56% of improvement in internal processes quality apropos customer satisfaction “ceteris paribus”, which means that there is significant correlation between independent and dependent variables in this equation of

the model. The integral coefficient of the determination is  $r^2 = 0,77$  and it means that the variation of features, which describe quality of internal processes, apropos customer satisfaction is determined by 77% with the features variations, which describe the height of the employee potential consisting of their skills and knowledge and intensity of *TQM* implementation apropos customer perspective elements. The same proceeding is repeated simultaneously with all other variables in a cascade way according to the balanced scorecard model because every variable of the model represent one of the balanced scorecard perspectives with their content.

#### 4. Testing of the null hypothesis

The rest equations of the model show the impact of first three perspectives as independent variables to the strategy implementation and indirectly to the financial perspective. These relationships could be presented through additional analyzes with the main goal of proving the researching hypothesis as existing a positive impact of intensity balanced scorecard concept using to the effectiveness and efficiency of an organization using one-tailed upper T-test. In this case, based on the researching sample data, using assumption of normal distribution ( $n \geq 30$ ;  $\alpha = 0,05$ ), of the sample mean which is proved earlier and using T-test gets the next results:

Table 1. Testing the null hypothesis using the variation of the sample mean

T-test for hypothesis of the mean	
Data	
Null hypothesis $\mu \neq \mu$	1
Level of significance	0,05
Sample size	102
Sample mean	7
Sample standard deviation	0,57
Intermediate calculations	
Standard error of the mean	0,165492531
Degrees of freedom	101
T-test statistic	36,25541266
Upper critical value	1,662155326
p-value	2,16981E-55
Reject the null hypothesis	

Source: Data from 102 B&H organizations comprised during researching process (2007-08).

From the Table it could be seen that the statistical test parameter is very small and it means that it alight outside of the confidence interval in the tail of normal distribution diagram and excluding acceptance of the null hypothesis. It means that p-value is far smaller than significance level and the

<sup>1</sup> See Appendix B.

null hypothesis is rejected as could have been seen in the table above which is generate using SPSS software. With a high level of certainty based on statistical analyzes using descriptive statistic, ANOVA analyzes and linear regression and correlation analyzes it can be assert that the researching hypothesis has accepted and confirm which was the main goal of the whole researching process. Level of significance using in this researching process is 0,05 and the standard deviation of the sample grand mean is very low and the nature of these parameters indicate necessary of accepting the researching hypothesis.

### Conclusion and recommendation

The results of this research could be very important for business practice and managers of domestic companies for constantly searching for methods and resources of the sustainable competitive advantages. This model can help for finding strategic answers to the continuous pressures put on efforts to improve the business performance of the companies. In the applicability sense, the investigation contribution could be seen through two following sense. The results and findings of the empiric analysis, according to the tested balanced scorecard conceptual model, indicated the concrete problems in domestic organizations thus bringing this problem issue closer to the average manager in Bosnia and Herzegovina. According to the antecedents of the balanced scorecard concept, the significance of the top management in the creation of the ambience, organizational culture, acceptance and implementation of the above concept has confirmed as inviolable contemporary business wisdom. The range of possible interventions is large but this researching regards a good base to spur the company business running and its development.

Although the study of the balanced scorecard concept implementation intensity applied by the companies in B&H, comprised the analysis of both theoretical and practical aspects of this problem. It is concluded that it is mainly scrutinized practical explanation, as well as finding solution for the problem of B&H organizations. The most significant finding pertains to the confirmation of the hypothesis on a direct positive influence of the balanced scorecard concept intensity implementation to achieve better business performance. This is proof that balanced scorecard concept practical justifiability in the acceptance and implementation

by B&H companies “*ceteris paribus*” and it can be confirmed that the results and findings of this study could be interesting for various users and public. Beside B&H managerial practice, strategic management theoreticians and economic academic circles, results of this research may be interesting for the creators as well as for the participants in the implementation of the business and macroeconomic policy in B&H as well as other developing countries.

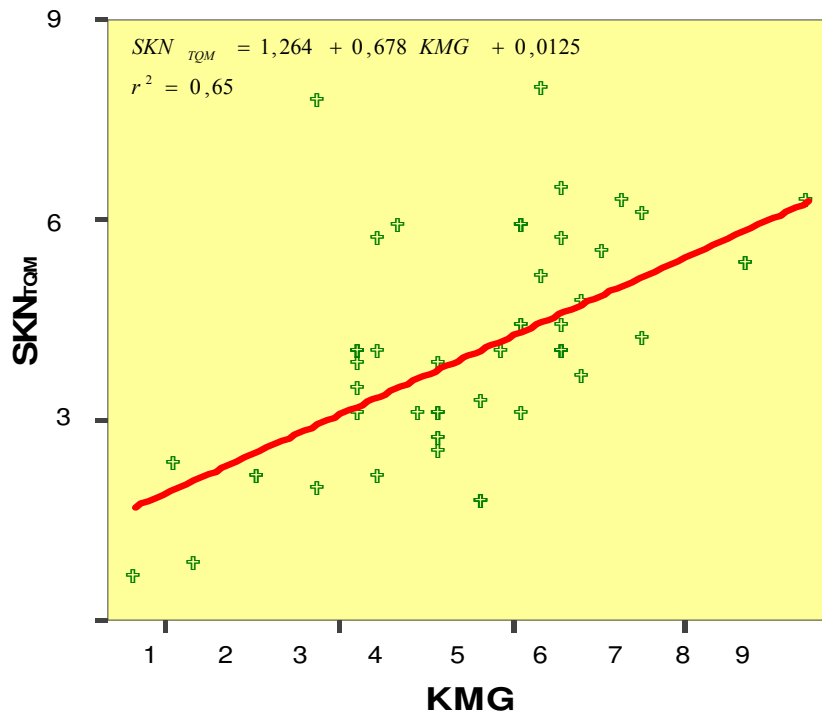
It is evident, that this research showed multiple benefits for the domestic managers in the B&H companies as a result of determination of the existing level of the intensity using the balanced score card concept. They primary relate to the possibility of measurements of the using intensity balanced scorecard concept level. Study results also confirmed the key managing implication for the managers or existence of the economic and social reasons as well as usefulness of the balanced scorecard concept implementation for the business performance. Taking into account the proof of direct positive effect on the financial performances of the B&H companies, signal has been forwarded toward other organizations to intensively get involved into the preparations, acceptance and implementation of this strategic approach. The results of this research are very important for business practice and managers in B&H companies who are constantly searching for methods and resources of the sustainable competitive advantages. This model can help for finding strategic answers to the continuous pressures put on efforts to improve the business performance. In terms of applicability, research contribution is twofold. Systematic survey and the available literature in the scientific field of strategic management, especially the balanced scorecard concept presented in this study, represents a very solid basis for familiarizing with, and understanding importance of this issue for the top-managers and thus for raising the overall awareness of the potential implications on managers and their companies results. Significance of the formulation put in practice of business and strategic studies, particularly investigation of the balanced scorecard concept implementation, has never been more evident or more necessary for domestic managers and companies as it is in today transition processes.

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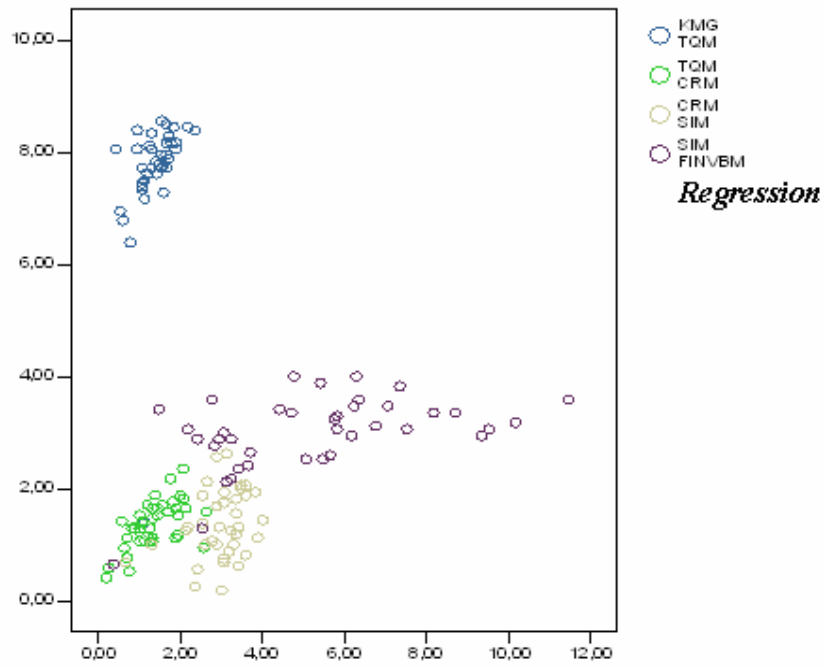
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**Appendix A. Impact of the learning and growth perspective to the internal business processes perspectives**



**Fig. 1. Multiple correlations**



Source: Data from 102 B&H organizations comprised during researching process (2007-08).

Fig. 2. Impact of *KMG* and *TQM* and/to *CRM* to *SIM* and multiple regression scatterplots

Appendix B.

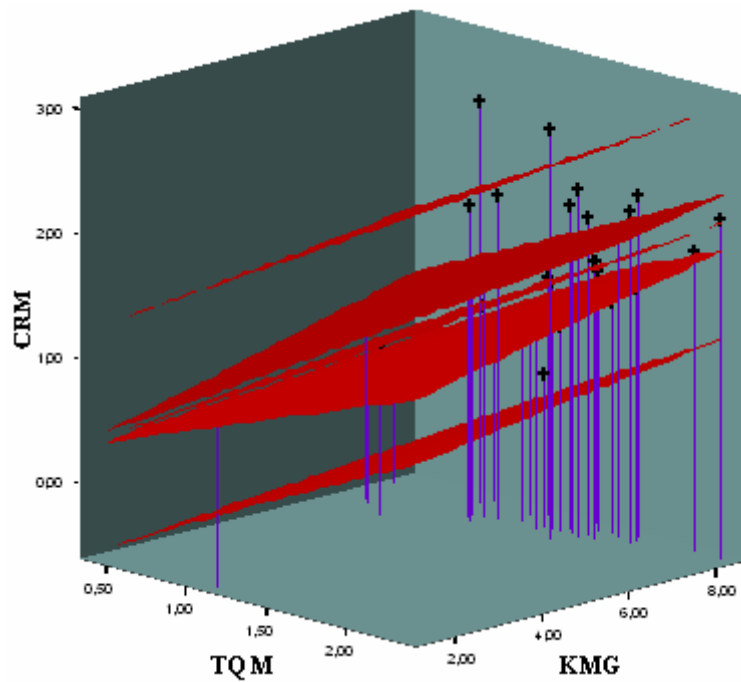
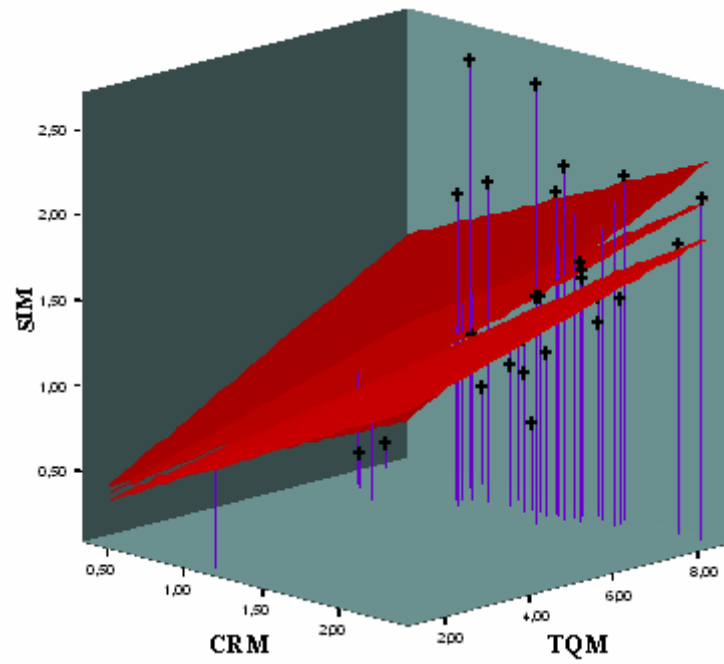


Fig. 3. Regression *TQM* and *KMG* to *CRM* (scatterplot)



Source: Data from 102 B&H organizations comprised during researching process (2007-08).

**Fig. 4. Regression *CRM* and *TQM* to *SIM* (scatterplot)**