

Article

Financial Management of IT Systems in Medium-Sized Agricultural Enterprises and Healthcare Institutions in the Republic of Serbia

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Abstract: The application of technological solutions in the process of making valid management decisions by top management of enterprises is of increasing importance in business operations. Such approaches are of particular interest in the operations of agricultural enterprises, but they can also apply to operations within, for example, healthcare and other institutions, in a word, heterogeneous entities. The aim of the research was to determine, by comparing the operations of medium-sized enterprises, the behavior of top management in relation to standard and innovative application of IT systems to determine the effects of state subsidies for six analyzed factors. We have determined that there are differences for all analyzed factors of IT application in the operations of medium-sized agricultural enterprises in the Republic of Serbia ($p < 0.0005^*$), as well as that strategic planning by top management based on the impact of standard and innovative IT can predict future business results. The results obtained are important for the functioning of agriculture, but also for the wider economy in the Republic of Serbia and similar economies in terms of size and influence.

Keywords: *IT system; company; health institution; business results.*

1. Introduction

The real functioning of heterogeneous legal entities in the economy of many economies, and especially medium-sized agricultural enterprises, implies a high degree of economic innovation in regular business operations [1]. Therefore, it is not surprising that there is an increasing number of scientific papers that monitor the application of business results and the comparison of standard technologies and innovative technologies, especially IT systems [2,3].

In addition to the highlighted and which refers to the application of innovative technologies in regular business, one part of the research is aimed at monitoring important business results in a wide sector of heterogeneous companies, primarily in making valid management decisions by top management in order to make a real improvement in business [4-7].

Strategic planning by top management refers to the essential optimization of processes that are performed in the regular business of heterogeneous legal entities, which is of great importance for a large number of developing countries, such as the economy of the Republic of Serbia, and the same experiences can be used in the practical operation of a larger number of surrounding countries [8-10].

The essence of such efforts to introduce the innovative existence of technology in order to raise overall business results is to look at the possibility of a more rational management of the company's resources on the one hand, and on the other hand to make the results of such economic activities as good as possible [11-13].

Taking into account the current situation, namely that most companies, especially medium-sized agricultural companies, have standard forms of IT system implementation in their business, the authors of this study went a step further and tried to reveal, based on the authors' already published views [13-16], the behavior in achieving business results if the practical operation of an innovative IT system is applied.

Namely, they focused their research on the "problem": how can receiving subsidies affect the business of small and medium-sized agricultural holdings from the point of view of making a profit? [14].

In this way, the authors satisfied the theoretical premise, namely the possibility of influencing the establishment of sustainability of real agriculture in a country [16,17].

Previous theoretical considerations, especially in countries in transition, have recognized the existence of: sustainable agriculture, along with the existence of social and environmental sustainability [18,19].

Therefore, subsidies, especially when provided for narrowly specialized segments of agriculture, should include analyses such as: farm viability analysis, cost analysis, production factor analysis, business success analysis, profit analysis, and others [20-22].

2. Materials and Methods

2.1. Sample

The authors conducted a survey in 192 medium-sized companies in the Republic of Serbia in the period from January 15 to February 15, 2025, and that the same was done in the mentioned companies where the structure was present in two forms of organization, namely in 132 companies with standard application of IT systems, i.e. in 60 companies that applied an innovative information system in regular business.

The essential observation is divided into the observation of two forms of introduction of IT systems in the business of medium-sized agricultural enterprises.

In the next step, the authors processed the initially obtained data using classical statistical methods.

The survey was filled out by the top managers of agricultural enterprises, with the possibility to make an evaluation in the interval from 1 to 10, where the weakest belief could be expressed with 1, and the strongest with 10, in relation to the IT system that is in the functioning and business of medium-sized agricultural enterprises.

The following factors were analyzed: the possible impact of organizational units on the company's operations,

IT system costs in regular operations, the specifics of the activity in which the company generates most of its income, that is, in relation to its survival on the market, and in relation to the expected business results in the following period of time.

In the final part of the introductory observation of the results obtained after the survey, the authors approached and applied the classic statistical processing of the obtained data collected by surveying the top management of the mentioned companies.

2.2. Methodology

The authors of this study carried out research in such a way that they observed two forms of introducing IT systems in business, namely: the standard way of introducing IT systems and the innovative system of introducing IT operations in the company's work.

An innovative IT system implies that it is introduced with the aim of achieving a certain development that follows the development of new products, entering new markets, adopting new technologies that are very important for agricultural activity, respecting the needs of the wider market and more. Thus, the innovative approach of introducing IT systems into regular business operations differs from the somewhat more inert standard approach of introducing IT systems into regular business processes.

The observation covered the entire territory of the Republic of Serbia. Detailed further disclosure meant that a survey was conducted, and it was done in such a way that only the top managers of the mentioned companies could fill out the survey.

The authors made the setting of the following Hypotheses and that:

H: 1 that there is no significant absence in the evaluated and analyzed factors of the possible impact of the two forms of introduction of the IT System in regular business (the standard form and the innovative form of the IT system that operates in the surveyed companies).

H: 2 that there is no deviation of factors in the applied model of the standard introduced IT system in the business of medium-sized agricultural enterprises.

H: 3 that there is no deviation of factors in the applied model of the innovative introduced IT system in the business of medium-sized agricultural enterprises.

Statistical processing of the data was performed using IBM SPSS (Statistical Package for Social Sciences) version 25. Refinement of the obtained results was made possible by applying the T-test of independent samples in order to enable a higher level of possible assurance.

A regression analysis was carried out in order to predict the possible future business in relation to the standard and innovative observation of the IT introduced system in the work of medium-sized agricultural enterprises in the Republic of Serbia.

A significance threshold of 0.05 was used in the analysis of IT systems in use in the analyzed and surveyed companies.

3. Results

The results presented in the study, which essentially resulted from the processing of data related to the application of IT impact factors in the work of medium-sized enterprises in the Republic of Serbia, are grouped into the following units.

3.1. Presentation of the results of the impact of IT systems on the work of medium-sized agricultural enterprises

The authors presented the results after the t test in Table 1. They related to two forms of application of IT systems in business, i.e. the application of standard business and innovative business IT systems in the work and business of agricultural enterprises in 2025.

The concretization of the results is systematized in Table 1.

Table 1. Differences between standard and innovative IT systems in business.

	Standard application of IT systems in the work of companies in business (N=132)	Innovative application of IT systems in business operations (N=60)	t	p
	Ave rage value			
Organizational units of the company	6.75 ± 0.42	3.77 ± 0.41	61.680	<0.0005*
Costs related to IT business	7.60 ± 0.45	6.76 ± 0.39	13.600	<0.0005*
Top management strategy	6.25 ± 0.42	9.47 ± 0.48	-44.556	<0.0005*
Specifics of the company's core activity	7.01 ± 0.84	8.45 ± 0.48	-15.710	<0.0005*
Expected business results	5.58 ± 0.40	8.40 ± 0.54	-34.849	<0.0005*
Total	6.77 ± 0.24	7.35 ± 0.24	-13.488	<0.0005*

The obtained results indicate deviations in all analyzed factors in both ways of applying the IT system in practical work and evaluation of the same by the surveyed decision-making process holders in medium-sized agricultural enterprises.

3.2. Prediction of the strategy of top management in relation to the factors of possible influence on the standard observation of the IT system in the practical application of business

The results are grouped in the form of a systematized Table 2, which essentially shows the possible impacts and trends in the coming period in relation to the analyzed factors of possible impact on the business and functioning of medium-sized agricultural enterprises that have introduced standard monitoring of IT systems.

Table 2. Prediction of the strategy and the influence of the top management's strategy on the standard operation of IT system.

	Beta	t	p
Constant	-	17.100	<0.0005*
Organizational units of the company	-0.607	-12.289	<0.0005*
Costs related to IT business	0.402	8.886	<0.0005*
Specifics of the company's core activity	0.134	2.801	0.005*
Expected business results	-0.21	-0.513	0.606

By presenting the obtained results in Table 2, a multiple linear regression was essentially performed, which essentially gave an overview of the top management's strategic decisions in relation to the analyzed factors, namely: the influence of organizational units, IT system costs, the specifics of the activity in which the company generates most of its income, i.e. in relation to its

survival on the market, and in relation to the expected business results through the applied standard introduced IT system.

3.3. Forecasting the strategy of top management in relation to the innovative factors of the IT system in business

The results are grouped in the form of a systematized Table 3. They refer to the presentation of the possible business of the surveyed companies in the following period in the work and business of medium-sized agricultural companies.

The systematization of the results is given in Table 3.

Table 3. Prediction of strategy and influence on top management's strategy on innovative application of IT systems.

	Beta	t	p
Constant	-	21.918	<0.0005*
Organizational units of the company	-0.755	-17.200	<0.0005*
Costs related to IT business	-0.375	-10.469	<0.0005*
Specifics of the company's core activity	0.025	-0.341	0.005*
Expected business results	0.022	-0.433	0.604

The presentation of the obtained results in Table 3 shows the significant impact of strategic decisions of top management in relation to the innovative introduction of IT systems in relation to the analyzed factors, i.e. the results of multiple linear regression and its impact on future business are presented.

4. Discussion

By presenting the obtained results, the authors presented the obtained results in the first part of the study (Table 1), which showed the impact of the standard and innovative approach to the application of IT systems in the business of medium-sized agricultural enterprises.

The same was done by analyzing the organizational units of the company, IT costs, strategic decisions of the top management, the specifics of the activity in which the agricultural companies operate, that is, in relation to the expected business results.

The presence of important deviations for all analyzed factors is visible, i.e. the level of significance after the t-test ($p < 0.0005^*$) is present and Hypothesis 1 can be rejected, i.e. there are differences for all analyzed factors of IT application in the business of medium-sized agricultural enterprises in the Republic of Serbia for 2025.

At the same time, it can be observed that in two factors: the factor of the influence of organizational units in the company and the costs arising from the introduction of the IT system model into regular business, a lower level of evaluation can be seen for the standard way of doing business of agricultural enterprises, while in all other analyzed factors, the existence of greater trust in the innovative approach of introducing IT systems into the company's business can be seen.

Thus, the obtained results of the research coincide with the already published works of the author [23].

In the following, a multiple linear regression was essentially performed, with the application of which the authors wanted to reveal the impact based on the prediction of the strategic business of the top management of medium-sized agricultural companies in relation to the other analyzed factors shown within the standard observation of the impact on business.

The obtained results of the standard observation of influence, i.e. regression show that the determination coefficient of 0.33 was obtained, i.e. that the obtained model describes with 33% of the total variance the state of the two forms of the introduced IT system in business. Strategic planning by the top management indicates that the IT impact of both forms can be predicted based on independent variables because the obtained model is statistically significant ($F=69.779$, $p<0.0005$), Table 2. The obtained results match the views of the author [24].

Hypothesis H 2 can be partially rejected, i.e. the strategic decision of the top management regarding the standard introduction of IT affects all factors except the factor of expected business results, i.e. it is more difficult to determine business in the future based on the analyzed factors.

The third level of observation included the innovative observation of the IT system in the business of medium-sized companies, that is, a multiple linear regression was applied where the coefficient of determination of 0.725 was obtained, where the obtained model describes with 72.5% the innovative introduction of the IT system in the business as well as the fact that it is statistically significant ($F=192.180$, $p<0.0005$), Table 3.

Hypothesis H 3 can be partially rejected, that is, the strategic decision of the top management regarding the innovative form of IT introduction affects all factors except for the factor of expected business results, that is, it is visibly more difficult to determine business in the future based on the analyzed factors, that is, the situation is similar to the obtained results shown in Table 2.

5. Conclusion

The obtained results of the study are such that they confirmed the expectations of the author from the beginning of the study.

We can conclude that the IT approach has a large practical application in the business of medium-sized agricultural enterprises in the Republic of Serbia, and we can group them into the following groups of conclusions, namely:

First, that there are significant differences in the evaluation of all analyzed factors of possible influence on the operations of medium-sized agricultural enterprises in the Republic of Serbia. With such a statement that there are significant deviations, it is necessary to emphasize that the factors of influence of organizational units and the factors of the costs of the introduction of IT systems have lower values in the case of the standard introduced IT system in business, while in all other analyzed factors there is a reverse tendency in relation to the innovatively introduced IT system in the business of medium-sized agricultural enterprises.

Second, that it is very useful to show, by applying multiple linear regression, the approach of standard introduction of IT systems in the company's operations using a unifying factor that is defined in the work as the influence of strategic decisions of top management in relation to: the importance of the influence of organizational units, IT system costs, the specificity of the activity in which the company generates most of its income, i.e. in relation to its survival on the market, and in relation to the expected results, ($F=69.779$, $p<0.0005$).

Third, the strategic decisions of the top management regarding the innovative introduction of IT systems in the operations of medium-sized agricultural enterprises is important in relation to the analyzed factors, and the same must be taken into account if positive management and the making of valid management decisions by the top management are desired in the future, which is undoubtedly confirmed ($F=192.180$, $p<0.0005$).

In the end, this study points to the importance of applying a generally introduced IT system in the business of medium-sized agricultural enterprises, and a further detailed observation such as a standard, innovative introduction of an IT system is possible and desirable both in the territory of the Republic of Serbia and in a wider perspective, noting that the same can be observed with the introduction of new factors as well as new forms of significant impact of the IT system on business results in the future.

Conflicts of Interest: The authors declare no conflict of interest.

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