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IMPACT OF ICT SUPPORT, LEADERSHIP AND QUALITY ON SUSTAINABILITY AND BUSINESS EXCELLENCE

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A B S T R A C T

A problem of Business Excellence (BE) has been investigated according to different aspects. For more detailed analysis it is necessary to develop an integrative model of business excellence, respecting baseline model of business excellence according to European Foundation of Quality Management (EFQM), with possibility to define relationships and level of significance of different variables. The main goal of the paper is to develop an integrative model for simulation effects in order to improve the ICT support, quality and leadership as independent variables on business excellence (BE). The model has been developed using techniques of modelling complex dynamic systems and evaluated using statistical techniques. In the sample of 159 organization in Serbian ICT support, leadership and quality and their impact on BE have been analysed. After analysis of simulation, it had been concluded that it is possible to improve business excellence with relative small investment in ICT support, leadership and quality.

1. INTRODUCTION

A competitiveness of enterprises in depends on many different concepts and aspects, such as business excellence. Business excellence (BE) was target of many researches by many researchers and professional organizations through a lot of concepts, models, techniques and tools (Breyfogle, 2008). One of analysed concept concepts was quality in wider sense. It is very frequently used as inspiration for building original models (Aikens, 2011) including different approaches, aspects and results (Arsovski, 2003).

In order to benchmark a business excellence on national and international level different award models have been developed. The most used and the best known are MBA (Malcolm Baldridge Award) in USA, Edward Deming Award and EFQM (Evans, 2011), and other national award models (Great Britain, Denmark, Australia, New Zeeland, Hungary, France, Serbia, etc). The common characteristic of all of the award models is that they are based on self-assessment, approach and used in purpose of benchmarking on external assessment by founders of models, too. Those models are not designed and appropriate for simulation purpose. Development of appropriate BE model for simulation is the main goal of this paper. The purpose of this paper is to define on integrative model of business excellence, related to ICT support, quality and leadership and their impact on business excellence in transition economy.

In the paper EFQM as base research model is used. Using previous research of authors (Arsovski et al., 2012) quality, ICT, leadership, process maturity, resilience, supply chain management, competiveness, sustainability, business excellence and other aspects, as well as an integrative meta model with appropriate set of methodologies, techniques and tools will be used. In this paper a part of results related to impact of ICT support, quality (of processes, products, and services)

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and leadership on business excellence, as depend variable is presented.

In referent literature partial relations among variables and structure of each variable have been analyzed on different ways and levels of analysis. Impact of quality is recognized in EFQM model based on:

- People,
- Processes, products & services, as enables, and
- The results, dominantly customer results.

Additional principles of quality management related to leadership, management, partnership and resources (Oukland, 2004) are included in analysis. Because, it is necessary to respect all of those principles as variables in a new proposed model.

Impact of ICT on business results has been investigated in previous period (Leidner et al., 2011). It depends on many factors, including business environment, innovation culture, knowledge, team engineering (Ngwenyama & Morawczynski, 2009; Prybutok et al., 2008).

Impact of leadership on business results has been analyzed on executive level, middle management level, team level, self-management level (Ragowsky et al., 2012; Arsovski, 2013). This variable for transition economies is not enough investigated and it is an additional challenge for the research.

The realized research has theoretical and empirical character. As theoretical results presented, the integrative model of business excellence, based on EFQM model, was developed using techniques of modelling a complex and dynamic systems. Practical implications of the research are determination of the level, of variables in model impact of the ICT support, leadership, quality (of the process, the products, and the services) and strategy on business excellence, as well as other variables in a proposed model. Statistical techniques and SPSS software for multi regression analysis were used for data analysis. On this way our started hypotheses are tested: positive and significant influence of the ICT support, leadership (general), strategy and quality (related to processes, products, and services) on business excellence in EFQM model (hypotheses h1, h2 and h3).

Results of the research performed in Serbian enterprises demonstrated robustness of the model and a possibility to improve dependent variable (business excellence) with small amount of investment in dependable variables: ICT support, leadership and quality.

The paper is structured in five chapters. After the introduction, in the second chapter, a review of different close related works is presented, relevant to the aim of the paper and the hypotheses related to it. In the third part of the paper, an integrative model of the business excellence, based on EFQM model, has been presented along with definition of structure, relations, goal function, and variables. The sample structure of the enterprises in Serbia, basics of used statistical techniques and software SPSS are presented in the fourth chapter, as well as the results of the model verification based on significance of the relations in a proposed model. In this chapter, we also analyzed gap with benchmarked level of business excellence and one scenario for its advancement through improving of ICT support, leadership, quality and strategy. At the end of the paper, the conclusions are presented related to level, relationships, and possibility for improvement of business excellence in organizations.

2. BACKGROUND

The first research areas related to this paper is ICT support to business excellence. The connection between ICT resources and management has been topic for research in number of papers. The role of the ICT resources and management practice has been analyzed as a source of synergy between business units of the enterprises (Tanriverdi, 2006). The synergy of business units in the enterprises is achieved by supporting an appropriate ICT infrastructure, the realization of the process development of the ICT strategy, the management of the relations connected with the implementation of ICT and the management process of ICT resources. The authors (Tanriverdi, 2006). presented the results of the researches, which were conducted on a sample of 165 industrial and 191 service enterprises (N=365), showing that – between the selected variables – there is a high correlation with the quality of ICT implementation, while the influence of the implementation of ICT on the performances of an enterprise is significantly lower. In this paper, the model of the management of the ICT resources is included based on the resource-based theories. The authors start from the strategy only to be followed by the definition and purchase of the needed ICT solutions. After the delivery of ICT solutions, their practical implementation is observed. Finally, the contribution of ICT to the fulfilment of the strategy is evaluated. At the level of human resources, what was related to different roles, business, skills, knowledge, experience, technical skills, as well as, behaviour and attitudes, had been defined in practice. According to this model, the ICT strategy balances business changes with ICT support.

Considering the fact that ICT support is added to the integrative model of BE and cover ICT related leadership, people, strategy and partnership and resources. This is the reason why the role of ICT is not enough recognized in BE models. Based on previous research we stated added several hypotheses (as well as goal of the research in this paper) that need to be proved: ICT support is positively correlated to quality (processes, products, and services); partnership and resources; strategy and people.

On the other hand the ICT support could be observed as aggregate variable composed from Arsovski (2013) ICT:

- Quality of ICT functioning, based on reliability, easiness of using, possibility to access, usefulness, and flexibility, and,

- Satisfaction of ICT customer (internal and external), based on reliability of getting a needed services, speed of getting the right answer, empathy and competences for supplied information.

For aggregation of sub-variables is possible to use different approaches (weighted assessment, statistical techniques and fuzzy approaches). On ICT support great impact have level of investment in ICT level of ICT strategy, level of management quality, and level of process quality (Arsovski et al., 2009; Arsovski, 2013).

According to the number of research (Prybutok et al., 2008; Chen et al., 2011; Harton et al., 2010; Ngwenyama & Morawczynski, 2009; Cragg, 2008; Peppard & Ward, 2004; Tanriverdi, 2006; Weil & Ross, 2004), it could be concluded that the level of investments made in ICT, directly and indirectly (through ICT strategy), has an influence on the quality of the implementation of ICT solutions. In the listed researches, it was, on average, proven through different case studies and theoretical analyses that, in clustered enterprises. There is a positive influence between the level of investment in ICT and the quality of the implementation of ICT, with a higher or lower regression coefficient. The basic conclusion is that investments are meaningful and, when supported by an ICT strategy as an element of corporate strategy, shows higher level of the quality implementation of ICT solutions, as a result.

Finally impact of leadership on business excellence has been analyzed according: (1) leadership on executive level, (2) leadership on middle management level, (3) team leadership level, and (4) self-leadership. Leadership on executive level could be transformational or transactional, inspiration, innovative, strategic, effective and ethical and other types (Yukl, 2010; Northouse, 2013). Leadership on middle management level is dominantly transactional, effective, innovative, and ICT leadership (Fairholm & Fairholm, 2009). Leadership on team level (Houschildt & Konradt, 2012; Brown & Fields, 2011) refers on team leaders and team members. Self-leadership (Brown & Fields, 2011) is less investigated approach especially not in area of business excellence. In all referred papers, a leadership is viewed as very important factor (variable) that affects some other variables influenced on business excellence. So in Hoch and Dulebahn (2013) paper, the impact of shared leadership has been analyzed on team performance in process planning and implementation of ERP (Enterprise Resource Planning) and HRM (Human Resources Management). Authors approved proposition that the shared leadership, enhancing team performance through its effect on the team process, was based on: cognitive, affective, and motivational processes. Different authors have been researching leadership according to many different aspects: relation between transformational leadership and the dissemination of organizational goals (Berson & Avolio. 2004), hierarchical levels and their correlations (Chun et al., 2009), transformational leadership and their variables (Miao et al., 2012), effect of self-leadership (Hauschildt & Konradt, 2012), change and continuity (Wilson, 2013), aspects of authentic leadership, creativity and innovation (Cerne et al., 2013), approach to transformational vs. non-transformational leadership in non-Western countries (Karakitapoğlu et al., 2013), models (Fairholm & Fairholm, 2009). Hirtz et al., (2007) analyzed leadership styles (transformational, transactional, and non-transactional) on leadership and quality management. They concluded that there was a relatively high correlation among them (0.46 – 0.72) and high regression coefficients (0.218 – 0.585). The highest impact on quality has process management and lowest leadership. It is clear that different authors aimed to define connections and relations between leadership and different concepts. In this research we will try to prove that: level of leadership is positively associated with level of strategy process outcome, partnership and resources, and ICT support.

The third research area related to this paper is business excellence and business performance. Many authors connected and based their researches on EFQM excellence model. EFQM model, version 2013 was analyzed (EFQM, 2013) by describing the enablers (leadership, people, strategy, partnership & resources, as well as processes, products & services) and results (people results, customer results, society results, and business results).

In Haffer and Kristensen (2008), authors analyzed business excellence initiatives in developed and developing companies and made a comparison between Polish and Danish companies based on EFQM excellence model. An aspect of selecting the effective management tools for EFQM by quality function deployment (QFD), approach is one of the main research topics of Yousefie et al., (2011).

Concept of BSC (Balanced Score Cards) versus quality award models as strategic frameworks was analyses in Dror (2008). Kanji (2008a), Kanji (2008b) discussed Aspect of implementation of Six Sigma to Business Excellence (2008).

Connections and relations of different variables in business excellence model has important role. Elg and Kolberg (2009) investigated alternative arguments and directions for analysis of performance measurement. They concluded that it is necessary to take into account internal dimensions, situational factors, external innovations, dimensions and outcomes. Starting from EFQM model as well as previous research we aimed the third group of goals that we need to prove: : Partnership and resources has positive impact on customer results, society results as well as people results, customer results and society results have positive impact on business results.

3. METHODOLOGY

In order to prove and research three set of issues that have been defined in previous section a number of methods was used including:

- Conceptual modeling method for the development of the base model (Sterman, 2000),
- A method of modeling business excellence based on the EFQM excellence model,
- Statistical methods (IBM SPSS v.2012),
- Expert assessment method based on appropriate questionnaires, and
- The method of simulation of complex dynamic systems (Albright et al., 2011).

For the purpose of statistical analysis, 352 companies in Serbia have been selected. After sending questionnaires to relevant managers and consultants who have worked extensively in companies as a response was received 159 completed questionnaires. In this way, the sample covers 159 enterprises.

Starting from the EFQM business excellence model (Figure 1) has been defined the development model (Figure 2) based on conceptual modelling techniques, while respecting the models listed in the references and according the hypotheses.

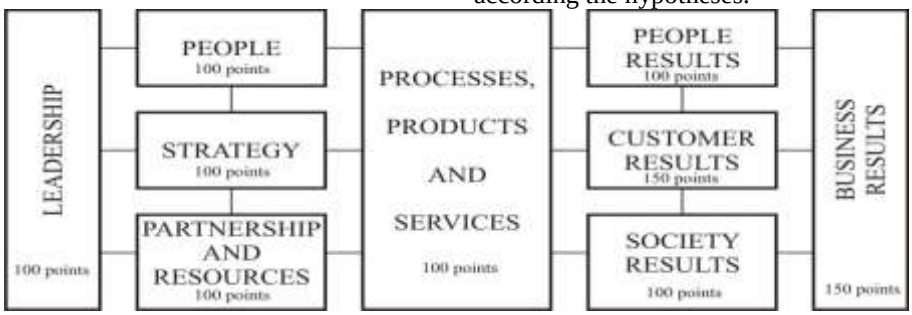

Figure 1. EFQM as model for research (EFQM, 2013)

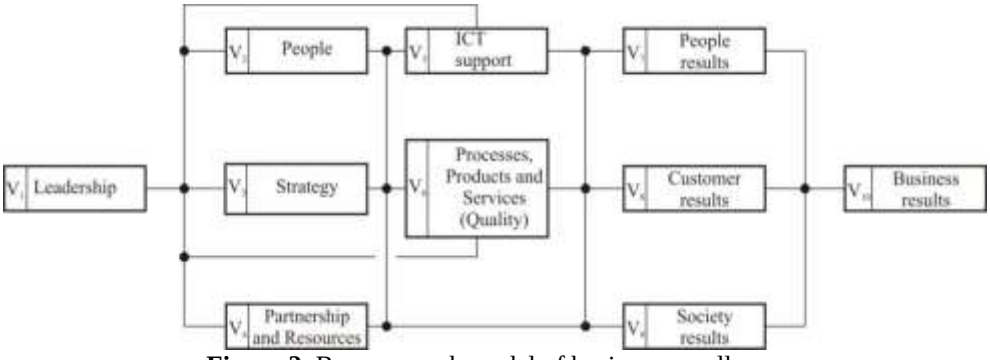

Figure 2. Base research model of business excellence

In this model, there have been identified 18 relations related to hypotheses. The relation R1 is related to the impact of general leadership on the effectiveness of the strategy in which the dominant role is played by the executive and middle management. Other human resources will also affect on the strategy, the level of partnership and resources as well, and it affects the ICT leadership, but it is not included in the model for now. The relation R2 refers to the impact of leadership on human resources in companies (people). It is based on the Leader - Member Exchange (LMX) theory (Yukl, 2010, p. 235).

The relation R3a is related to the impact of leadership on partnership and resources, based on a key leadership role to establish internal and external communication channels and directs employees to continuously create and perform a effective value chain (Chang & Lin, 2008). Relation R3b is related to the impact of leadership on quality (processes, products and services). Relation R4 essential for the research. It is related to the impact of ICT support on quality and R5a, on strategy. Relation R6 is related to impact of leadership on ICT support, based on concept of Strategy Deployment (Peppard & Ward, 2004; Roztocki & Weistrofer, 2011) and Hoshin - Kanry, in which all employees participate.

Key role in the EFQM Business Excellence Model has processes, products and services. It can be expressed in different ways. In the paper, there has been used the concept of quality. In this model, a variable is defined as quality of processes, products and services. The value of this variable is defined as the arithmetic meaning of the process quality, product quality and service quality as a result of the processes in enterprises.

Relation R5d is conducted on impact of strategy on quality, R5b on people and R5c on partnership and resources.

Previous analysis has been continued to the impact of the strategy on the development of partnerships and engagement resources. This is especially true for companies in clusters, supply chains and other associations of enterprises (Sawik, 2009).

The impact of human resources is expressed through competence, motivation and other aspects of the involvement of human resources. This impact in the ISO 9000 series is expressed through awareness, competence and motivation (Eklof & Selivanova, 2008).

Relation R5d is related to the impact of the strategy on the processes, products and services. On the other hand, strategy affects the strategy process and thus the components of the products and services strategy as a result of the process (Gebauer, 2008).

Relation R5f refers to the impact of partnership and resources to the processes, products and services. Partnership affects the effectiveness of the process-oriented to external stakeholders and the level of resources utilization to the effectiveness of the process, and thus the quality of products and services, as results of processes.

Relation R4 refers to the effect of the variable V5 (ICT support) on the V6 (quality of processes, products and services). This relationship is separately analyzed in this paper because of the increasing importance of the application of ICT (Information and Communication Technology) in the digital economy, and thus in the transition economies (Sanders & Premus, 2005; Nevo & Wade, 2010; Chen et al., 2010).

Relation R8 refers to the impact of V6 (process, production and services) on V7 (people results) and in particular on employee satisfaction, employee motivation, employee loyalty and so on. It is covered by international standards ISO 10002, ISO 18001 and other authors (Chang & Lin, 2008; Zink, 2008).

Relation R9 refers to the impact of V6 (process, production and services) on V8 (customer results). This is the most investigated area of research related to quality as "a measure of satisfaction" (Oukland & Tanner, 2008).

Relation R10 shows the impact of the processes, products and services on society results. This is particularly described in clauses in standard ISO 14000, ISO 26000, ISO 28000, ISO 50000 and authors (Coelho & Vilares, 2010; Kanji & Chopra, 2010).

Variables V7, V8 and V9 have impact on variable V10 (business results) through the relation R11a, R11b and R11c (Figure 3).

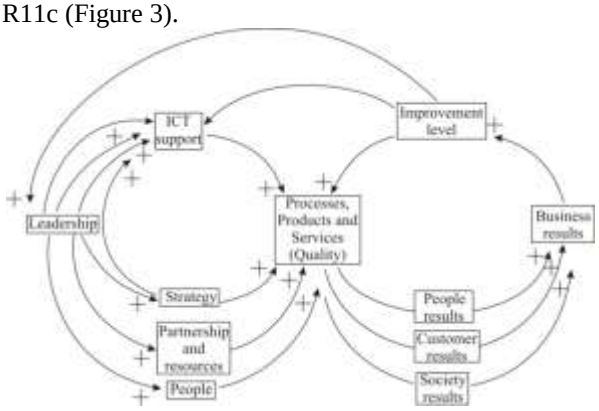

Figure 3. The simulation model

Based on this model, the research methodology was developed and devised in four stages:

- On the basis of self-assessment perform analysis of questionnaires to determine baseline variables V1-V10 and the regression coefficients relationship between them,
- After eliminating non-significant relationships in the base model is determined research model and it is confirmed for the sample as a whole,
- For this model has been defined the new values obtained by regression analysis, and
- After eliminating non-significant relationship the final model is determined, which became the basis for the simulation.

For simulation purpose in this model, in addition to the previously described variables, is included variable V11: improvement level. For any relationship to the simulation model, positive impacts are assumed, i.e. with increase of the causes increasing the consequences. Using a statistical analysis, it is possible to determine the level of the impact, the direction of impact (positive or negative), and the correlation coefficients. Based on recommendations from the literature, it can be adopted that relationships are significant if the value of Pearson's correlation coefficient is greater than 0.4.

During the simulation process was changed variables V1 (leadership), V5 (ICT support) and V6 (Process, Products and Services) for respectively 10%, 20% and 30% compared to the previously determined mean values of variables V1-V10. For each of these scenarios showed a possible increase in business excellence (BE), according to the EFQM model:

$$\Delta BE = (\Delta V1+\Delta V2+ \Delta V3+ \Delta V4+ \Delta V5+ \Delta V6+ \Delta V7+ 1.5*\Delta V8+ \Delta V9+ 1.5*\Delta V10)*100$$

and calculated amount of improvement of BE related to base level (absolute or percentage of base level).

4. RESEARCH RESULTS

For verification of the proposed models has been formed the sample of 159 companies in Serbia, whose detailed structure is given in Table 1. Figure 4 is presented graphical illustration of the data samples from the distribution of enterprises by size (small, medium and large), as well as the sectors (industry, services and food).

Table 1. Structure of the sample by enterprise size and sectors

	Sector			
Enterprise size	**Industry**	**Services and tourism**	**Food**	**Σ**
0-10	9	18	18	45
10-50	20	19	16	55
50-125	15	8	5	28
125-250	5	1	1	7
250-500	6	5	0	11
500-1000	5	3	0	8
>1000	4	1	0	5
Σ	64	55	40	159

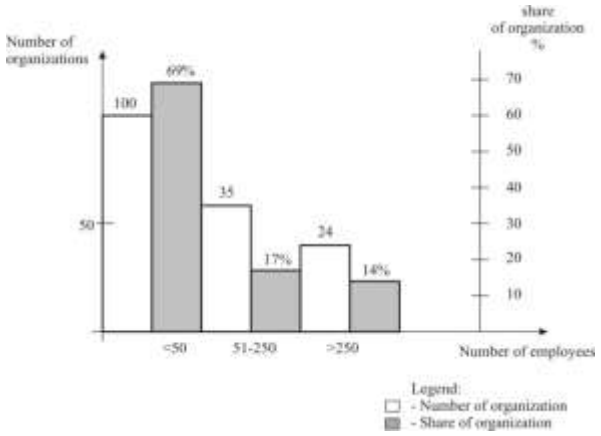

Figure 4. Overall structure of the sample

The small enterprises have a dominant share in the sample (69%) which is slightly lower than the average of Serbia, and the share of large companies (14) is higher than average due to low response primarily the management of small businesses in carrying out this research. Representation of companies by sectors, in the sample, was satisfactory compared to the average in Serbia

4.1 Determination of initial values of the variables and the relationships between them

To determine the initial values of variables, the appropriate questionnaire was developed in accordance with the model of self-assessment according to the EFQM (EFQM, 2013). The questionnaires were sent to managers and consultants who developed and established business processes in mentioned companies. Very few managers, especially in the small and medium-sized enterprises were partly included in the study and when completing the questionnaires by the consultants, the overall response rate was 45%, which can be considered satisfactory.

Each variable is described in appropriate way with clarification of its structure. For aggregation, it is used weighting method based on expert assessment, because in praxis there is not enough information about interviewed enterprises.

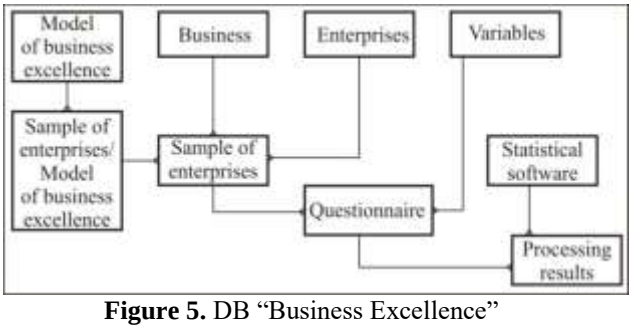

Figure 5. DB "Business Excellence"

Leadership (variable V1) is decomposed on: V11 (executive leadership), V12 (middle level leadership), V13 (team leadership) and V14 (self leadership) and calculated weighted measure of V1 for each enterprise. People (V2), strategy (V3), partnership and resources (V4), processes, production and services (V5), people

Table 2. Overall assessment of Pearson correlation coefficients

Pearson Correlation	Leadership	Strategy	Process, Production and Services	ICT support	People	Partnership and resources	Society results	Customer results	People results	Business results
Leadership	1	.770	.612	.561	.359	.407	.401	.380	.454	.436
Strategy	.770	1	.700	.542	.382	.418	.414	.398	.455	.402
Process, Production and Services	.612	.700	1	.495	.319	.364	.338	.331	.361	.300
ICT support	.561	.542	.495	1	.411	.473	.424	.403	.447	.408
People	.359	.382	.319	.411	1	.916	.614	.581	.666	.582
Partnership and resources	.407	.418	.364	.473	.916	1	.670	.657	.705	.626
Society results	.401	.414	.338	.424	.614	.670	1	.794	.843	.751
Customer results	.380	.398	.331	.403	.581	.657	.794	1	.888	.777
People results	.454	.455	.361	.447	.666	.705	.843	.888	1	.810
Business results	.436	.402	.300	.408	.582	.626	.751	.777	.810	1

Table 3. Mean values and standard deviation of variables in model

Descriptive Statistics			
	Mean	**Std. Deviation**	**Points**
Leadership	6.9191	.69375	69
Process, Production and Services	6.7789	.82467	68
ICT support	5.2882	1.41795	-
Strategy	7.1086	.68754	71
People	7.4013	.70617	74
Partnership and resources	7.6033	.64781	76
Society results	7.5638	.82362	75
Customer results	7.7704	.62961	115
People results	7.8599	.56208	78
Business results	7.6132	.87350	114
		Sum	740

results (V6), customer results (V7), society results (V8), and business results (V10) are assessed using proposition of EFQM model by self-assessment approach.

Before processing, the data base, structure of DB „ Business Excellence", has been developed and it is shown in Figure 5.

Data related to measured values of the variables V1-V10 has been entered into this database in Microsoft Access environment, and then transferred into the statistical software SPSS IBM. Using this software has been calculated mean values and correlations between variables (Table 2 and Table 3).

4.2 Determination of the base model

After eliminating the non-significant in the relations research has been formed the base model, which is shown in Figure 6.

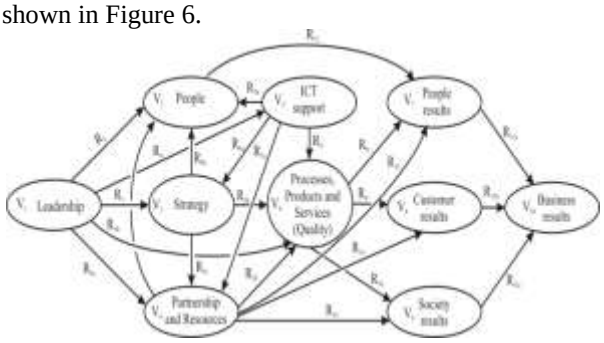

Figure 6. Base model for Business Excellence simulation

In appendix A in tables 1-9 are presented part of results of statistical calculation of Pearson's coefficients and regression coefficients.

Based on the calculation by SPSS software, three simulations can be conducted, presented in table 4 (10 percentage of improvement of V1, V5 and V6), table 5 (20 percentage of improvement of V1, V5 and V6) and table 6 (30 percentage of improvement of V1, V5 and V6).

Table 4. Simulation - 10 percent of improvement

Descriptive Statistics			
	Mean	**Std. Deviation**	**Points**
Leadership	7.6110	.76313	76
Process, Production and Services	7.4568	.90714	74
ICT support	5.8170	1.55975	-
Strategy	7.6139	.59048	76
People	7.6183	.34164	74
Partnership and resources	7.8275	.35884	76
Society results	7.8196	.35590	76
Customer results	7.9623	.26649	120
People results	8.0487	.25701	80
Business results	7.8584	.33508	118
		Sum	770

Table 5. Simulation - 20 percent of improvement

Descriptive Statistics			
	Mean	**Std. Deviation**	**Points**
Leadership	8.3029	.83250	83
Process, Production and Services	8.1347	.98961	81
ICT support	6.3458	1.70154	-
Strategy	8.1208	.64416	81
People	7.8309	.37269	78
Partnership and resources	8.0475	.39146	80
Society results	8.0697	.38826	80
Customer results	8.1494	.29072	122
People results	8.2309	.28037	82
Business results	8.0949	.36554	121
		Sum	808

Table 6. Simulation - 30 percent of improvement

Descriptive Statistics			
	Mean	**Std. Deviation**	**Points**
Leadership	8.9948	.90188	89
Process, Production and Services	8.8126	1.07207	88
ICT support	6.8746	1.84334	-
Strategy	8.6277	.69784	86
People	8.0435	.40375	80
Partnership and resources	8.2674	.42408	82
Society results	8.3198	.42061	83
Customer results	8.3365	.31495	125
People results	8.4131	.30374	84
Business results	8.3314	.39600	124
		Sum	841

4.3 Analysis of research results

The analysis of descriptive statistics showed:

- Relatively high score of variables whose mean values are on a scale 1-10 ranging from 5.2882 - 7.8599,
- Relatively low variance that are in the range 7-27%.

Based on the analysis of the size of Pearson's correlation coefficient, it was found that:

- Between all variables in the model, there is a correlation ranging from 0.300-0.916,
- Since the business model is based on the efqm excellence model, in the same relation observed only in the base model with significance above 0.3,
- Thus established the following relationships between the variables:
  - V2 = -0.254-0.025*V1+0.03*V3+1.012*V4-0.015*V5
  - V3 = 2.038+0.673*V1+0.078*V5

- V4 = 5.084+0.086*V1+0.159*V3+0.151*V5
- V5 = -2.645+1.147*V1
- V6 = 0.577+0.152*V1+0.622*V3+0.045*V4+0.073*V5
- V7 = 2.96 +0.109*V2+0.464*V4+0.084*V6
- V8 = 2.654+0.081*V4+0.601*V6
- V9 = 0.737+0.109*V4+0.801*V6
- V10 = -1.804+0.676*V7+0.321*V8+0.213*V9

Previously established relationships are the basis for the simulation of the impact of leadership (V1), ICT support (V5) and quality (of processes, production and services - V6) on Business Excellence. This simulation was based on the initial assessment of business excellence (BE) based on the EFQM model, using mean value of each variable (VI mean):

BE = $V1_{mean}$*100+$V2_{mean}$*100+ $V3_{mean}$*100+ $V4_{mean}$*100+ $V5_{mean}$*100+ $V6_{mean}$*100+ $V7_{mean}$*100+ $V8_{mean}$*150+ $V9_{mean}$*100+ $V10_{mean}$*150

This procedure is determined by the mean value of the business excellence of the company in a sample (of 740 points). On this way is confirmed the base hypotheses H1, H2, and H3.

With varying the variables V1, V5 and V6 to +10, +20 and +30%, obtained the expected increase in BE (Figure 7). From the figure it can be seen that the increase of BE about 13%, which can be considered satisfactory as to increase this level can use the "soft" factors, such as:

- Communication,
- Training,
- Motivation,
- Business process management,
- Redesign of processes, etc.

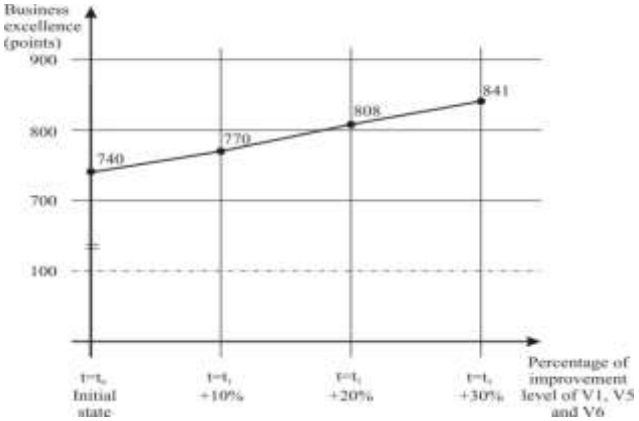

Figure 7. Expected improvement of business excellence

For more improvement is necessary to conduct further analysis of the effects of improvement projects, particularly from the perspective of improving business processes, energy efficiency, sustainability, and so on.

5. CONCLUSION

Achieving business excellence has become a condition for survival in the global economy. Increase of the business excellence can be achieved in several ways, but in terms of constraints, especially financial resources, the solution should be “soft " factors. In this paper, we tested the impact of ICT support, leadership and quality as well as the influential factors on the level of business excellence.

To confirm the hypothesis regarding the impact of ICT support, leadership and the quality of business excellence, a sample was formed on 159 companies from Serbia, with the structure (company size and sectors of the economy) that is similar to the structure of the Serbian economy.

The research literature was used for modelling of business excellence based on EFQM business excellence model. In addition to the variables in the model, for the purpose of this study was added variable V5: ICT support.

What was found based on the responses from performed statistical analysis, by using the SPSS software package IBM, was:

- The average of the variables in the model (5.2882 - 7.8599) and their variance (7% - 27%) were satisfactory.
- There are a correlations among the variables in the model range from 0.300 to 0.916,
- This is used as a starting point to form the base model, which included the relationship with significance greater than 0.4, except for those with more than 0.3, which are important for simulation in the overall model,
- Based on the prior established the mean value of business excellence of the company in the observed sample of 740 points, which is more than it is expected, for transition conditions in serbia,
- Through variation of the variables v1 (leadership), ICT support (v5) and quality (v6) for respectively 10, 20 and 30%, could be calculated new (expected) value of business excellence. It can be increased to 13%, which is an important source of corporate competitiveness.

The results are presented in tables 7, 8, 9 and 10. The limitations of this model of business excellence are related to referent EFQM model, the structure of variables, sample size, as well as differences in sectors. From the aspect of model limitation, this can be overcome by the inclusion of the other models of business excellence and their integration. Values of variables are defined as single values according EFQM model with the response to appropriate questions. In the further research it may be sub-variables and values of variables which can be determined as a weighted average of their value. The sample size will certainly increase in the coming period through additional research, taking into account the structure of the

economy, and a regional aspect. This is related to differences in sectors, too.

In future research, the emphasis will be on the prevailing constraints, extending the model of business excellence, comparative analyzes of countries in transition economy, with the impact analysis and other variables, on operational excellence, sustainability and competitiveness of an enterprise.

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Appendix 1

Table. 7 – Leadership and ICT support - > Strategy

Correlations						
		Strategy		**Leadership**	**ICT support**	
Pearson Correlation		1.000		.770	.542	
		.770		1.000	.561	
		.542		.561	1.000	
Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	Std. Error	Beta		
1	(Constant)	2.038	.361		5.638	.000
	Leadership	.673	.061	.679	10.993	.000
	ICT support	.078	.030	.161	2.598	.010
a. Dependent Variable: Strategy						

Table 8. Leadership, Strategy, Partnership and Resources and ICT support - > People

Correlations						
		People	**Leadership**	**Strategy**	**Partnership and resources**	**ICT support**
Pearson Correlation		1.000	.359	.382	.916	.411
		.359	1.000	.770	.407	.561
		.382	.770	1.000	.418	.542
		.916	.407	.418	1.000	.473
		.411	.561	.542	.473	1.000
Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	Std. Error	Beta		
1	(Constant)	-.254	.339		-.750	.454
	Leadership	-.025	.055	-.024	-.449	.654
	Strategy	.030	.055	.029	.543	.588
	Partnership and resources	1.012	.042	.928	24.176	.000
	ICT support	-.015	.021	-.030	-.716	.475
a. Dependent Variable: People						

Table 9. Leadership, Strategy and ICT support - > Partnership and Resources

Correlations						
		Partnership and resources		**Leadership**	**Strategy**	**ICT support**
Pearson Correlation		1.000		.407	.418	.473
		.407		1.000	.770	.561
		.418		.770	1.000	.542
		.473		.561	.542	1.000
Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.084	.517		9.834	.000
	Leadership	.086	.107	.092	.801	.425
	Strategy	.159	.106	.169	1.493	.138
	ICT support	.151	.040	.330	3.791	.000
a. Dependent Variable: Partnership and resources						

Table 10. Leadership - > ICT support

Correlations						
		ICT support		**Leadership**		
Pearson Correlation		1.000		.561		
		.561		1.000		
Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.645	.961		-2.753	.007
	Leadership	1.147	.138	.561	8.299	.000
a. Dependent Variable: ICT support						