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Article

The Impact of IT Support and Health Equipment Investments on the Business Efficiency of Agricultural Farms

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Abstract: The aim of the paper was to present the importance of additional investments in the work of both classically established agricultural farms and those that opt for additional investments in equipment, with the implementation of IT systems, with the aim of achieving greater management efficiency. In this way, it is possible to enter the financial market and stock exchanges in order to increase business success in this way. Methodologically, the authors, based on a survey, objectively presented the importance of implementing additional investments in health equipment in order to achieve greater overall income in the work of agricultural farms. The contribution of the authors of the study is reflected in the presentation of the strong influence of the two analyzed factors, namely the popularization of tourism, because the value obtained (β=-0.320), as well as the factor of growth of the tourism product, because its influence is significant (β=0.259) in the work of agricultural farms, especially those that have accepted the application of additional investments in IT support as a factor of entering financial markets and doing business on stock exchanges.

Keywords: *Farm; healthcare equipment; IT system; financial markets; stock market.*

1. Introduction

The real management of different legal entities in agribusiness requires different approaches as well as the application of innovative solutions such as the application of IT within the framework of regular or additional investments, for example in health equipment, in order to enable more efficient operations of a large number of farms and other entities in agriculture in order to generate additional income [1-5].

Therefore, the problem of making valid management decisions, especially in investing in additional parts that are intended to improve the overall business, especially within health services, is of great importance because it is then possible to enter the financial markets and stock exchanges, primarily in the field of agriculture [6-10].

The efficiency of investment in additional business is treated as an important business issue of a very wide range of legal entities operating within the agrarian sector in order to increase total profits

and to enable the security of the operations of a large number of entities in the agrarian organization as well as more broadly [11-15].

In addition to the prominent appearance on the financial markets as a result of operations with additional investments, for example in health equipment, management also has other options, such as inclusion in the IT support system [16-19].

The comprehensiveness of business operations and investments, both regular and extraordinary, such as investments in health equipment, aims to completely improve the management decisions made, that is, to achieve better and more secure incomes both on farms and in other forms of organization in agriculture [20-24].

2. Materials and Methods

The research was carried out in such a way that a survey procedure was carried out by outsiders, which included a total of 54 classic agricultural farms that provided tourist accommodation and catering services on the farm and 91 farms that decided to increase their income by investing in health services of accommodation. Accordingly, a total of 145 farms were surveyed.

The survey was conducted in two types of agricultural farms, i.e. in those that provide standard tourist services and those farms that decided to invest additionally in health equipment in order to expand the range of services with the aim of gaining more additional income and thus increasing the efficiency of business and management of the agricultural farm.

The surveyed farms were given the opportunity to fill out the offered questionnaire by the farm owners, with the evaluation interval being given, which ranged from 1 to 10. The weakest confidence in the farm's operation could be assessed with a score of 1 and the highest score of 10 was the strongest confidence in the farm's operation based on the aforementioned four factors of possible impact on business efficiency.

More precisely, the proposed research related to the overall perception of the management in tourism of agricultural farms was carried out by analyzing four factors that can affect the efficiency of their business, namely: popularization of rural tourism, expansion of the product range, change in the profile of tourists staying at the rural household or farm, and growth of the farm's tourism product.

The subject of the research focus was on the study of the real picture of the possible application of management skills in agricultural farms based on additional investment in health equipment in order to increase the real efficiency of business, i.e. to achieve a higher level of total income.

The entire research was carried out within the analyzed agricultural holdings that operate on the territory of the entire Republic of Serbia for at least the last two years of operation, that is, which were active and registered in the period from January 1, 2024 to January 30, 2026.

The research was carried out in order to see the existence of possible differences in the work of agricultural farms that classically apply business and in relation to those that have decided to make additional investments in health equipment (primarily small spa pools, up to five people, equipment for the sale of health food intended for people who strive to reduce body weight by applying approved health treatments, health equipment that helps improve the health of tourists, etc.) in order to generate additional income.

The research period in which the research was conducted was from 01. 01. to 30. 01. 2026. and it related to the entire Republic of Serbia.

After the survey, the authors performed a statistical analysis based on the initial data obtained from the analyzed agricultural farms, using the IBM SPSS software, version 25. In addition, they performed a grouping of the results using the displays given in Tables 1-2.

In addition, the results obtained given in Table 1 were strengthened based on the display of the obtained T-test, where the categorization of factors that influence the work efficiency of business in both forms of agricultural farms was given, provided that the significance threshold was defined as a value of 0.05.

3. Results

The first unit included the part in which the existence of the obtained results is seen where there is a substantial comparison of the work of agricultural farms, namely those that operate classically in relation to the second group of farms where the business has been improved through additional investments in health equipment in order to increase the efficiency of their business.

All this was observed in relation to the analyzed factors, namely: the popularization of tourism, the expansion of the tourist assortment, the change in the tourist profile and the growth of the tourist product of the agricultural farm in order to increase the efficiency of their business.

The obtained results shown in Table 1 were strengthened by applying the t-test, which drew attention to the real significance of the individual factor of possible influence on the management of the agricultural farm in relation to the form of its organization, which are actually.

Below is a presentation of each individual factor analyzed in relation to the efficiency of business operations according to the form of management in tourism of the agricultural farm. All this was done in order to reveal the behavior of the agricultural farm based primarily on the attitudes towards making key decisions in the financial management of the agricultural farm, namely the classic one and the one that opted for additional investments in health equipment in order to achieve greater financial value of the business.

The authors present the results obtained after the evaluation by the head of the agricultural farm in relation to the evaluated (given) factors that may have an impact on the efficiency of the business operations of the two mentioned forms of agricultural farm operations, which is given in the presentation visible in Table 1.

Table 1. Presentation of the evaluation of agricultural farm owners.

Analyzed	Form of agricultural holding in relation to management	Mean	Average deviation	t	*p*
Popularization of tourism	A	5.69	0.37	-30.197	<0.0005*
	B	7.83	0.35		
Expansion of the tourist assortment	A	5.73	0.38	-24.850	<0.0005*
	B	7.56	0.47		
Change of tourist profile	A	4.00	0.59	-33.749	<0.0005*
	B	6.80	0.33		
Growth of tourism product	A	4.02	0.02	-40.251	<0.0005*
	B	7.59	0.45		
Total valuation	A	4.70	0.16	-33.614	<0.0005*
	B	7.69	0.28		

*A=Classic farming (N=54); B= Agricultural holding that invests in health equipment (N=91); *Statistical significance at level of 0.05.*

The presented results of the comparison of two forms of agricultural farm management operating in the economy of the Republic of Serbia in terms of increasing the efficiency of their management based on the analyzed factors are presented in Table 1. The presentation provides a clear picture of the impact of all analyzed factors on business efficiency in favor of those farms that have decided to

make additional investments in the purchase of health equipment in order to increase the amount of total income that they can generate based on the additional investment.

In the second part of the research, the authors presented the obtained research results, which included forecasting the trend of farm business efficiency based on additional investments in health equipment.

The forecast was made in relation to four factors that influence the efficiency of farm business, which are managed by farm owners in the real management of one of the two forms of farm business.

The results of the study provide an overview of each of the analyzed factors, i.e. their individual contributions, for each of the listed analyzed factors that can influence the efficiency of a farm regardless of the form of investment in the business.

All of this is shown in the results given in Table 2, in the form of a presentation of each individual contribution per analyzed factor as part of a presentation of individual influence, the application of which can influence the prediction of efficiency based on investments primarily in health equipment of agricultural farms within the framework of tourism business management of the aforementioned entities.

Table 2. The contribution of the analyzed factors from the aspect of forecasting the efficiency of investments in health equipment on agricultural farms.

	Beta	**t**	***p***
A constant	-	0.444	0.645
Popularization of tourism	-0.320	-8.901	<0.0005*
Expansion of the tourist assortment	0.067	1.269	0.190
Growth of tourism product	0.259	6.446	<0.0005*
Change of tourist profile	-0.011	-0.124	0.890

**Statistical significance at level of 0.05.*

The results in Table 2 showed that there is a significant influence of the factors: popularization of tourism and growth of tourism product in the business of both forms of real functioning of agricultural farms in the Republic of Serbia ($p<0.001$).

The greatest contribution to the prediction of work efficiency after additional investment in health equipment of agricultural farms that want to achieve more business income has the factor popularization of tourism ($\beta=-0.320$).

In addition, the factor growth of tourism product is influential because its value ($\beta=0.259$) and in itself is positive and significant in the business of agricultural farms analyzed in the study. Essentially, they affect the efficiency of agricultural farms (popularization of tourism and popularization of tourism) based on the efficiency of real business operations of agricultural farms, which should be paid attention to in the future operation of the same, both in Serbia and more broadly.

4. Discussion

The evaluation by the owners of agricultural farms in two forms of their business, which are evidently different, especially in terms of efficiency related to business, that is, the achievement of business results, is such that we see a strong existence of significant differences in terms of real business compared to classic and additional adjustment.

This was done in relation to additional business investment based on the existence of subsequent investment in health equipment in order to increase the total business income. In such a business, factors such as those analyzed in the study: popularization of tourism, expansion of the tourist assortment, change in the profile of tourists and growth of the tourist product of agricultural farms in order to increase the efficiency of their business can have a strong impact, as indicated by the results of this study.

The results obtained largely coincide with the previously stated views of the authors on the great importance of the real efficiency of the business of agricultural and other legal entities in real business.

The first key point after the preparation and presentation of the study would be that there is a large or significant deviation ($p<0.0005^*$) in favor of the business of agricultural farms that opted for business with additional investment, for example investment in health equipment, so that the results of the total income would be better, that is the efficiency of the business would be visible for each of the individual factors analyzed, but also for their overall observed score.

Another key point of this study indicates that it is possible and important to take into account the factors: popularization of tourism because the obtained value is such that it amounts to (β=-0.320), as well as the growth of tourism product factor because it is influential and because its value is shown in the study such that it amounts to significant (β=0.259) and which relate to the business of agricultural farms analyzed in the study.

As the final point of the study that arises from the obtained results, it could be pointed out that it is important to observe in the future business of agricultural farms in Serbia, but also more broadly, the comprehensiveness of investments in order to raise the level of additional income, which would raise the efficiency of the same to a higher level and which would give the overall business its real significance.

General additional investment in health equipment can serve as a basis for the exit of agricultural farms to the current, above all, agricultural markets and stock exchanges, and in particular it should be emphasized that this is necessary with the use of IT support systems as business security for numerous entities.

5. Conclusions

The impact of management based on additional investment, especially within the framework of agricultural farms, is of utmost importance, especially since the study clearly confirmed that there is a distinct importance of applying additional investment, for example, investing in health equipment, in order to achieve better overall income generation.

The paper indicates the importance of the growing confidence of agricultural farm owners regarding the impact of additional investment in health equipment with the aim of increasing the overall income of the agricultural farm, which is visible as the first important conclusion of this study.

After reading this study, the second conclusion would be that agricultural farms that have opted for additional investment in health equipment achieve better business results compared to the classic business of agricultural farms in Serbia.

The third conclusion would be that from the analyzed factors of possible influence on the business of both types of agricultural holdings, it is important to consider two factors in particular, i.e. popularization of tourism because the obtained value is such that it amounts to (β=-0.320), as well as the growth of tourism product factor because its influence is such that it amounts to significant (β=0.259).

In the end the final conclusion would be that it is of great importance to continuously study additional investments, especially those related to the importance of considering investments in additional equipment, for example health equipment, because this enables better business and greater efficiency in considering investments both in the present and, perhaps more importantly, in the future business of agricultural farms, both in Serbia and in other economies of similar size and strength.

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

Declaration of Generative AI Use: The authors declare that no generative AI tools were used in the preparation of this manuscript.

References

1. Bakmaz, O.; Vukčević, V.; Laković, D.; Arnautović, I.; Nastić, S.; Krstajić, G.; Popović, S. Modern Management of Medium-sized Agricultural Enterprises and Reporting in English on Recent Change. *J Agron Technol Eng Manag* **2025.** 8:1, 1429-1436. https://www.fimek.edu.rs/downloads/casopisi/jatem/issue/v8_1/13_(13)_J_Agron_Technol_Eng_Manag_2025_8(1)_1429-1436._httpsdoi.org10.55817EDDU2681.pdf
2. Čolović, M.; Đuranović-Miličić, J.; Gligović, D.; Arnautović, I.; Nastić, S. & Popović, S. Joint investments of the real economy and healthcre institutions in the Republic of Serbia, *Ekonomija Teorija i praksa*, **2024**, 17:3 97-108. https://casopis.fimek.edu.rs/index.php/etp/article/view/298
3. Bakmaz, O.; Eremić-Đođić, J.; Dragosavac, M.; Sredojević, D.; Dejanović, A.; Arnautović, I.; Krstajić, G. & Popović, S. 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*, **2025**, 8:2, 1562-1572. https://www.fimek.edu.rs/jatem.html
4. Popović, S.; Bakmaz, O.; Popović, D.; Dragosavac, M.; Nastić, S.; Pajović, I.; Majstorović, A.; Sredojević, D.; Radaković, M. & Petković, Z. Valuation of agricultural land in relation to location of city centers as a factor in the management of mentioned resource, *Agriculture & Forestry*, **2025**, 71:1, 99-113. https://doi.org/10.17707/AgricultForest.71.1.08.
5. Popović, S.; Arnautović, I. & Krstajić, G. Realistic financial reporting and management of primary health care in Serbia, *Trendovi u poslovanju*, **2025**, 25: 1, 107-116. https://scindeks.ceon.rs/Article.aspx?artid=2334-816X2501107P
6. Bojnec, Š. & Fertő, I. Testing the validity of Gibrat's law for Slovenian farms: cross-sectional dependence and unit root tests. *Economic Research-Ekonomska Istraživanja*, **2020**, 33:1, 1280–1293. https://www.tandfonline.com/doi/full/10.1080/1331677X.2020.1722722
7. Liu, J.; Xu, Q. & Zhou, T. Can pro-environmental behavior increase farmers' income?—Evidence from arable land quality protection practices in China. *Economic Research-Ekonomska Istraživanja*, **2023**, 36:1. https://www.tandfonline.com/doi/full/10.1080/1331677X.2023.2179512
8. Sapolaite, V.; Reziti, I. & Balezentis, T. Dynamics in the economic performance of farms: a quintipartite decomposition of the profitability change at the aggregate level. *Economic Research-Ekonomska Istraživanja*, **2023,** 36:1, 708–726. https://www.tandfonline.com/doi/full/10.1080/1331677X.2023.2179512

9. Peltonen-Sainio, P.; Jauhiainen, L.; Joona, J.; Mattila, T. J.; Hydén, T. & Känkänen, H. Farm characteristics shape farmers' cover crop choices in Finland. *International Journal of Agricultural Sustainability*, **2024**, 22:1. https://www.tandfonline.com/doi/full/10.1080/14735903.2023.2299596
10. VanWormer, J.; Bendixsen, G.; & Shukla, K. Dairy Farm Work and Protection from Gastrointestinal Illness. *Journal of Agromedicine*, **2023**, 28:4, 640–646. https://www.tandfonline.com/doi/abs/10.1080/1059924X.2023.2209091
11. Burke, R.; Berg, L.; Weichelt, P.; Gabor, M.; Rudolphi, M.; Bendixsen, G. & VanWormer, J. A PheWAS Analysis of the Risks and Benefits of Growing Up on a Farm. *Journal of Agro* medicine, **2026**, 31:2, 254–262. https://pubmed.ncbi.nlm.nih.gov/41275339/
12. Chu, M.; Rennie, C.; Kirychuk, S.; Cockcroft, D.; Gordon, R., Pickett, W. & Lawson, A. Farm Exposures and Allergic Disease Among Children Living in a Rural Setting. *Journal of Agro medicine*, **2023**, 28:4, 676–688. https://pubmed.ncbi.nlm.nih.gov/37038656/
13. Ringering, S.; Gracy, L. & Sass, D. Male Farm and Agricultural Worker Suicides in Kansas, 2016-2020. *Journal of Agro medicine*, **2024**, 29:2, 136–143. https://pubmed.ncbi.nlm.nih.gov/38250797/
14. Drall, A. & Mandal, S. Does Non-Farm Income Raise Farm Productivity? New Evidence from India. *The Journal of Development Studies*, 2025, 61:9, 1526–1547. https://pubmed.ncbi.nlm.nih.gov/38250797/
15. Anang, T. & Apedo, K. The influence of off-farm work on farm income among smallholder farm households in northern Ghana. *Cogent Economics & Finance*, **2023**, 11:1. https://www.tandfonline.com/doi/full/10.1080/23322039.2023.2196861
16. Karanikolas, P.; Bebeli, J. & Thanopoulos, R. Farm economic sustainability and agro biodiversity: identifying viable farming alternatives during the economic crisis in Greece. *Journal of Environmental Economics and Policy*, **2018**, 7:1, 69–84. https://www.tandfonline.com/doi/full/10.1080/21606544.2017.1360212
17. Pinar, A.; & Akyuz, A. Smart supply chain collaboration maturity evaluation model based on a q-Rung or toper fuzzy decision making methodology. *International Journal of Systems Science: Operations & Logistics*, **2024,** *11*(1). https://www.tandfonline.com/doi/full/10.1080/23302674.2024.2409777
18. Grossman, A. Busines Improvement Districts: Promise and Performance: Editor's Introduction. *Public Performance & Management Review*, **2010**, *33*(3), 355–360. https://www.tandfonline.com/toc/mpmr20/33/3
19. Peel, D. & Lloyd, G. (2010). Wrestling with the Value Added of Business Improvement Districts: Efficiency, Accountability, and Contractual Governance in Scotland. *Public Performance & Management Review*, **2010**, *33*(3), 488–508. https://www.jstor.org/stable/40586803
20. Barry, K. 'Like yelling bomb in an airport': bed bugs and more-than-human geographies of migrant farm worker hostels. *Social & Cultural Geography*, **2024**, *25*(7), 1006–1024. https://www.tandfonline.com/doi/full/10.1080/14649365.2023.2257660
21. Hayes, M. Your good health: Access to health and health care in Northern Ireland. *Regional Studies*, **1986**, 20:6, 493–504. https://www.tandfonline.com/doi/abs/10.1080/09595238600185431
22. Mecwan, S.; Sheth, M. & Khanna, R. Enhancing social accountability through adolescent and youth leadership: a case study on sexual and reproductive health from Gujarat, India. *Gender & Developme*nt, **2021**, 29:1, 151–169. https://www.tandfonline.com/doi/full/10.1080/13552074.2021.1886684
23. Barua, A.; Waghmare, R. & Venkiteswaran, S. Implementing Reproductive and Child Health Services in Rural Maharashtra, India: a Pragmatic Approach. *Reproductive Health Matters*, **2003**, 11:21, 140–149. https://www.tandfonline.com/doi/full/10.1016/S0968-8080%2803%2902162-1
24. George, E.; Moorthy, S.; Di Tommaso, A.; Rankin, E.; Oxlad, M.; Murthy, G. & D'Souza, B. Developing a modified and contextualized Occupational Justice Health Questionnaire (OJHQ) for use with marginalized populations: A Delphi study. Journal of Occupational Science, **2025**, 32:3, 533–554. https://www.tandfonline.com/doi/full/10.1080/14427591.2025.2463013