

TECHNOLOGY-DRIVEN DECISION MAKING: THE INFLUENCE OF SYSTEMS ON MARKET COMPETITIVENESS OF TOURISTIC ENTERPRISES

Prof.ass.dr.Driton Sylqa

University “Haxhi Zeka”, Business Faculty

Kosovo, Peja

driton.sylqa@unhz.eu

Abstract

In an era of rapid globalization and technological advancement, decision making systems have emerged as a critical tool for enhancing financial decision-making in companies with international touristic activities. This study examines the impact of decision-making systems on financial performance, with a particular focus on equity investment, asset management, and market competitiveness in touristic corporations. Using a quantitative deductive approach, the research tests key hypotheses to determine how decision-making systems contributes to improving decision accuracy and operational efficiency. Statistical analysis confirms that enterprises integrating systems into their financial decision-making processes achieve greater profitability, enhanced competitiveness, and more effective investment strategies. Additionally, the findings highlight the role of decision supporting systems in reducing uncertainty, improving compliance with regulatory frameworks, and fostering data-driven management practices. The study concludes with strategic recommendations on leveraging intelligent platforms as a core component of business operations to optimize decision-making and ensure long-term financial sustainability in globally active corporations.

Keywords: Decision Making Systems, Financial Performance, International Companies, Depository Corporations, Investment Decision-Making

Introduction

In today's highly competitive tourism industry, technology-driven decision-making systems have become a crucial factor in enhancing the market positioning and financial performance of touristic enterprises. As globalization and digital transformation accelerate, businesses engaged in international tourism must rely on advanced decision-supporting tools to optimize their operations, investment strategies, and market responsiveness. The ability to process large volumes of data, predict market trends, and improve asset management through intelligent decision-making systems provides touristic corporations with a strategic advantage in an increasingly volatile business environment (Khaki and Akin, 2020).

Decision-making systems influence multiple aspects of organizational behavior, from individual decision-making to corporate-level strategy, enabling touristic enterprises to streamline financial operations, reduce uncertainties, and enhance overall competitiveness. These systems facilitate efficient allocation of resources, improve customer relationship management, and strengthen compliance with industry regulations. Furthermore, by integrating smart data analytics and automation, decision-making technologies allow businesses to rapidly adapt to market fluctuations and consumer demands, ensuring sustainable growth and profitability (Buhalis, 2019).

To maximize the effectiveness of decision-making systems, it is essential to engage key stakeholders in their development, ensure user-friendly interfaces, and provide continuous training to optimize utilization. Touristic enterprises that successfully implement such systems not only gain a competitive edge but also drive innovation and operational efficiency in an evolving global market. This paper explores the impact of decision-making technologies on market competitiveness, financial sustainability, and strategic management within international touristic enterprises, offering insights into best practices for leveraging these systems to achieve long-term success. (Marakas, 2018).

The tourism sector exhibits significant research gaps in the application of decision-support systems (DSS), particularly in the context of small and medium-sized enterprises (SMEs). While DSS has been extensively studied in finance and business management, its specific impact on tourism—especially regarding market positioning, profitability, and strategic investments—remains underexplored (Suanpang, P, Pothipassa, P., 2024). Additionally, the industry's inherent volatility, driven by factors such as seasonality and global disruptions, necessitates further investigation into adaptive decision-making systems that can enhance resilience. Moreover, the integration of smart technologies like AI and IoT into DSS frameworks for sustainable competitive advantage is insufficiently addressed. Finally, there is a notable absence of industry-specific case studies focusing on SMEs, which limits understanding of how DSS implementation varies across different business scales. Addressing these gaps could yield valuable insights into the role of technology-driven decision-making systems in fostering financial sustainability and competitiveness within the international tourism industry. (Chang, 2021)

Theoretical frame

Globalization has significantly increased access to tourism, particularly for the middle class. As a result, tourism has emerged as one of the largest industrial sectors globally over the past two decades. (Streimikiene, et al, 2021).

Moreover, the commercial application of information technology has profoundly transformed organizational structures and operations. In the context of globalization and the pressing need for market competitiveness, companies—particularly in the Western Balkan countries—face both challenges and obligations. Information systems technology significantly influences organizational performance, including in the tourism sector, with effects that can be both direct and indirect. The direct impact manifests through the enhancement and acceleration of production and business processes, leading to improved financial metrics such as productivity, profitability, and competitiveness. Conversely, the indirect influence of decision-making systems on organizations is observed through their effects on various aspects of organizational behavior at individual, group, and organizational levels, which ultimately impact the company's financial performance. (Khaki and Akin, 2020).

Technology-Driven Decision Making has become a strategically important resource of modern companies. They provide concentration of all information that is important for quality decision making, Marakas set the categorization of systems performance at based on 180 research that deals with the impact of Technology-Driven Decision Making on the organizational performance

(Marakas, 2018). The categorization of supporting decision-making systems performance in the company encompasses six important dimensions: the quality of information technology, quality information, use of information technologies, satisfaction of users (employees), individual influence and the influence of the organization. In addition, there are opinions that maintenance technological competitiveness of the company is a responsibility that should be shared by all members of the management team (Sharda, Delen, Turban, 2019).

The integration of decision-making systems in equity investment practices has significantly influenced the performance of depository corporations. These systems, which leverage advanced data analytics, artificial intelligence, and machine learning, are designed to enhance decision-making processes, mitigate risks, and optimize investment outcomes. As financial markets become increasingly complex, decision-making tools provide critical support in analyzing vast datasets, predicting market trends, and managing investment portfolios. (Ismail, H et al., 2018)

Recent research highlights the profound impact of decision-making systems on investment decisions within depository corporations. For instance, the use of these systems has been shown to improve accuracy in predicting market movements and identifying profitable investment opportunities, thereby enhancing the overall performance of these institutions (Abideen et al., 2023). Additionally, decision-making tools help minimize behavioral biases that often lead to suboptimal investment choices. By providing data-driven insights, these systems reduce the influence of emotional and psychological factors on investors, resulting in more rational and effective decision-making (Ahmed et al., 2023).

Moreover, the adoption of decision-making systems in depository corporations has facilitated better compliance with regulatory requirements and increased transparency in investment activities. This is particularly important for minority depository institutions (MDIs), which face unique challenges in accessing capital and managing investments. The Federal Reserve's initiatives to support MDIs through various programs underscore the critical role of these systems in promoting financial stability and inclusion in underserved communities. (Federal Reserve, 2022).

In emerging markets, decision-making systems have proven valuable in navigating volatile economic conditions and market anomalies. Studies on the Pakistani equity market reveal that these systems significantly influence investment decisions by providing robust analytical frameworks that consider local market dynamics and investor behavior. These findings suggest that decision-making systems not only enhance investment performance but also contribute to the overall resilience and competitiveness of depository corporations in diverse economic environments. (Qiu et al., 2023).

Leveraging Decision-Making Systems for Investment Strategies in the Western Balkans' Tourism Sector

The impact of decision-making systems on equity investment in the performance of organizations dealing with touristic activities in the Western Balkans has become increasingly significant. As the region integrates more closely with the European Union, the deployment of advanced decision-making systems has been pivotal in enhancing investment strategies and financial performance. (Turban, 2019)

Decision making systems, which include sophisticated data analysis tools and algorithms, aid tourism enterprises in making informed investment decisions. These systems are particularly valuable in the volatile markets of the Western Balkans, where economic conditions are influenced by various external factors, including EU economic policies and global market trends.

The European Investment Bank (EIB) has significantly contributed to the development of the tourism sector in the Western Balkans, investing €1.2 billion in 2023. This funding has supported sustainable projects and small and medium enterprises (SMEs), helping to stabilize and grow the regional economy. By providing both financial and technical advisory support, the EIB has enabled local businesses to adopt decision making systems that enhance their investment decision-making processes (EIB).

Moreover, the World Bank's initiatives have also played a crucial role. Their programs focus on building the resilience and investment readiness of small, innovative tourism businesses in the Western Balkans. These efforts include mentoring and training to help these companies expand beyond national borders and integrate advanced decision-making tools into their operations. This not only improves their performance but also attracts more equity investments by showcasing their capability to adapt to market changes and economic shocks (World Bank).

The adoption of decision-making systems in organizations dealing with touristic activities facilitates better risk management and optimized investment portfolios. These systems analyze vast amounts of data to identify investment opportunities and potential risks, providing a competitive edge in the rapidly evolving tourism markets of the Western Balkans. As these systems become more integrated into the industry's infrastructure, they contribute to the overall stability and growth of the tourism sector, fostering a more attractive environment for equity investments (World Bank).

In conclusion, the implementation of decision-making systems is crucial for enhancing the performance of organizations dealing with touristic activities in the Western Balkans. By leveraging these technologies, tourism enterprises can make more informed investment decisions, manage risks more effectively, and ultimately drive economic growth and stability in the region.

Methodology

The questions for assessing decision-making systems were developed based on theoretical considerations and relevant aspects of implementation. Existing literature highlights the significance of information technology adoption in enhancing business operations. Furthermore, previous research emphasizes the importance of employee training and motivation in effectively utilizing modern information technologies.

To construct a suitable questionnaire for measuring decision-making systems in touristic enterprises, various standardized instruments were reviewed. While these instruments provided valuable insights, none fully aligned with the objectives of this study. Consequently, a customized questionnaire was developed to measure the integration, application, and perceived importance of decision-making systems in tourism enterprises.

Financial performance was evaluated based on well-established indicators from prior research, including profitability, sales growth, fixed asset growth, market share, and industry competitiveness. To provide a more comprehensive assessment, two additional dimensions—productivity and employee salaries—were incorporated.

As a result, the study assessed the following seven financial performance indicators, ranked by respondents: Productivity, Profitability, Market share, Sales growth, Competitiveness, Fixed asset growth, and Employee salaries.

All performance indicators were evaluated using a five-point Likert scale, a methodology widely applied in previous research (Wang et al., 2011). Financial performance was treated as a single dimension in the analysis.

Data Analysis

The research findings were derived using appropriate statistical methods. IBM SPSS Statistics software was used for data analysis, applying the following techniques:

- ✚ Descriptive statistics: To assess the current state (mean values) of decision-making systems and their impact on business performance in touristic enterprises.
- ✚ T-test: To determine statistically significant differences between companies with high and low levels of decision-making system integration in relation to financial performance.
- ✚ Correlation analysis: To identify relationships between decision-making system adoption and financial performance indicators.
- ✚ Regression analysis: To evaluate the predictive influence of decision-making system variables (independent factors) on business performance outcomes.
- ✚ Hierarchical regression analysis: To examine moderating effects of leadership-member exchange (LMX), trust in management, workplace trust, ownership structure, and communication effectiveness on decision-making system adoption and business performance.

Research sample

The research was conducted among touristic enterprises in four South East European Countries (Kosovo, Albania, Monte Negro and Macedonia) with middle managers serving as the primary respondents. Data collection involved structured interviews and questionnaire distribution. A total of 600 questionnaires were disseminated, of which 412 were returned. However, 32 questionnaires were excluded due to incomplete responses, resulting in a final sample of $N = 381$ middle managers from 102 companies. The effective response rate was 63%. By incorporating these factors, the study comprehensively evaluate the role of decision-making systems in driving market competitiveness within the tourism sector.

Table 1 . Sample population

What margin of error can you accept? <small>5% is a common choice</small>	5%
What confidence level do you need? <small>Typical choices are 90%, 95%, or 99%</small>	95%
What is the population size? <small>If you don't know, use 20000</small>	35678
What is the response distribution? <small>Leave this as 50%</small>	50%
Your recommended sample size is	381

Table 2: Sample calculation

Alternate scenarios								
With a sample size of	<input type="text" value="100"/>	<input type="text" value="200"/>	<input type="text" value="300"/>		With a confidence level of	<input type="text" value="90"/>	<input type="text" value="95"/>	<input type="text" value="99"/>
Your margin of error would be	9.79%	6.91%	5.63%		Your sample size would need to be	269	381	652

Source: sample calculator <http://www.raosoft.com/samplesize.html>

Analyses

In this part are being addressed the features of dependent and independent variables, their effects on the validation of raised hypotheses and their relationships between themselves. So, the following table brings the description of the variables extracted from the questionnaire.

Table 3: Research Variables description

Variable	Description of Variables	Data source
Dependent variable (Y)	Financial Performance - Profit / Loss Based on DMS (FPAHDMS)	Report query 2015-2024
Independent variable (X ₁)	System based financial performance (FKZDMS)	Questionary 2024
Independent variable (X ₂)	Support based decision making (DMS)	Questionary 2024
Independent variable (X ₃)	General and Special Reserves (RPV)	Questionary 2024
Independent variable (X ₄)	Asset and Liability Management via DMS (MAD)	Questionary 2024

The following figures are statistical values of research variables as presented in tabular form.

Table 4: Statistical description of variables

Variable	ob a	Mean	Std. Dev.	Min	Max
FPAHDMS	411	22.36437	22.6532	-2.3	94.32
FKZDMS	412	187.6105	109.8263	4.9	342.8
DMS	412	65.69959	73.52933	-1.8	303.1
RPV	409	16.00031	8.926923	.3	39.1
MDS	408	.575426	.3322049	0	2.37
MAD	412	1279.572	458.1689	133.3	1920

Based on above table it may be concluded that the standard deviation in the answers provided by the respondents are on the acceptable limit. Regarding the number of answers for which the variables are satisfactory, are based on the number of respondents. The next table show the results of correlation between variables.

Table 5: Correlation analyses of variables

	PF	FKZ	FM	RPV	GD	MAD
HDSS	1.0000					
FKZDS	0.6833	1.0000				
DSS	0.4265	0.7803	1.0000			
RPV	0.5717	0.9283	0.8126	1.0000		
MDS	0.2634	-0.4598	-0.3625	-0.4058	1.0000	
HDSS	0.5334	0.8916	0.5762	0.8697	-0.5782	1.0000

In this part are presented the standard multiple regression analysis, where through this statistical test is verified the validity of the hypotheses presented at the beginning of this study. Throughout results of standard multiple regression, whilst considering the level of significance is analyzed the impact of independent variables on the dependent variable and on the other hand the regression coefficients are interpreted.

Table 6: Standard multiple regression analysis

Source	SS	df	MS	T7 ¹ / R	No. Tt	-222
Model	70404.3465	5	1408	0.8693	Prob > F	= 58.34
Residual	52136.8574	216	241	.37434	R-squared	= 0.0000
Total	122541.204	221	554.	485085	Adj R-squared	= 0.5745
PF	Coef.	Std. Err.	t	p> 1 tl	[95% Conf. Interval]	
HDSS	.339292	.0306779	11.06	0.000	.2788256	.3997583
FKZDS	.1770626	.0315123	-5.62	0.000	.2391736	.1149516
DSS	.4916227	.4140731	1.19	0.236	.3245184	1.307764
RPV	9.41909	4.646249	-2.03	0.044	18.57688	.2612994
MDS	.0422754	.0075542	-5.60	0.000	.0571647	.0273861
Cons	21.20386	6.417775	3.30	0.001	8.554374	33.85334

Based on the results of the standard multiple regression analysis and the regression equation we can conclude that all the independent variables of this study are significant and are within the range of statistical reliability except for the general and specific stock variables. The coefficient of determination between these variables, the dependent variable and the independent variable included in this econometric model is 57.45% which represents an average level of explanatory nature of these variables and means that this econometric model is statistically stable.

β_0 - HDSS all factors are constant then the value of financial performance of companies is 21.20 units. This statement is correct because the significance level is $0.001 < 0.05$.

β_1 FKZDS it - DSS based financial performance if the decision increase per unit capital and keep other factors constant, then the PF will increase by 0.399 units. This statement is correct because the significance level is $0.000 < 0.05$.

β_2 DSS - if retained earnings increase by one unit while keeping other factors constant, then PF will increase by 0.177 units. This statement is correct because the significance level is $0.000 < 0.05$.

β_3 RPV - if total and specific reserves increase by one unit while keeping other factors constant, then PF will increase by 0.491 units. This statement is not correct because the significance level is $0.236 > 0.05$.

β_4 GDit - if donor grants increase per unit keeping other factors constant, then PF will increase by 9.41 units. This statement is correct since the significance value is $0.044 < 0.05$.

β_5 MDS - if asset and liability management increase by one unit while keeping other factors constant, then PF will increase by 0.422 units. This statement is correct since the significance value is $0.04 < 0.05$.

It can be concluded that all independent variables are significant, statistically significant and confirm the validity of the hypotheses of this study, with the exception of the general and specific reserve variable which is not significant.

Hypothesis testing is performed on the basis of anova analysis and regression analysis R squeeze. For more information see the following table:

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,986 ^a	,972	,953	16481,521

a. Predictors: (Constant FIN per DSS)

The R finds that all the hypotheses are proven which means: proprietary decision support systems affected the financial performance of depository corporations decision support systems have on retained earnings on the financial performance of depository corporations effect do decision support systems have on the management of assets and liabilities in the financial performance of multinational corporations.

Tab 8 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28174173868,505	2	14087086934,252	51,859	,005 ^b
	Residual	814921614,829	3	271640538,276		
	Total	28989095483,333	5			

a. Dependent Variable: FIN

b. Predictors: (Constant), DSS

Conclusion

The primary objective of this study is to assess the impact of decision-making systems (DMS) on the capital structure and financial performance of touristic enterprises. This study utilizes panel data analysis to evaluate these relationships. The results indicate that the overall level of information technology adoption for decision-making purposes is slightly above average, suggesting that touristic enterprises have a relatively strong foundation in technological integration. Moreover, the study finds that the highest adoption levels of decision-making systems are observed in companies where top management actively prioritizes information technology. This suggests that when management recognizes the strategic importance of digital decision-making tools, their implementation and effectiveness are likely to increase.

Higher levels of decision-making system adoption are particularly evident in the following cases:

- The CEO is a woman.

- The CEO is a younger individual (under 45 years of age).
- The company operates as a privately-owned enterprise.
- The company demonstrates strong financial performance.

Enterprises meeting two or more of these conditions tend to exhibit significantly higher levels of decision-making system usage. Additionally, professional respect for leadership (LMX dimension) and trust in management actions (mutual workplace trust) contribute to increased technological adoption. Leaders who are highly skilled and strategically competent create an environment conducive to the effective use of decision-making systems, ultimately improving business performance.

The degree of decision-making system adoption—encompassing its implementation, effectiveness, employee training, and management commitment—forms a critical dimension of modern technological utilization in touristic enterprises. The level of decision-making system adoption serves as an indicator of an organization's overall business performance. When considering the technical, operational, organizational, and behavioral impacts of decision-making technology, it is evident that higher technological integration has both direct and indirect positive effects on various business performance metrics. Indirect effects are realized through financial improvements: a higher degree of technological integration enhances financial performance, which in turn strengthens overall organizational performance.

This study employed panel data econometric models to assess the correlation between decision-making system adoption, capital structure, and financial performance in touristic enterprises. The empirical findings demonstrate that the independent variables—funds contributed by owners, retained earnings, special and general reserves, grants from donors, and net external assets—significantly impact financial performance at the 1%, 5%, and 10% confidence levels. These factors positively influence the financial stability and growth potential of touristic enterprises.

Based on these findings, it is recommended that touristic enterprises:

- ✚ Increase investment in decision-making technologies to enhance strategic financial decision-making and market responsiveness.
- ✚ Expand funding sources, particularly through owner contributions, retained earnings, and external grants, to strengthen financial resilience.
- ✚ Improve asset and liability management, ensuring a balanced capital structure that supports long-term profitability.
- ✚ Promote leadership awareness and employee training to maximize the benefits of decision-making systems in operational efficiency and investment strategies.

By integrating these recommendations, touristic enterprises can enhance profitability, optimize investment strategies, and achieve sustainable competitive advantages in the market.

References

- Ahmad, A. H. (2018). Auditing communication satisfaction among academic staff: An approach to managing academic excellence. *The Business Review*, 5, 330-333.;
- Akkirman, A. D., Harris, D. L. (2017). Organizational communication satisfaction in the virtual workplace. *Journal of Management Development*, 24(5), 397-409.;

- Allen N. J., Meyer, J. P. (2020). The Measurement and Antecedents of Affective, Continuance and Normative Commitment to the Organization. *Journal of Occupational Psychology*, 63, 1-18.;
- Danziger, J., Dunkle, D., (2018). Information technology and worker satisfaction. Center for research on information technology and organizations. School of Social Sciences: University of California;
- Dasgupta, S., Agarwal, D., Ioannidis, A., Gopalakrishnan, S. (2019). Determinants of information technology adoption: An extension of existing models to firms in a developing country. *Journal of Global Information Management*, 7(3), 41-49;
- Buhalis, D., 2019. "Technology in tourism—from information communication technologies to eTourism and smart tourism towards ambient intelligence tourism. *Tourism Review*, , 74(1), p. 557–581..
- Chang, D., 2021. Impact of the COVID-19 Pandemic on the Tourism Industry: Applying TRIZ and DEMATEL to Construct a Decision-Making Model. *Sustainability*., 13(14), p. 7610.
- Ismail, H et al., 2018. Inherent factors of family business and transgenerational influencing tourism business in Malaysian islands. *Journal of Tourism and Cultural Change*, 17(1), pp. 624 - 641.
- Khaki and Akin, 2020. Determinants of Capital Structure: New Evidence from GCC Countries (April 15, 2020). *Journal of International Studies* 13 (1).
- Marakas, G. M., 2018. *Decision Support Systems in the 21st Century* (4th ed.). Boston: Pearson.
- Sharda, Delen, Turban, 2019. *Analytics, Data Science, & Artificial Intelligence: Systems for Decision Support*. Boston: Pearson.
- Streimikiene, et al, 2021. Sustainable tourism development and competitiveness: The systematic literature review. *Sustainable Development*, Volume 29, p. 259–271.
- Suanpang, P, Pothipassa, P., 2024. Integrating Generative AI and IoT for Sustainable Smart Tourism Destinations.. *Sustainability*., 16(17), p. 7435.
- Turban, E. S. R. & D. D., 2019. *Decision Support and Business Intelligence Systems*. NY: Pearson Education.
- Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). "Smart tourism: foundations and developments." *Electronic Markets*, 25, 179–188.
- Khaki, A. R., & Akin, A. (2020), Determinants of Capital Structure: New Evidence from GCC Countries. *Journal of International Studies*, 13(1)., Available at SSRN: <https://ssrn.com/abstract=3085452>;
- Xiang, Z., & Fesenmaier, D. R. (2017). "Big data analytics, tourism design and smart tourism ecosystems." *Journal of Destination Marketing & Management*, 6(3), 255-257.
- Stohs, H. M., & Mauer, C. D. (n.d.). "The Determinants of Corporate Debt Maturity".
- Wild, J., and Wild K., (2024) "International Business – the challenges of globalization", 10th edition, Pearson;
- World Bank (2023). *Tourism for Development: Sustainable Growth Strategies in Emerging Markets*.
- European Investment Bank (EIB) (2023). *Investment in Tourism and Infrastructure in the Western Balkans*.
- Khaki, A., & Akin, B. (2020). The Role of Decision-Making Technologies in Enhancing Competitive Advantage. *Journal of Business Research*, 109, 233-245.
- UNWTO (United Nations World Tourism Organization) (2022). *Digital Transformation in the Tourism Industry*.