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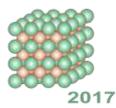


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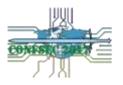


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CASE STUDY - INNOVATION AND BUSSINESS EXCELENCE

Prof. Dr Mitreva E.¹, Prof. Dr Krivokapić Z.²

University "Goce Delcev", Shtip, Macedonia, elizabeta.mitreva@ugd.edu.mk¹ University of Montenegro, Podgorica, Montenegro, zdravkok@ac.me²

Abstract: Success in the market can only be achieved if the business processes are designed and realized with the optimum use of the resources in order to do the best job for the first time, without any disadvantages, without waste of time and to the satisfaction of all the interested parties. Sustainable success can only be left out if innovations are being promoted and innovated. That is why this paper is based on innovations in correlation with the European Quality Award, so we are evaluating the state of innovativeness of the relationship with the model of business excellence. The enterprises have been analyzed through the questionnaire in accordance with the criteria for obtaining the international quality award.

The obtained data have united the experience and reality of significance of a number of certifed organizational systems in Montenegro. The analysis of data, principles and strategies that would be resulted from this research should help and provide useful directives in developing of a model for improving of organizational performance, in defining of measures to achieve a sustainable business systems, for increase of innovation, to contribute the strenghtening of links among the enterprises, scientific research and Innovation.

Keywords: Business Excellence, Europian Quality Award, Standardization, Business Processes, Innovations

1. Introduction

The subject of this paper includes enterprises from Montenegro, and their impact on the global market where there is a global increase in claims related to quality. The main objective of this paper is that, to make the analysis of the situation by applying modern scientific approaches and their application in business environments. This will affect the performance improvement of business processes, particularly in the promotion and development of innovation and entrepreneurship in companies with certified management systems, and those who have not done it.

The European Quality Award model quality with its criteria enables organizations to realize a picture of themselves on the basis of clear criteria. Most of the countries on the basis of this model have their own national awards. Montenegro has no national quality award and there is no one company that is applying for the European Quality Award. Therefore, the paper is oriented towards organizations with certified management system (ISO 9001, ISO 14001 or any others), because such systems are arranged, using a planned approach, possess the necessary dose of persistence and have defined rights, obligations and responsibilities of each individual.

The results stemming from this research for these companies can be taken as a benchmark for all others, because the rules for certification of management systems are unambiguous, which leads to the conclusion that the results are widely used.

2. Business excellence

The concept of business excellence (BE) should be seen as an expression of the highest quality and reliability. For superior organizations is characterized to continuously improve their operations and adapt to changes in time and space, and simultaneously cause changes on their own. Organizations that seek business excellence are characterized by superior business results - at the same time in their business inevitably involve a wider social responsibility. [1]

Today, the business excellence is evidenced on the basis of national and regional awards, which play a particularly important role in the development of quality in each country which are extensively applied on the basis of established quality awards. The three most famous model of business excellence are: the Deming Award in Japan, the US National Quality Award Malcolm Baldrige and the European Quality Award - EFQM. The paper discusses the EFQM - European model. [2]

The Fundamental Concepts are (Figure 1):

• Adding Value for Customers

- Creating a Sustainable Future
- Developing Organisational Capability
- Harnessing Creativity & Innovation
- Leading with Vision, Inspiration & Integrity
- Managing with Agility
- Succeeding through the Talent of People
- Sustaining Outstanding Results

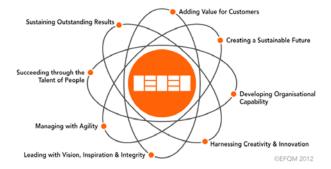


Fig. 1 The Fundamental Concepts EFQM.

Today, the business excellence is evidenced on the basis of national and regional awards, which play a particularly important role in the development of quality in each country which are extensively applied on the basis of established quality awards. The three most famous model of business excellence are: the Deming Award in Japan, the US National Quality Award Malcom Baldrige and the European Quality Award - EFQM. The paper discusses the EFQM - European model. Many countries in the world have their own national award,. All these awards were declared for models of excellence, and the criteria which change over time, are used to compare organizations or self-assessment in the process of continuous improvement of business.

The EFQM Excellence Model is based on nine criteria. Five of these are "**Enablers**" and four are "**Results**". The "Enabler" criteria cover what an organisation does and how it does it. The "Results" criteria cover what an organisation achieves (Figure 2).



Fig. 2 EFQM Excellence Model.

As shown in Figure 2, the model reflects the causalconsequential relationship between the actuator and the results of the criteria. Correlation of the left and right hand side consists of the causal-consequential relation between the mover and the results, as well as the feedback of the results in the form of learning and innovation. [4]

Confirmation of a causal-consequential link between the actuator and the result is of fundamental importance in self-assessment, where the assessor should always check the Log file consistency between the given results and data collected on the basis of relevant criteria and driving sub-criteria. Such consistency is sometimes difficult to verify in view of the holistic character of the organization, because different drivers react to each other in the creation of the result. [5,6]

3. Innovation

Innovation is introduction of a new, previously unknown product or process or significant improvement of already existing organization scheme which leads to the development of a new generation of products and their distribution.

Understanding the significance of innovation and reengineering of products/services, innovation strategy and activities of organization in that field is one of the preconditions for achieving competitive advantage and survival in dynamic market. Business system that tends to be successful and to make a progress in market aspect needs to be innovative. Creation of the new market or new category of product is the most efficient way of competing in mature markets. Innovations and innovative strategies, constant improvements and application of knowledge bring a series of advantages and their significance is reflected in the following [7,8]:

- Innovation encourages the economic growth and makes profit,
- Growth in innovations of 1% contributes to the growth of income per a citizen of about 0.05 %,
- Innovation directly influences the increase of employment and indirectly contributes to economic efficiency and profit,
- Innovative products provide the winning and retaining of a share in the market, as well as the increase of profitability in markets.

The concept of innovation can best be observed through the definition of innovation as the implementation of a new and improved idea, procedure, good, service, process which brings new benefits or quality in implementation. The most accepted is classification by OECD: [9,10]

- 1) Innovations of products/services,
- 2) Innovations of process,
- 3) Innovations of organization,
- 4) Innovations of marketing.

Innovation of product – some product or service which is new or significantly improved. This includes significant improvement in technical specifications, components and materials, improvement in the sense of approaching users' requirements and suitability for use or some other functional characteristics.

Innovation of process – new or significantly improved method of production or delivery. This includes significant changes in techniques, equipment and/or software.

Innovation of organization represents the implementation of a new method of the organization within the enterprise, organization in the workplace or organization of external relations.

Innovation of marketing – new method in marketing that includes significant changes in product's design and packaging, placement of the product, promotion of the product or price formation.

4. Research methodology and results

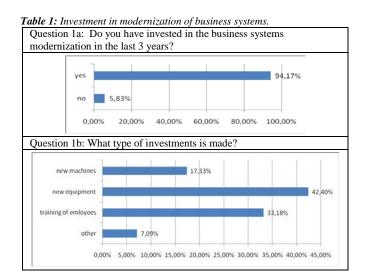
Research was carried out by interview method. Questionnaire that is used in that occassion consisted of 91 questions, 33 of which referred to innovativeness in correlation with the criteria elements of the European Quality Award.

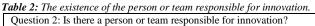
From the set of all Montenegrin business systems, we performed a survey on the sample of 120 business systems as following:

- 1) *Statistical set*: **425 business systems**, from 15 Montenegrin cities;
- 2) Sample: 120 business systems;
- 3) *Unit of research (entity)*: small, medium or large Montenegrin enterprise;
- 4) *Instrument of research*: INTERVIEW filling in the survey questionnaire by the interviewer;
- 5) Manner of selecting the respondents: Systematic.

Elements			Montenegro
Statistical group			125
Sample size			60
Standard utilization		One standard	24 (40%)
		Integrated standard	36 (60%)
Firm structure	size	Micro	-
		Small	33,33%
		Medium	45%
		Big	21,67%
irm	owership	private	70%
F_{i}		state	21,67%
		mix	8,33%
Education			36,7%
Uti	liyation of qu	uality tools	1,66
_		Small	20%
Innovation orientation		Medium	71,63%
		Big	8,3%
R&D department			43,33%
Relational potencial			83,34%
R&D investment			1,62% of revenue 33,33% without investment
Employee training investment			63,33%
Technological investment			95%
Networking		partners	16,67%
		Research inst.	10%
Own inno activities			62%
Without research			11,59%
Number of commercial innovations			4,7
Without inno			15%
Number of patents			2
Without patent protection			66,67%
Profitability			85%
Profitability improvement			-

For the purpose of this study a comparison was based on seven issues, which the authors believe that in terms of the goals are the most important and can contribute to obtaining the most beneficial results [11]. The following table gives a comparative view on all items.





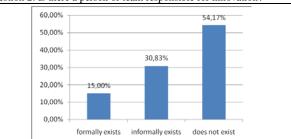


Table 3: The frequency of innovation related meetings.

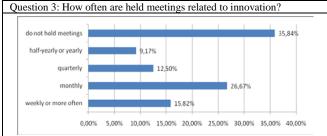


Table 4: The funds allocated to innovation.

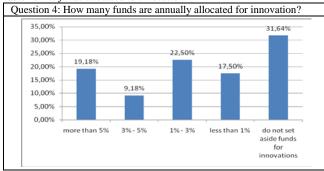


 Table 5: Place of innovation in the strategy of the operating system.

 Question 5: What priority is given to innovation in business strategy?

 innovations are not a priority due attention is paid to them among top 10 priorities the highest priority 0,00% 10,00% 20,00% 30,00% 40,00% 50,00%

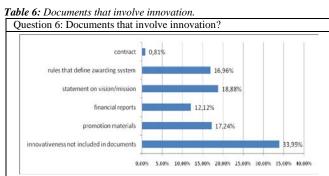
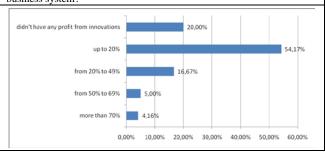


 Table 7: Share of innovation in the total income of business systems.

 Question 7: What is the share of revenues from new - improved products / services developed in the last 3 years, the total income of the business system?



With this defined results and views, we enter into the analysis and conclusions presented in the next section work.

4. Conclusion

The study was conducted based on data that are selected so as to be fully comparable and give a true picture of the state of innovation in Montenegrin organizations. Samples provide a picture of the real business environment and are therefore significant results and applicable in realistic conditions. It should also be noted that the method of collecting data through surveys and interviews, tended to reduce subjectivity and to create an objective view of the situation in our organizations.

We performed a survey in 120 Montenegrin organizations and found that there are a lot of fields for improving its innovation. Based on that survey we found that even, organizations invested in the modernization of their business system (mostly in equipment), most of them don't have person or team responsible for innovation. Most organizations allocated less than 5 % of funds per year to the innovation while just 19,18% allocated more than 5 %. The very serious fact is that more than 30% organizations don't allocate any funds for innovation. There were also found that innovation is important for organizations but they mostly don't include innovation in their documents.

However, increasing the innovation capacity and improving business processes innovation system, create a predisposition for the development of a number of new products / services, and thus greater chance of their commercialization. In order to improve innovation in organizations they need to: develop a strategy for the company which will be an integral part of innovation activities and to develop organizational structures and processes that support innovation activities.

The most important aspect of any business sistem is a learning organization. From all this follows the conclusion that a successful business is only possible with a well-functioning system of innovation that develop TQM strategies and weight meet the criteria of the European Quality Award.

5. References

[1] Krivokapić Z. (2011). Sistem menadžmenta kvalitetom, Mašisnki fakultet, Podgorica.

- [2] Krivokapić Z., Jovanović J., Vujović A., Peković S. (2016). Kvalitet u turizmu, Mašinski fakultet, Podgorica.
- [3] EFQM (2012). An Overview of the EFQM Excellence Model, EFQM.
- [4] Gómez-Gómez J., Martínez-Costa M. Martínez-Lorente, A.R. (2011). A critical evaluation of the EFQM model. International Journal of Quality & Reliability Management, 28(5), 484-502.
- [5] Young Kim D., Kumar V., Murphy, S.A. (2010). European foundation for quality management business excellence model: an integrative review and research agenda. International Journal of Quality & Reliability Management, 27(6), 684-701.
- [6] Mitreva E., Filiposki O. (2012). Proposal methodology of the subsystem-internal standardization as part of TQM system. International Journal for Quality Research, 6(3), 251-258.
- [7] Davila T., Epstein M.J., Shelton R. (2006). Making Innovation Work – How to Manage It, Measure It, and Profit from It, Wharton School Publishing.
- [8] Diaye M., Pekovic S., Krivokapic Z., Jovanovic J., Vujovic A. (2008). Difficulties in ISO 9001 implementation in Manufacturing and Service Organizations: Empirical Evidence from Serbia-Montenegro. International Journal for Quality Research, 1(2), 35-41.
- [9] OECD (2005) Eurostat., Oslo Manual Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition. OECD Publishing.
- [10] European Commission (1995). Green Paper on Innovation. European Commission.
- [11] Krivokapić Z., Vujović A., Petrović S., Jovanović J., Peković S. (2012). Research results of innovativeness in certified business systems. In 6th International Quality Conference, Kragujevac, Serbia.