

Vladimir Nedić¹

*Academy of Applied Studies Šumadija,
Kragujevac, Republic of Serbia*

Violeta Domanović²

Danijela Despotović³

*University of Kragujevac, Faculty of Economics,
Kragujevac, Republic of Serbia*

P. 35-51

SCIENTIFIC REVIEW PAPER

10.5937/ESD2402035N

Received: December 22, 2023

Accepted: March 19, 2024

THE APPLICATION OF EFQM MODEL OF BUSINESS EXCELLENCE IN THE PROCESS OF SELF-ASSESSMENT OF BUSINESS PROCESSES: A CASE STUDY

Abstract

In contemporary business environment, business excellence is an inevitable condition for the long-term survival, growth and development of an enterprise. Business Excellence implies permanent improvement of all business processes and activities, which ultimately contributes to improvement of long-term and sustainable enterprise effectiveness and creation of value for all stakeholders. Hence, the paper discusses the concept of business excellence and possibilities of application of the model of business excellence in order to define metrics and self-assessment of business processes and activities. The enterprise inevitably implements innovations in business, but the question is whether the innovations are economically justified or not. The aim of the paper is to highlight the significance of self-assessment in the enterprise and the role of the EFQM business excellence model in the analysis of efficiency and effectiveness of the applied innovations. The research results prove that it is possible to apply the EFQM model in the process of self-assessment of business process performances before and after the application of innovations. Practical contribution of the research is reflected in the development and application of authorial database model and suggesting the solution for self-assessment based on EFQM 2013 methodology.

Keywords: *business excellence, EFQM model of business excellence, self-assessment, innovations of process, quality documents*

JEL Classification: M10, M21

ПРИМЕНА ЕФQM МОДЕЛА ПОСЛОВНЕ ИЗВРСНОСТИ У ПРОЦЕСУ САМОПРОЦЕНЕ ПОСЛОВНИХ ПРОЦЕСА: СТУДИЈА СЛУЧАЈА

Анстракт

У савременом пословном окружењу, пословна изврсност је неизбежан услов за дугорочни опстанак, раст и развој предузећа. Пословна изврсност

¹ vnedic@asss.edu.rs, ORCID.ID 0000-0003-0654-2145

² vterzic@kg.ac.rs, ORCID.ID 0000-0002-9753-6260

³ ddespotovic@kg.ac.rs, <https://orcid.org/0000-0002-2610-8605>

подразумева трајно унапређење свих пословних процеса и активности, што у крајњој линији доприноси побољшању дугорочне и одрживе ефективности предузећа и стварању вредности за све стејхолдере. Стога се у раду разматра концепт пословне изврсности, као и могућности примене модела пословне изврсности у циљу дефинисања метрике и самопроцене пословних процеса и активности. Предузеће неизбежно примењује иновације у пословању, али је питање да ли су иновације економски оправдане или не. Циљ рада је да се истакне значај самопроцене у предузећу и улога EFQM модела пословне изврсности у анализи ефикасности и ефективности примењених иновација. Резултати истраживања доказују да је EFQM модел могуће применити у процесу самооцењивања перформанси пословних процеса пре и после примене иновација. Практични допринос истраживања огледа се у развоју и примени модела ауторске базе података и апликативног решења за самооцењивање заснованог на методологији EFQM 2013.

Кључне речи: *пословна изврсност, EFQM модел пословне изврсности, самопроцена, иновације процеса, квалитет.*

1. Introduction

A contemporary enterprise is faced with numerous challenges and environmental threats. Managers are forced to permanently take measures for improvement and carry out the principle of productivity, cost-effectiveness and profitability in practice. This means that on the one hand, they have to work on improvement of enterprise efficiency in order to achieve economically sustainable competitiveness along with respect and satisfaction of requirements of various stakeholders related to enterprise functioning (socially and ecologically sustainable competitiveness) (Despotovic et al., 2016). Considering the fact that managing the relationships with all relevant stakeholders has a strategic significance for long-term success and existence of an enterprise, the authors Perrini & Tencati (2006) emphasize that measuring the success of a corporation should not be limited to fostering values for one interest group exclusively, i.e. owners-shareholders, but for all stakeholders. This approach resulted in adopting holistic and comprehensive model of measurement and managing the business success of an enterprise. The model is extremely flexible; it combines traditional, accounting criteria of performance with those which assess the success of an enterprise in satisfaction of interests and demands of stakeholders, significant for long-term maintenance of the enterprise profitability. Hence the necessity for implementation of the concept of business/organisational excellence - BE appeared.

There is no world standard of excellence model; it only includes a creative framework of criteria which, using benchmarking and self-assessment model defines the achieved level of excellence. Excellence models include structural criteria which evaluate the management level of an organisation.

In order to achieve business excellence, the enterprises worldwide adopt certain models of quality increase. The most recognised world models are defined and promoted by "European Foundation for Quality Management - EFQM, Japanese Union of Scientists and Engineers – JUSE and National Institute of Standards and Technology – NIST, US

Commerce Department". Their efforts resulted in increased satisfaction of clients, reduction of expenses, greater reliability and quality. However, in certain cases, the dependency on such models made companies focus on the obtained award at the expense of preservation of sustainability.

All models of business excellence are grounded on the truth that the enterprise will achieve best results by including all employees in the activities of permanent improvement and innovation of own processes and products (Heleta, 2008). According to this concept, the models also include continual quality self-assessment, which is a methodical and well planned re-examining of the enterprise's activities and outcomes, realised through the applied excellence model. Self-assessment is a useful and constructive model of focusing and prioritising the efforts in continual improvements and innovations, as well as their model of measuring the progression which is permanently repeated. The method is oriented towards constant solutions, increase of competitiveness and long-term results (Nedić, 2015).

Thus, the focus of this paper is the application of the model of business excellence in self-assessment of an enterprise. The aim of the research is firstly to emphasize the significance of business excellence in contemporary business environment and then to point out the effect of one model of business excellence, i.e. EFQM to the self-assessment process (Suárez, Roldán & Calvo-Mora, 2014).

In line with the defined subject and aims of research it is possible to define an initial hypothesis that it is possible to apply EFQM model of business excellence in the defining and realisation of the self-assessment process of the enterprise (Tutuncu & Kucukusta, 2009).

Starting from the initial presumption, the qualitative methodology was relevant together with the model of database and application solution for self-assessment by using EFQM 2013 (EFQM Model in Action, 2016). By using the method of synthesis and induction based on theoretical and empirical research of various authors related to the application of business excellence model, the synthesis of diverse attitudes was done, which resulted in general conclusions about the significance of application of business excellence model in contemporary business environment.

The paper is structured in the form of three thematically completed wholes. The first part presents conceptual bases of business excellence. The second part provides a review of the preceding studies related to the application of business excellence model. The third part presents an original model of database and suggests the solution for the self-assessment of an enterprise.

Finally, pursuant to the results of practical implementation of the developed application solution, the appropriate conclusions are made and the attitude about the validity of initial hypothesis is adopted. In continuation of final considerations, scientific and practical contribution of the research is pointed out, the limitations are identified and the proposed direction of further research is proposed.

2. Conceptual bases of business excellence

Traditionally, managers rely to financial criteria in order to assess performance and make some business decisions. Domanović & Bogićević (2015, p 272) point out that "in addition to indisputable possibilities provided by financial criteria, it is necessary to point to their deficiency and incompleteness, necessary in the assessment of the enterprise performance... financial

reports are a retrospective presentation of business-financial life of an enterprise on the certain day or for a certain period, and as such, make possible the identification of historically oriented financial criteria of the enterprise performance.... The complexities of accounting rules, which are often subject to changes, together with the discretion of a manager to numerically design financial reports are a specific problem in the assessment of the enterprise performance.”

Domanović & Bogičević (2015, 272) emphasize that complete relevant information for assessment of the enterprise performance is not available, and some is impossible to asses. To rely on financial indicators only is like a ride with the help of rear-view mirror. Or, as Keynes says “*There is a danger of expecting results of the future to be predicted from the past.*” (Winslow, 2003). However, the maintenance of competitiveness in contemporary business environment demands rather holistic approach to measurement of performance. Even when the initiatives of total quality management were applied in practice, effectiveness still remained a challenge. (Dubey, 2016, p. 60). At the same time, business leaders searched for the definition of business excellence.

Business excellence is a result of utilisation of “philosophy of total quality management”. Total quality management – TQM implies provision of quality in all segments of business in an enterprise and in relationships with all stakeholders (providers, employees, consultants, shareholders, creditors, etc.). The models of business excellence and total quality management enable the measuring of satisfaction of customers, employees and shareholders at the same time. Business excellence is a section of total quality management because it is developed on the same values. Total quality management and business excellence develop their philosophy from good experience and practice of successful companies (Domanović, 2010, p. 164).

Models of business excellence (Figure 1) are based on the concept that it is necessary to respect the interests and requirements of all stakeholders which are by any means connected with the functioning of an enterprise. The perspectives of stakeholders are obvious “in the excellence model of European Foundation for Quality Management and National Award for Quality – *Malcolm Baldrige*”. Domanović (2010, p. 165) points out that “business excellence model of European Foundation for Quality Management – EFQM appeared at the moment when ‘quality’ and ‘total quality’ reached their peak in the mind of managers. Advancement towards quality was conditioned by acceptance of ISO 9000, the international standard focused on the systems of quality in business. As a response to this trend, numerous companies that aspired towards quality searched for the models of business description by using numerous characteristics, which implied a step further from pure observation of the systems of internal quality.”

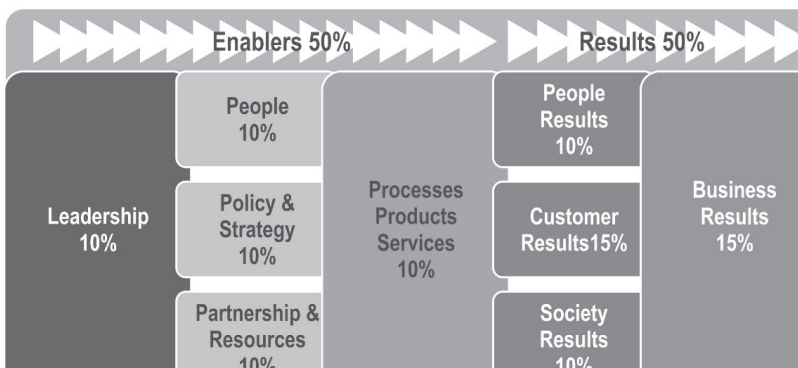


Figure 1 Generic model of business/organizational excellence

This model of thinking and acting led to the establishment of "European Foundation for Quality Management – EFQM" and publication of the model of "business excellence". Plowman (2001) points out the model of business excellence which includes 9 elements (Fig. 2). Five elements are known as *inputs (enablers)*, i.e. everything that contributes to the realisation of results, while the remaining four elements are *results*. Each element is weighed and looking as a whole, the enterprise which is said to have 80% or more points is said to have achieved *excellence* in its business. In Europe such a positive outcome allows the enterprise to compete for annual European Quality Award- EQA.

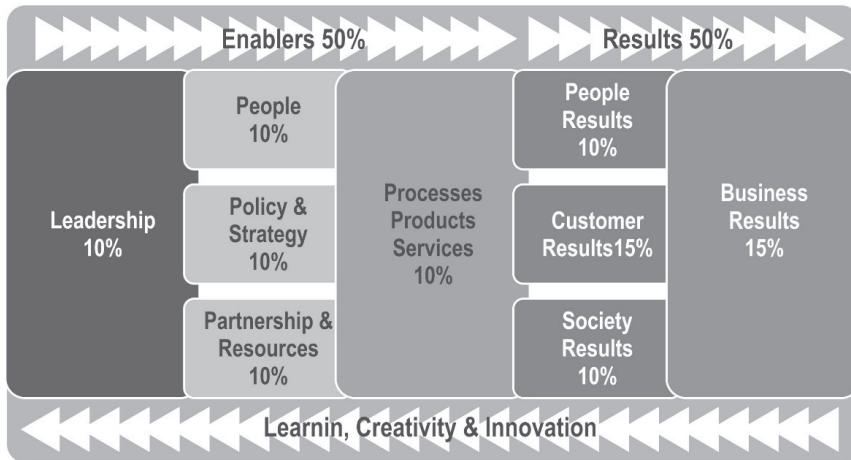


Fig. 2 Model of European Award for business excellence

Source: Modified according The EFQM excellence model in action (2000); Plowman, (2001, 21); Domanović, (2010, 166)

Kanji (2002, p. 7) points out that "EFQM and European Organisation for Quality" define organisational excellence as a "model of functioning which enables the enterprise to achieve balanced satisfaction of stakeholders/constituents (i.e. buyers, employees, society and shareholders) thus increasing the probability of long-term success." The author points to a few models of business excellence based on TQM philosophy such as (Kanji, 2002, p. 16) "Kanji's business excellence model (KBEM), Deming award, ESQM excellence model, Malcolm Baldrige national quality award (MBNQA), Ericsson business excellence model (EBEM), Balanced Scorecard (BSC), Lynch and Cross performance pyramid, ISO 9000, Capability maturity model (CMM)".

These models are to a great degree based on TQM theories, but are different in the scope and approach. Some models are more oriented to results, while other ones are more procedurally oriented. There are three awards such as: Deming, MBNQA and European quality award (EQA). Some models demand external evaluation of performance, while other ones serve for "self-assessment" of business success (Kanji, 2002, p. 16-39).

3. The previous research related to the application of business excellence model

Sheikholeslam & Emamian (2016) point out that as much as market competitiveness increases, the relationship between organisational performances and the practice of total quality management becomes stronger and more positive. In aim to improve the customers' satisfaction and business excellence, the role of "total quality management" becomes unavoidable and essential. The customers' satisfaction is one of the highest assessed aims in the application of the concept of total quality management. Particular organisational practise and employees' perceptions of the principles of quality management could be associated, eventually leading to the customers' satisfaction. The customers' satisfaction can lead to business excellence. Together with other related factors the employees' satisfaction could lead to both customers' satisfaction and business excellence.

Gómez-Gómez *et al.* (2016) investigated weight factor dimensions in *EFQM* model and concluded that depending on methodology used for weight factor assessment, weight factor could be different from those in basic *EFQM* model. The authors suggested that managers should define weight factors for each element in the model in accordance with the characteristic of an enterprise. "Leadership, strategy, partnership, resources and processes" could be more or less important in the creation of success, depending on the specific situation in the enterprise.

Ismyrlis & Moschidis (2015) conclude that ISO standards are universally adopted and applied in all companies and countries. *TQM* model is still in practice. On the other hand, many other models of quality management are not very popular in Greece, such as *kaizen*, quality circles, and *PDCA* circle and excellence models. Besides, the authors point out that it is the size of an enterprise, not its sector that influences the level of application of tools/techniques.

Kralj (2016) investigates the model of "business excellence based on *EFQM* model". The model of sustainable excellence is holistic and integrates various excellence models pointing to possibilities of their complementary application.

"National Institute of Standards and Technology (NIST)" (2015) indicates the changes in 2015-2016, pointing out that a holistic view of making effective management decisions is implemented in increasingly complex and competitive external environment. Therefore, it is necessary to reconsider the criteria for assessment of business excellence due to rapid changes in business and social environment.

Dubey (2016, p. 64-69) suggests a new model which overcomes shortages of the already established models of business excellence measurements. Beginning with *EFQM* model as a base, he suggests the model which presents various enablers in each stage of development towards agile model of business excellence. The enablers from the first to the fifth stage of development will provide flexibility and dynamism necessary for customization in the final stage. In the final stage of development, the model is adjusted to geopolitical factors, national and organisational culture, size and type of organisation, corresponding sub criteria, functions and sectors, so that the model becomes suitable for a specific organisation. The enablers of development in certain stages are flexibility, strategic causes, integration with the model, balance sheet results, fine tuning, comprehensiveness and level of model tuning.

In their research Safari *et al.* (2012) are focused on human aspects of *EFQM* model by examining correlation between the criteria of employees from the aspect of enablers of

EFQM on the one hand and on the other hand from the aspect of results i.e. the satisfaction of employees. According to the research results, the criterion of people is strongly connected with the criterion of results of people. Also, their conclusion was that companies should not be focused on a few sub criteria only, but should be devoted to each sub criterion, i.e. to approach the model in a balanced way as a unique whole.

Milovanović (2014) examines the influence of the application of concept of total quality management on the profitability of an enterprise in the domain of hotel management in the Republic of Serbia. The author does not find the existence of clear connection between the concept of total quality management and hotel profitability, but he points out those limiting factors are a possible reason of such results. This finding is especially unexpected because the existing level of implementation of total quality management in the hotels in Republic of Serbia is relatively high. Potential reason of this can be found in insufficient understanding of hotel managers of the significance of the implementation and practical application of TQM.

Radosavljević et al. (2015) analyse "business performance of small and medium" companies in the Republic of Serbia pursuant to *EFQM* model criteria. The results of research show that the number of small and medium companies with *ISO* certificate is very small in comparison to the developed countries, while the number of small and medium companies which apply *EQFM* is even smaller. The results of research show that the stated model has positive implications on the business of small and medium companies. The results concerning customers, employees and key business results are the links which should be improved in order to achieve business excellence in future.

4. Analysis of excellence self-assessment by using EFQM 2013 methodology

Self-assessment is a multidimensional method of permanent and systematic re-examining in the process of continuous improvement and innovations of business processes as following:

- What have we achieved?
- The possibilities we have for further improvement and innovations
- The gap between actual and expected results

In aim to perform "self-assessment according to EFQM 2013 methodology", the "analysis of current questionnaires (EFQM Model in Action, 2016; Guide, Business Excellence Matrix-User, 2013)" in all nine criteria was done; thus the database model was modified and developed together with the solution suggestion for self-assessment (Fig. 3). The solution suggestion enables the instalment of the programme on the enterprise computers as well as "continuous process of self-assessment" by using this methodology. Thus, the requirements for assessment of nearly momentous position of an enterprise are provided together with the identification of its key advantages and domains of progress. The succeeding formula presents a mathematical form of the self-assessment model:

$$R = 600 \cdot \sum_{i=1}^9 W_C(i) \cdot \left(\frac{\sum_{j=1}^m G_{SubC}(i, j)}{m} \right) \quad (1)$$

where:

- i - principal criteria of the method (from 1 to 9),
- j - subcriteria of each of principal criterion (from 1 to minimum $m=7$ and maximum $m=9$, respectively)
- W_C - fixed weight factor for each of main criteria (from 1 to 9 with values 0.1 or 0.15 in accordance with Fig. 2), so the scoring limited to 600 points.
- G_{SubC} - grade as weight factor for each of “ subcriteria (from 0 to 4 where 0 brings 0%; 1 brings 25%; 2 brings 50%; 3 brings 75%; and 4 brings 100% points “ which is brought by sub-criterium in line with the coefficient of weight and number of corresponding subcriteria into a criterion)



Figure 3 Main self-assessment software menu

The need for implementation of *software* in the implementation process of business "excellence model" enlarges with the growth of an enterprise size. The application of *software* encourages the changes in business processes. Some authors point out that an enterprise in contemporary business environment should use various performance indicators in managerial purposes (Krstić, Sekulić, & Ivanović, 2014), financial and non-financial (Krstić, 2009). "Proper combination of traditional performance criteria, support them with Web analytics and get connected with vision and strategy in order to provide a holistic approach to the organisation" (Domanović (2016, 164). In addition, software provides faster and more continual development of corporate culture of self-assessment and expands the base of self-assessment to practically all stakeholders in the enterprise.

In particular research, the database of solution suggestion is initially made in line with EFQM 2013 demands, but the users might adapt and expand the defined criteria and

subcriteria, change their weight factors and scientific assessment. This allows the possibility of fine tuning of the applied methodology according to particular needs of an enterprise (Gómez- Gómez *et al.* (2016).

Besides the numerical assessment, we could give descriptive comments to each criterion regarding "a) the existing advantages and b) the domain of improvement of an enterprise for the segment of business to which the observed criterion is related. The programme also supports the entry of these descriptive comments, but they are not taken into consideration during the analysis".

In line with the defined EFQM 2013 model, the assessment is made for every subcriterion within these nine criteria (Figure 4)

The screenshot shows a Microsoft Access form titled 'EFQM 2013'. The form contains the following fields:

- ID/Title of Assessment: 1 / P1.A before innovati
- Organization: P1/QDMS there is no software support
- Date: 1/1/2013
- Remark: QDMS is not used, a self-assessment before implementation process innovation

The 'Results' tab is active, displaying a table with the following columns: Criteria, SubCriteria, and Score. The table contains 9 rows of data. A dropdown menu is open for the score '2' in the 4th row, showing the following options:

- 0 No Evidence! Don't Know
- 1 We have plans!
- 2 On our way!
- 3 Close to good!
- 4 Fully done

Figure 4 Form for entry and updating of self-assessment results

The review of results is realised in the reviews which present comparable results for two or more selected self-assessments. Thus, the improvement, i.e. the change of the attained business excellence is presented expositively and numerically.

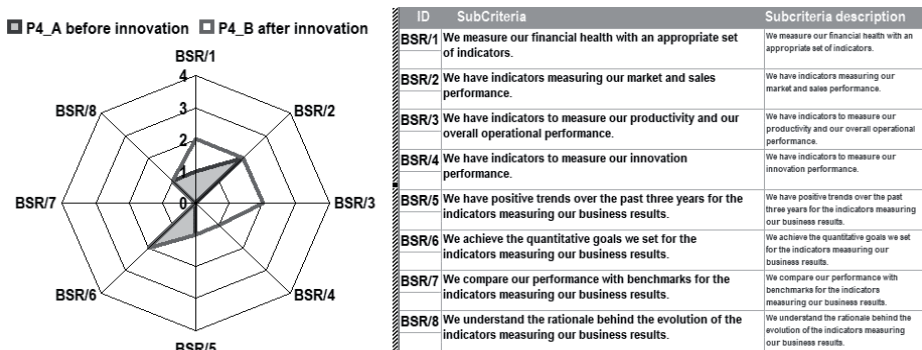


Figure 5 Diagram for presentation of sub criterion results (with a description of a sub criterion)

The Figure presents the review for sub criteria by one selected criterion, while Figure 6 shows a summary review of two self-assessments by all criteria of the model.

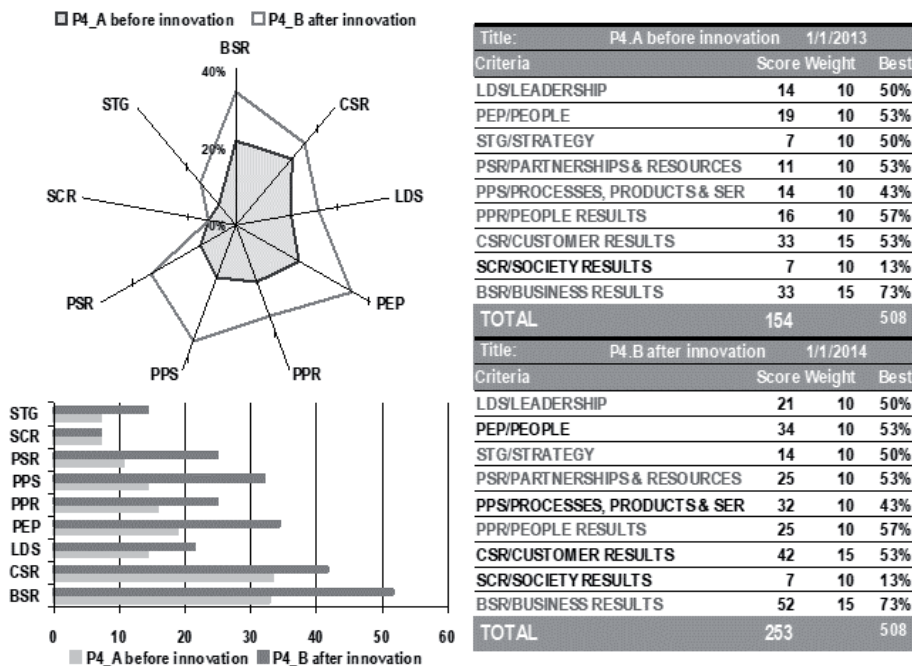


Figure 6 Summary review of self-assessment results of enterprises before and after the process innovation

Practical use of application solution was carried out as a joint analysis of a group of case studies, focused on the realisation and analysis of self-assessment of the organisation before and after the implementation of innovation of one of *core* business processes (i.e. one of the realisation processes). In wider sense, the influence of various implementations of

"Quality document management system (QDMS)" as a catalyser and innovation prototypical platforms on the process of innovation of business procedures were examined, depicted in detail in the paper Nedic et al., (2016), schematically presented in the Figure 7. "The observed companies made self-assessment before and after the implementation of innovative software solutions" as a support to the defined core process. The results are presented in the form of graphic a) separately per enterprise (Fig. 8); and b) and summary (Fig.9).

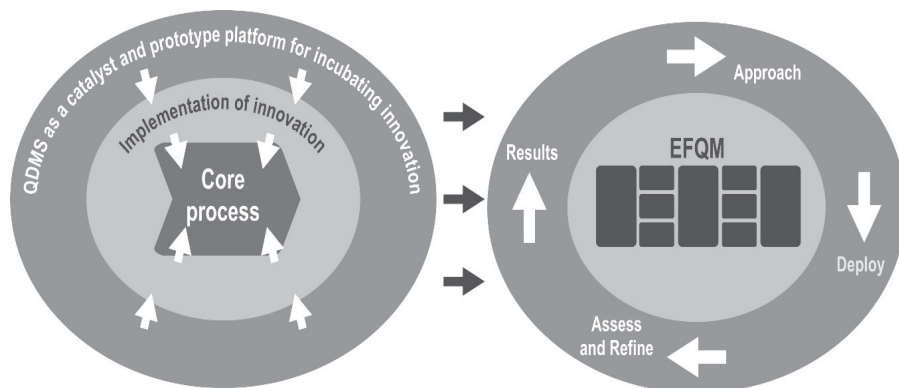


Figure 7 Presentation of QDMS as a catalyst and innovative prototypical platforms and its influence on business excellence

To be more precise, the presented analysis utilised the data obtained from four projects (four case studies) where software solutions were deliberately developed and implemented in order to support this innovation processes in four production organisations, whose structure belonged to small and medium companies. The mentioned innovative projects engaged approximately the same resources in the realisation of innovation. The observed enterprises implemented ISOO 9001 metasytem and therefore a certain "form of documentation management" (Erić & Nedić, 2010). The companies taken as subjects of study cases were selected in the way to provide the follow-up of the influence of both domain and scope of "implementation and exploitation of the developed QDMS on management of innovation process".

The Table includes the review (by companies which were the subjects of case studies) of descriptions of corresponding forms of QMS documentation, business processes and implemented innovations of the processes.

Table 1 Analysed enterprises/companies

Enterprise code	The form of implemented QDMS	Process/subprocess which is innovated	Description of innovation
P1	The enterprise does not use QDMS software solution	Subprocess of contracting, supply and transport of raw milk	Implementation of software for support to subprocess
P2	The enterprise uses QDMS only in the domain of QMS documentation	Subprocess of analysis and transport of raw milk	Implementation of software for support to subprocess of transport transformed into <i>outsourse</i>

P3	The enterprise uses extended QDMS with management of QMS records	The process of production of dairy products	Implementation of software for follow up of the loss of raw material, semi-manufactured goods and finalized products in the process
P4	The enterprise uses QDMS with management of drafts, records and system for publication and subscription to data from records (ED)	The process of analysis, contracting, supply and transport of raw milk.	Implementation of software for support to whole process

In Figure 8 separate radar diagrams are presented for each enterprise, which provide parallel interpretation of the results before and after the innovation of the process in amounts of percentage for each EFQM criterion.

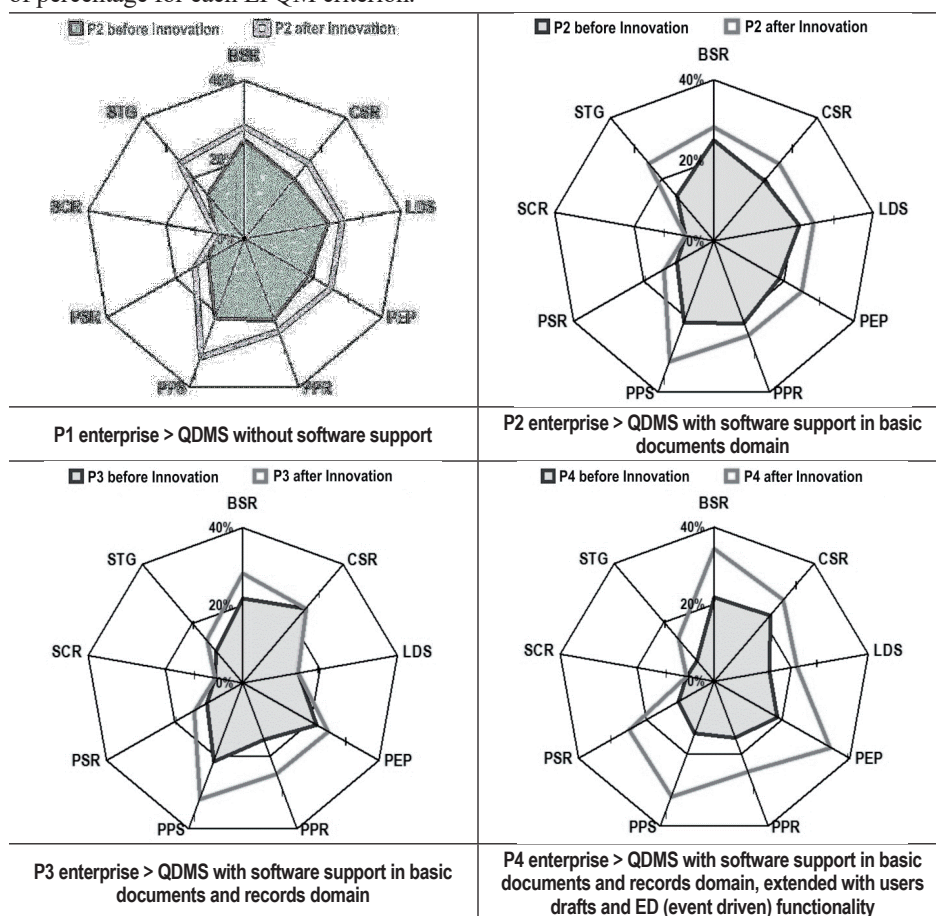


Figure 8 Review of results (%) of self-assessment of companies before and after the innovation of process

Discussing the summary results the value of acquired points by EFQM 2013 model of business excellence is presented a) before the implementation of process innovation, b) after the implementation of process innovation and c) the obtained difference (Fig. 9)

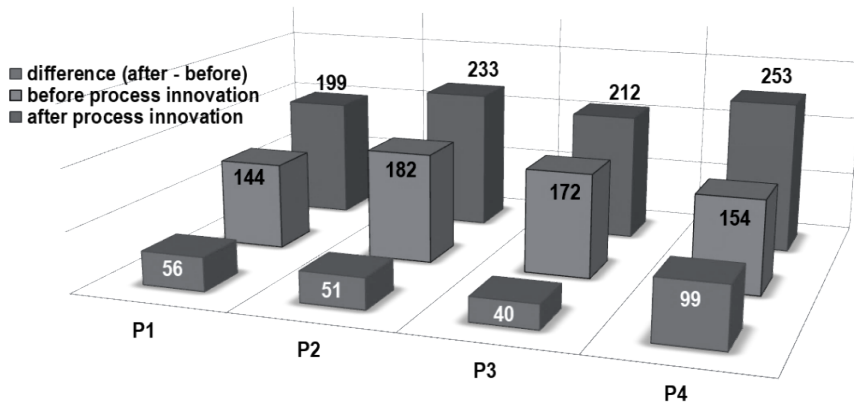


Figure 9 Summary results of self-assessment by EFQM

From graphic interpretation of the derived results, we might conclude that the biggest relative improvement of business excellence after the innovation implementation process is found in P4 Enterprise where QDMS with the most comprehensive extension of domain was applied. The most balanced improvement in business excellence was made in P2 Enterprise which applies QDMS in its basic domain (management of "QMS documentation").

Application solution for self-assessment of companies by EFQM 2013 methodology was thus applied within wider research and development of *innovation management model*.

5. Conclusion

Business excellence is an unavoidable condition of long-term existence, growth and development of an enterprise in contemporary business environment, characterised by extremely high dynamism, complexity, heterogeneousness, uncertainty and unpredictability. In such business conditions, managers are forced to continuously find new models of improvement of efficiency and performance of use of available resources (human, intellectual, and material, financial, market, strategic and other). The quality of enterprise business is best confirmed by external stakeholders. However, in order to achieve long-term business excellence, it is important to make self-assessment of business processes and activities. This is aimed at comparing the real with target values of performance of business processes, in order to identify positive or negative deviations and define and take corrective measures to remove negative deviations and stimulate positive deviations. Hence, an inexhaustible need and unappeasable thirst for improvement of efficiency in contemporary business environment become initial triggers in the process of invention of "excellent" models of measuring and managing business performances.

Business excellence is an outgrowth of total quality management because it is established on the identical vales. Total quality management and business excellence developed their philosophies on good experience and the practice of successful companies. The perspective of stakeholders is obvious in the model of excellence of European Foundation for Quality Management and National Award for Quality – Malcolm Baldrige. "Business Excellence Model of European Foundation for Quality Management – EFQM" appeared at the moment when "quality" and "total quality" reached their peak in the mind of managers. Advancing towards quality was conditioned by acceptance of ISO 9000, the international standard focused on the systems of quality in business. It was a step further from the system of internal quality.

By comparative analysis of characteristics of various models of business excellence, it can be concluded that no model *per se* provides answers to all relevant questions on the pathway of long-term success of the enterprise. Only by integrative and complementary application of alternate models of business excellence it is possible to improve internal quality of products and business processes and external quality directed towards the relationships with all stakeholders (Krstić, Pešić, & Anđelković, 2010). However, here the question of possibility of application arises from separate models of business excellence in practice and application of such integrative and holistic model. This normally needs much knowledge, energy, capability, goodwill of not only managers and employees but also of all partners and constituents who are in any way involved in functioning of an enterprise. Besides, the question is what outcome of expense analysis and benefits of application of such model in practice would be. The paper shows the research results of domestic and foreign authors who point that the answer to this question still has to be searched for. In this sense, the role of information-communication technologies is significant. Domanović (2016, 158) points out that "starting from the demands imposed to a contemporary enterprise by strategic and operational management, aimed at successful implementation of the model of business excellence it is necessary to automate systems of management and measurement. The main advantage of the application of software is seen in time saving, which would otherwise be spent on activities which do not add any value. However, implementation and application of software has its price, which includes both the costs of implementation and exploitation together with the compensation for use (license)."

Scientific contribution of this research is found in pointing out both the significance of measuring business excellence and self-assessment of an enterprise in contemporary business environment. Particular business excellence models were mostly treated in the literature, pointing to advantages and disadvantages of their application, but little attention was paid to comparative analysis of various business excellence models as well as possibilities of their integrative application. It is not only significant for the companies that act in contemporary business environment to apply business excellence models, but also to try to use certain models complementary. The results of the research show that it is possible to do self-assessment of excellence based on EFQM model.

Practical contribution of the research is found in the development and application of authorial model of database and application solution for self-assessment based on EFQM model. This is especially important to the enterprise managers, because it allows self-assessment of business activities and processes, to identify deviations of real in comparison to target performances of business processes and define and take measures for improvement of business processes in the future.

However, it is especially important to accentuate the next limitations of the conducted research. First, the paper presents only the review of research related to application of separate models of business excellence, but not comparative analysis of the presented models. Second, the paper discusses only one model of business excellence, EFQM model, which was applied in the analysis of self-assessment of business excellence. Hence, further research could be directed towards empirical research of the effects of alternate models of business excellence on the efficiency of an enterprise, and creation of appropriate software solutions for assessment of excellence based on other business excellence models, such as Balanced Scorecard. The third limiting factor of practical part of research could be found in the sources of data used in analyses. They were primarily obtained from the representatives of owners and management of the observed enterprises. Since they were the bearers of key decisions in the observed enterprises, there is a real risk of partiality of the obtained data, which might be avoided by future expanding the basis of self-assessment sources to all stakeholders of enterprises.

References

- Despotovic, D., Cvetanovic, S., Nedic, V., & Despotovic, M. (2016). Economic, social and environmental dimension of sustainable competitiveness of European countries. *Journal of Environmental Planning and Management*, 59(9), 1656-1678.
- Domanović, V. (2010). *Balanced Scorecard – mogućnosti i efekti primene*. Kragujevac, Univerzitet u Kragujevcu: Ekonomski fakultet.
- Domanović, V. (2016). Efekti integrisane primene Usklađene liste rezultata i Upravljanja zasnovanog na aktivnostima na strategiju i efikasnost preduzeća. *Ekonomski horizonti*, 18(2), 153-167.
- Domanović, V., Bogićević, J. (2015). Ocena performansi preduzeća: iskustva zemalja Evropske unije i Republike Srbije. In M. Jakšić, V. Stojanović-Aleksić, & P. Mimović (Eds.), *Ekonomsko-socijalni aspekti priključivanja srbije Evropskoj uniji* (pp. 269-281). Kragujevac, Univerzitet u Kragujevcu: Ekonomski fakultet.
- Dubey, M. (2015). Developing an agile business excellence model for organizational sustainability. Published online in Wiley Online Library (wileyonlinelibrary.com). *Global Business and Organizational Excellence*. <https://doi.org/10.1002/joe.21656>.
- EFQM Model in Action. (2016, August 16). Retrieved September 17, 2023, from <http://www.efqm.org/efqm-model/efqm-model-in-action-0>.
- Erić, M., Nedić, V., Stefanović, M., & Djukić, M. (2010). Architecture Software Solution to Support and Document Management Quality System. Center for Quality.
- Gómez- Gómez, J., Martínez-Costa, M., & Martínez-Lorente, R. A. (2016). Weighting the dimensions in models of excellence – a critical review from business perspective. *Measuring Business Excellence*, 20(3), 79-90. <http://dx.doi.org/10.1108/MBE-01-2016-0007>.
- Guide, Business Excellence Matrix-User. (2013). *EFQM Model 2013 Version*. EFQM, Brussels, Belgium.

- Heleta, M. (2008). *Menadžment kvaliteta*. Beograd: Univerzitet Singidunum.
- Ismyrlis, V., Moschidis, O. (2015). The use of quality management systems, tools, and techniques in ISO 9001:2008 certified companies with multidimensional statistics: the Greek case. *Total Quality Management*, 26(5), 497–514. <http://dx.doi.org/10.1080/14783363.2013.856543>.
- Kanji, K. G. (2002). *Measuring Business Excellence*. Routledge Advances in Management and Business Studies.
- Kralj, D. (2016). In search of sustainable business excellence: an application of the EFQM model. *International Journal of Economics and Management Systems*, 1, 1-10. <https://www.iasar.org/iasar/filedownloads/ijems/2016/007-0007.pdf>
- Krstić, B. (2009). Upravljanje intelektualnim performansama preduzeća. *Economic Themes*, 47(2), p. 59-73.
- Krstić, B., Pešić, M. A., & Anđelković, A. (2010). Upravljanje varijacijama u vremenu, kvalitetu realizacije i autputima aktivnosti u cilju povećanja efikasnosti poslovnih procesa preduzeća. *Ekonomске teme*, 48(3), 343-353.
- Krstić, B., Sekulić, V., & Ivanović, V. (2014). How to apply the Sustainability Balanced Scorecard concept. *Economic Themes*, 52(1), 65-80.
- Milovanović, V. (2014). Total quality management as a profitability factor in the hotel industry. *Industrija*, 42(3), 115-127. DOI: 10.5937/industrija42-5905.
- National Institute of Standards and Technology (NIST) (2015). *Baldrige Excellence Framework*. United States Department of Commerce, Web: <http://www.nist.gov/baldrige>.
- Nedić, V. M. (2015). Razvoj modela upravljanja inovacijama za unapređenje poslovne izvrsnosti malih i srednjih preduzeća/Development of innovation management model for improving business excellence of small and medium enterprises. Doctoral dissertation, Univerzitet u Kragujevcu, Fakultet inženjerskih nauka.
- Nedic, V., Despotovic, D., Cvetanovic, S., Despotovic, M., & Eric, M. (2015). Innovation of IT metasystems by means of event-driven paradigm using QDMS. *Enterprise Information Systems*, 10(8), 893-910. <http://dx.doi.org/10.1080/17517575.2014.996779>.
- Perrini, F. & Tencati, A. (2006). Sustainability and stakeholder management: the need for new corporate performance evaluation and reporting systems. *Business Strategy and the Environment*, 15(5), 296-308. DOI: 10.1002/bse.538.
- Plowman, B. (2001) *Activity-Based Management: Improving Processes and Profitability*, Abingdon, Oxon. GBR: Gower Publishing Limited, <http://site.ebrary.com/lib/nhhb/>
- Radosavljević, M., Bošković, G., Kalač, E. (2015). Analysis of business performance of small and medium-sized enterprises in the Republic of Serbia according to the criteria of the EFQM model. *Teme*, 39(3), 925-641.
- Safari, H., Abdollahi, B., & Ghasemi, R. (2012). Canonical correlation analysis between people criterion and people results criterion in EFQM model. *Total Quality Management & Business Excellence*, 23(5-6), 541-555.

- Sheikholeslam, M. N., Emamian, S. (2016). TQM and customer satisfaction towards business excellence. *International Journal of Learning Management Systems*, 4(1), 35-42. <http://dx.doi.org/10.18576/ijlms/040105>.
- Suárez, E., Roldán, J. L., & Calvo-Mora, A. (2014). A structural analysis of the EFQM model: an assessment of the mediating role of process management. *Journal of Business Economics and Management*, 15(5), 862-885.
- Tutuncu, O., & Kucukusta, D. (2010). Canonical correlation between job satisfaction and EFQM business excellence model. *Quality & Quantity*, 44(6), 1227-1238.
- Winslow, T. (2003). The foundations of Keynes's economics. In *The Philosophy of Keynes' Economics* (pp. 150-165). Routledge.

