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Applications of IT Systems and Digitalization to Optimize Energy Efficiency in Business Enterprises

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ABSTRACT

The purpose of implementing system applications and digitalization is to optimize energy efficiency in business enterprises as a real system that is increasingly used in modern business. The method used in the preparation of this paper was the application of objective, reliable and systematic collection of valid theoretical evidence as well as the experience of top management in terms of practical significance for optimizing production processes. In this paper, we have come to the discovery that the application of digitalization in the practical application of enterprise work is possible by applying an innovative method that is applied in the form of a behavioral model that the authors defined in the presentation of Figure 1. In addition, it allows for the improvement of management decisions in the overall operations of numerous companies. Innovative IT systems serve as a starting point for achieving the necessary implementation of energy efficiency in the operations of numerous heterogeneous companies. All this depends on the implementation of new software that is introduced into the operations of numerous companies. This is important for developing countries because a company's IT system that operates across all parts and sectors of the company in a large number of companies that undertake IT innovations leads to business optimization and economic benefits. Such businesses involve large investments in software solutions, either through purchases from third parties or in-house development.

1. INTRODUCTION

The impact of the process of introducing new software systems is necessary in all economic sectors, and can especially affect the business of the energy sector. This is important in the conditions of increasing energy consumption, which is observed from a monetary point of view, because it has a tendency to grow in the business of numerous economies [1-5].

The impact of the process of introducing new software that will optimize energy business is reflected in the increase in the overall effectiveness of business operations of economic entities [6-10].

The responsible and innovative issue of introducing new IT systems, the application of software that optimizes energy business, and the introduction of special application software within the framework of using energy-efficient business projects goes in the direction and goal of increasing the overall optimal business operations of the enterprise, which is primarily for increasing the profit of the enterprise in modern business [11-16].

2. MATERIALS AND METHODS

The material collected by the authors was basically related to publicly available research, which was the basis for forming the basis of modeling the application of IT systems in relation to the formation of optimal energy solutions in the economy.

In addition, the authors collected the opinions of relevant top managers who manage companies that applied and used in their work the application of digitization in business where the purpose was to optimize energy resources in the economy.

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The goal of such collection was the creation of business models, that is, the basis for the formation of original methods that would be presented as possible models of optimal business with the application of IT systems that will be used by a large number of companies in real business.

All that business was observed in the business of companies in the Republic of Serbia with IT systems and digital platforms as the basis of business improvement through optimizing the application of energy use in the business of heterogeneous companies.

3. RESULTS

Numerous sectors of the economy in business by the top management should take advantage of all the advantages in order to highlight their potential for business.

Thus, IT systems can have a great potential for digitalization, especially if it is about savings related to the optimization of the use of energy potential for business, which can contribute to their efficiency in order to achieve numerous benefits, which is the basis for achieving the results that the authors of this study reached in this paper as the target category.

The results indicated by the authors of the study refer to:

- energy sustainability,
- business efficiency after IT implementation,
- raising business productivity in connection with digitization,
- reducing the consumption of primary resources available to the company,
- reduction of required raw materials for business,
- reduction of energy and IT innovation.

Maintaining the optimization that have been outlined by the top management.

Reduction of costs in business by optimization and application of IT.

Necessities that are reflected in the presentation of results must take into account the redistribution of the value of the capital available to the company.

All of this is reflected in the operations of numerous companies that have adopted IT systems in their regular operations, and which the authors used to create the systems or behavior models shown in Figures 1-2 below.

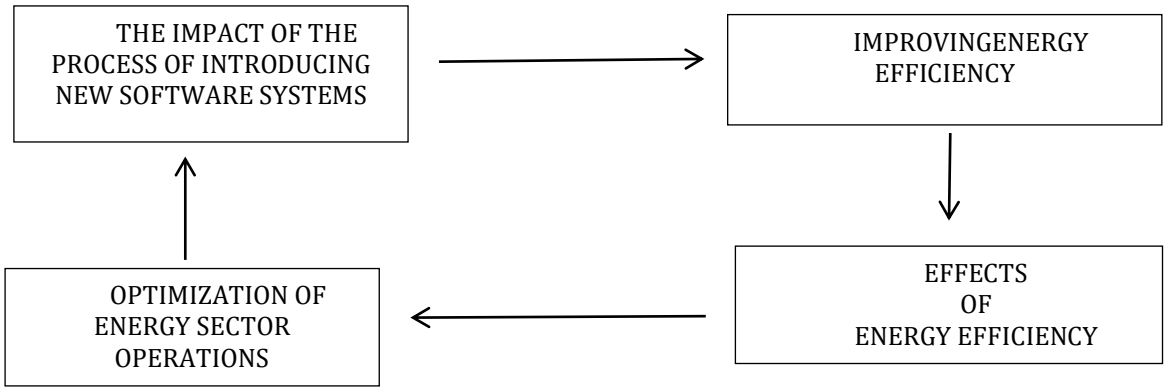

Figure 1. The impact of the digitization process on the economy

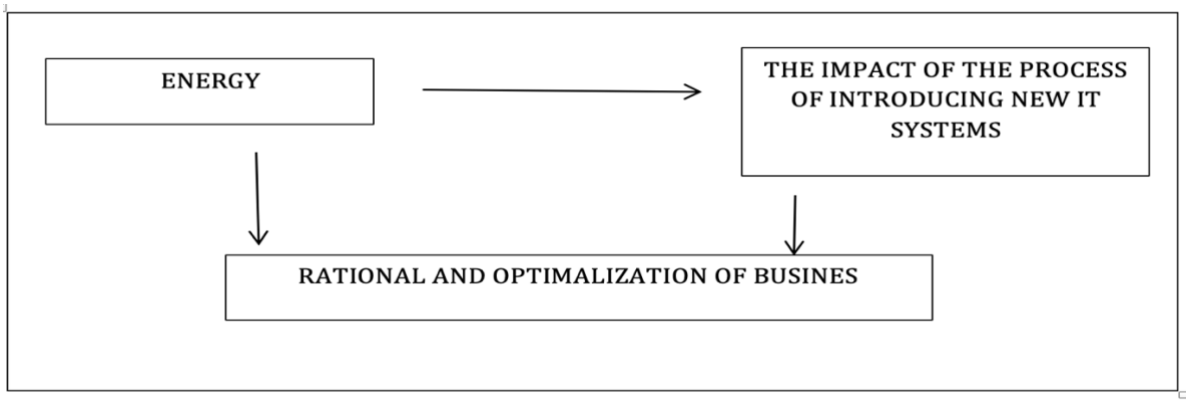

Figure 2. The impact of the process of introducing new IT systems

The essential results show a possible behavioral model of the application of IT, that is, the IT system of operation in the business of heterogeneous companies with the aim of achieving positive business effects after the implementation of the introduction of the IT system.

4. DISCUSSION

The discussion analysis includes in this paper highlighting the formation of the basis of IT system application modeling in relation to the formation of optimal energy solutions in the economy of numerous companies, for example, the operations of numerous heterogeneous companies in the Republic of Serbia [17]. In addition, within the discussion, it should be noted that the authors collected valid opinions of relevant top managers, which they used to form models that can realistically be applied in the business of numerous companies, which the authors presented as models in Figures 1-2.

It and digitization is an important factor for the application of real business, especially if it is about optimizing the use of energy factors that are used in the business of numerous companies, and which should be used for the theoretical and practical improvement of overall management in heterogeneous companies.

Such observation and comprehensive appreciation of innovative management is present in the business of the top management of numerous companies, especially those that strive for the development and improvement of management and therefore also those that want to achieve better business success, i.e. business results [18-21].

This is of great importance in the business of energy raw materials, which are becoming more and more expensive, and the application of which can be tied to the application of digitization in business, where the meaning was the optimization of energy resources in the economy of companies in the Republic of Serbia.

The goal of such action, i.e. the optimization of energy use, which will be close to the ideal if the use of business models is applied, i.e. the basis would be shown as possible models of optimal business with the application of IT systems that will be used by a large number of companies in real business with the aim of making a profit through the rational use of energy.

All that business was observed in the business of companies in the Republic of Serbia with IT systems and digital platforms with the aim of optimizing the use of raw materials that tend to increase prices as well as the basis of other business-related improvements by optimizing the application of energy use in the business of heterogeneous companies, which is of great importance especially for small economies such as the economy of the Republic of Serbia.

5. Conclusion

The impact of the process of introducing new software solutions to enable the optimization of energy use in business operations is increasingly affecting a large number of significant business entities. This is of great importance in the work of numerous companies in small countries such as the Republic of Serbia. This is especially important if it is necessary to implement a reduction in energy impact by applying modern technology. Only such business operations lead to an improvement in real business operations, profit creation, etc. Thus, IT systems, i.e. the digitalization of the economy and the application of new development software solutions can become factors of development and optimization of business operations.

Conflict of Interest

No conflict of interest is declared by tehe authors. In addition, no financial support was received.

Author Contributions

Study Design, SP, DS and MD; Data Collection, SP; Data Interpretation, DS, and MD; Manuscript Preparation, SP; Literature Search, DS and MD. Author has read and agreed to the published version of the manuscript.

REFERENCES

1. Bakmaz, O., Dragosavac, M., Jestrović, V., Radaković, M., Davidov, T., Bjelica, B, Brakus, A., & Popović, D., (**2023**). Management of plant production (narcissus l.) Through the application of non-standard growing methods in order to increase the financial value of production, *Economics of Agriculture*, 70, 2. [CrossRef]
2. Bakmaz, O., Dragosavac, M., Brakus, A., Radaković, M., Arnautović, I., Samardžić, V., Krstajić, G. & Popović, S. (**2024**). Financial security and invoicing in management of public enterprises whose founders are local self-government units, example Republic of Serbia. *Lex localis-Journal of Local Self-Government*, 22(2), 198-218. [CrossRef]
3. Bakmaz, O., Dragosavac, M., Popović, D., Brakus, A., Pajović, I., Turčinović, Ž., Radaković, M. & Popović, S. (**2024**). The significance of real financial reporting

of agricultural mechanism in relation to the making of management decisions of individual farms and medium-sized agricultural enterprises. *The Journal Agriculture and Forestry*, 71(1), 171-184. [CrossRef]

4. Bakmaz, O., Đuranović-Miličić, J., Dugonjić, D, Brakus, A., Gligović, D., Grublješić, Ž. & Popović, S. (**2024**). Management of non-standard agricultural equipment based on assessments of farm owners and management of healthcare organizations based on common use for patient treatment needs, Poljoprivredna tehnika, 49(4), 33-38. [CrossRef]
5. Arnautović, I., Davidov, T., Nastić, S. & Popović, S. (**2022**). Značaj donošenja racionalne poslovne odluke top menadžmenta u poljoprivrednim preduzećima u Republici Srbiji. *Poljoprivredna tehnika*, 47(3), 1-8. [CrossRef]
6. Čavlin, M. , Vapa-Tankosić, J., & Mirković, Z. (**2022**) Analiza faktora finansijske i profitne pozicije u funkciji integrisanog upravljanja rizicima u sektoru rudarstva, *Ekonomija-teorija i praksa*, 15(3), 56-73. [CrossRef]
7. Čolović, M., Đuranović-Miličić, J., Gligović, D., Arnautović, I, Nastić, S. & Popović, S. (**2024**). Joint investments of the real economy and healthcre institutions in the Republic of Serbia. *Ekonomija Teorija i praksa*. 17:3 97-108. [CrossRef]
8. Vitomir, G., Tatjana Davidov7, Davidov, T. & Popović, S. (**2022**). The significance of archiving documentation and assessment quality of archiving financial documentation given by top managers. *Economics of Agriculture*, 69(4), 949-1252. [CrossRef]
9. Bakmaz, O., Vukčević, V., Laković, D., Arnautović, I., Nastić, S., Krstajić, G., & Popović, S. (2025). Modern Management of Medium-sized Agricultural Enterprises and Reporting in English on Recent Change. *J Agron Technol Eng Manag*, 8(1), 1429-1436. [CrossRef]
10. Ivaniš., M. & Popović., S. (**2013**). Altmanov Z-Score model analize, Ekonomija-teorija i praksa br.2, Fakultet za ekonomiju i inženjerski menadžment. *Univerzitet Privredna akademija u Novom Sadu*, 6(2), 47-62.
11. Popović, D., Vitomir, J., Tomaš-Miskin, S., Davidov, T., Popović, S., Jovanović, M., Aćimić-Remiković, M., & Jovanović, S. (**2021**). Implementation of internal control with reference to the application of it in companies operating on the principles of the green economy. *Agriculture & Forestry*, 67(2), 261-269. [CrossRef]
12. Tomas-Miskin S., Vitomir, J., Popović, S. & Vitomir, G. (**2022**). Decision-making of Top Management and Internal Audit on the Issue of Archiving Documentation in Companies Founded by Local Government Units in the Republic of Serbia. *Lex Localis – Journal of Local Self-Government*, 20(4), 889-995. [CrossRef]
13. Lekić , N., Vukosavljević D., Vapa–Tankosić,. J.,Lekić, S., & Mandić, S. (**2021**). Uticaj motivacionih faktora na organizacionu posvećenost zaposlenih u bankama. *Ekonomija –teorija i praksa*, (1), 1-22. [CrossRef]
14. Lekić, N., Vapa-Tankosić, J., Lekić, S., Vapa, B., & Mandić, S. (**2023**). Intellectual capital and business performance in ICT companies. *Ekonomija - teorija i praksa*, 2, 44-61. [CrossRef]
15. Popović, S., Vitomir, J., Tomaš-Miskin, S., Davidov, T., Nastić., S., Popović, V., Popović, D., & Vitomir, G. (**2021**). The importance of a realistically determined amount of tax on property rights relating to the ownership of agricultural land in the Republic of Serbia adopted by tax authorities of local selfgovernment units, Ekonomika poljoprivrede. *Economics of agriculture*, 68(4), 1029-1042. [CrossRef]
16. Radović, M., Vitomir, J., Laban, B., Jovin, S., Nastić, S., Popović, V. & Popović S. (**2019**). Management of joint stock companies and farms by using fair value of agricultural equipment in financial statements on the example of IMT 533 Tractor, Economics of Agriculture, 1: 35-50. [CrossRef]
17. Radović, M., Vitomir, J. & Popović, S. (**2021**). Impact of internal control in enterprises founded by local self-government units: the case of Republic of Serbia, *Inzinerine Ekonomika Engineering Economics*, 32(1): 82–90. [CrossRef]
18. Jovanović, S., Đokić, S. & Popvić, S. (**2025**). Procurement of agricultural mechanism through IPARD measure-1, and application of marketing in the meaning of explaining the profitability of investments by the advisory service, *Poljoprivredna Tehnika*, 50(2), 1-6. [CrossRef]
19. Bakmaz, O., Đuranović-Miličić, J., Dragosavac, M., Sredojević, D., Gligović, D., Arnautović, I., Krstajić, G., Pajović, I., Popović, S. (**2025**). Financial Management of IT Systems in Medium-Sized Agricultural Enterprises and Healthcare Institutions in the Republic of Serbia. *J Agron Technol Eng Manag* 8(4), 1651-1658. [CrossRef]
20. Bakmaz, O.; Eremić - Đođić, J.; Dragosavac, M.; Sredojević, D.; Dejanović, A.; Arnautović, I.; Krstajić, G. & Popović, S. (**2025**). Financial Management of Small and Medium–sized Farms using State Subsidies, it System of Records for Genetic Resources: Example of Republic of Serbia. *J Agron Technol Eng Manag, 8*(2), 1562-1572. [CrossRef]
21. Sredojević, D., Dragosavac, M. & Popvić, S. (**2025**). Application of Innovative it Systems to the Overall Development of Business in An Economy Such as The Republic of Serbia, *Journal of Sport Industry &Blockchain Technology*, 2(1), 9-12, [CrossRef]