DOI https://doi.org/10.5281/zenodo.10049652#203

TWIST, 2024, Vol. 19, Issue 3, pp. 27-34

TWIST

Journal homepage: www.twistjournal.net

The Impact of Information Systems on Labor Efficiency in SEE Countries

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Abstract
The main purpose of this paper is to study the impact of information systems on work productivity in enterprises that originate or operate in a state in transition. The theoretical model used in this paper deals with the narrow areas related to the impact of information systems on work productivity, how these systems are used in order to increase the efficiency and performance of work in the organization. The research method used in the paper is a quantitative statistical method because the analysis of the research variables was done through the econometric model and the testing of the hypotheses through the T-test since we have n>30, broadly n is 100. The results showed the r value .634 for the following model Important is the safe using of SI, fast and accurate data for effective decision making, reliable SI in measuring productivity affect System affect work efficiency in your company to delete. According to the T-test, which is 43,540, we understand that SI affects work productivity. The conclusion of the study shows us that the use of information systems can improve the productivity and performance of the organization. These systems provide the tools and techniques to efficiently collect, store, process and disseminate information. By using them correctly, organizations can benefit from better communication, closer collaboration, harmonization of processes and easier access to information.

Keywords
Information system, Labour productivity, Effective, Decision

INTRODUCTION

Information systems have a significant impact on work productivity in organizations. These systems provide specialized tools and technologies to collect, store, process, and distribute information in an efficient and organized manner. Thus, they help improve communication, collaboration, and coordination within the organization, creating a more effective and optimized work environment. The use of IS helps to reduce the time of information preparation and increase accessibility for all members of the organization. By automating information processing processes such as document distribution, reporting, data analysis, and performance monitoring, employees can focus more on core tasks and help make informed decisions. Information technology is currently developing at a rapid pace. speed, so information technology plays a very important role and is a key element of society and business (Imran, 2023), (Hepu Deng, 2023). According to authors Aazam, Zeadally Harras Soh & Connolly Xu, David, & Kim, Eberhard Xu Ferreira, Oliveira, Silva, & da Cunha Cavalcanti and Ibarra, Ganzarain, Igartua: The world is experiencing the beginning of a new industrial revolution, which

is expected to have a profound impact on industries across the globe. This is a new era of connecting the physical to the digital world, strengthening human-machine interactions, and driving automation through integrations between intelligent machines and intelligent software. (Pereira, 2023). In the work system, the existence and role of information technology, have brought development using them as a support tool, but rather as the main weapon to support the success of service to the community, as well as improving the performance of employees. So information technology is a group of tools that help individuals in work and performing tasks (Pradanna Putra Tampi, 2022). According to the authors (Goasduff, Swoboda, Barnes, Carroll, Conboy, and Papagiannidis), voice-based digital assistants have recently been on the rise in terms of work environments, driven largely by the coronavirus pandemic in leading organizations to consider more We use a work from home model to ensure business continuity (Marikyan, 2022).

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EFFECTIVE USE OF INFORMATION SYSTEMS

Advances in computer-aided information technology in recent years have given rise to a variety of systems that managers can use to make and implement today's decisions. These systems are often designed from the ground up for a specific purpose and are very different from traditional electronic data processing systems. In order to truly benefit from information systems, they must be used effectively. However, such effective use can only be achieved by assessing their nature and motivations, which requires a solid understanding of information systems theory. (Andrew Burton-Jones, 2013). Applications are designed and deployed to support, not replace, managers responsible for decision making and execution. More and more people in organizations use so-called decision support systems to improve their management efficiency. (Alter, 1976). Effective and efficient use of information technology requires aligning I/T strategy with business strategy, something that has not been accomplished using traditional approaches in the past. The Strategic Alignment Framework applies a strategic alignment model that reflects the view that business success depends on the linkages between business strategy, information technology strategy, organizational infrastructure and processes, and I/T infrastructure and processes. Emphasis on the connection between information technology and enterprises can significantly affect the competitiveness and efficiency of enterprises. The essential question is how information technology enables firms to gain competitive and strategic advantages (Luftman, 1993). All aspects of the effective use of decision-making systems in digital organizations, covering topics such as data analysis, reporting systems, and performance management systems. Digital decision-making systems can help organizations identify emerging trends and opportunities, set clear goals, and use evidence-based data to make informed decisions and improve organizational performance (Laudon, 2007). According to Turban, E., Leidner, D., McLean, E., and Wetherbe, J., they examine how decision-making systems use information technology to support management decisions in modern organizations. Topics covered by the authors include data analytics, management information systems, project management information technology, and digital strategies for improving organizational performance. During their analysis, the authors also address the challenges and risks associated with the use of decision-making systems. They discuss the importance of information security, change management, and adaptability to technological innovations (Turban, 2015).

IMPACT OF INFORMATION SYSTEMS ON LABOR PRODUCTIVITY

According to author Willis: Productivity is an essential element in economic growth and wealth creation, driving social development in society, and according to Paul Krugman "Productivity is not everything, but in the long run, it is almost everything". Therefore, studying the impact of ICT on productivity is an important work, especially considering the specific trends of human society (Arslan, 2022). Information and communication technology is changing the world around us. According to the World Bank report, ICT infrastructure in developing countries attracts investment, creates employment and growth opportunities and increases fiscal revenues. It is also being used as a tool for growth, to make the system more responsive, cost-effective, and faster. The significant impact of ICT will drive countries to invest in improving and strengthening ICT networks. These networks will help both less developed and developed countries to increase their economic growth rates (Laddha, 2022). According to these authors (Bakos and Treacy, Rai, Patnayakuni, Seth, Ynzunza, and Izar,). How it helps reduce geographic disparities and makes employees more efficient, which is reflected in improvements in process, administration, and information management, thus positively affecting a company's productivity and competitiveness (Demian Abrego Almazána, 2017). Affecting all industries, the impact of digital transformation on business activities is different, as in manufacturing, trade, and service companies. The biggest interest of the manufacturing companies is in the control of the cost per product, the period of production as well as the division of the total costs of production, logistics, and administration. Their main challenges to be a competitive business are Flexible production, high-quality production, optimized procurement costs, and inventory management. Commercial businesses are interested in monitoring product purchase prices and focus on logistics and customer service costs (Soto-Acosta, 2020). According to Cyert & Mars, Marschak & Radner, and Galbraith), access to information should increase the productivity of information workers by:

a) support more quality decision-making,
b) promotes the development of management skills and
c) enabling more effective political operability.

Reducing information and uncertainty improves resource allocation and decision-making and reduces the cost of delay by improving the accuracy of action-to-action mind maps and delivering expected results (Sinan Aral, 2012). Authors such as Arrow and Stiglitz say that accurate information also mitigates risk aversion, enabling recruiters to make the right decisions faster, but according to Szulanski: reduced uncertainty helps recruiters make quick decisions about the right candidates before to the right customers, increasing the likelihood that searches will be completed faster, which increases job completion rates and the revenue the company earns. Sharing information or procedural knowledge can also improve employees' ability to deal with repetitive research questions, and recruiters report learning to deal with difficult professional situations through peer exchanges. The two most important network characteristics that can theoretically improve performance by providing access to information are structural diversity (the existence of "structural holes" in communication networks, according to Burt, and short path lengths to different parts of the network "intermodal high"; according to Freeman and Hansen. While social networking research examines these concepts through survey-based research that states that no one relates the flow of information in electronic mail networks to productivity—an important goal of how the flow of information in the performance of information workers (Sinan Aral, 2012). Previous research on IT productivity was based on the theory of revenue maximization of input cost increments assumed to be exogenously determined. However, empirical analysis of production models requires appropriate assumptions about the economic behavior of firms including cost minimization, profit maximization, and revenue maximization. Regression models cannot effectively explain decision-making estimates of production functions if they fail to include information about managerial decisions, for example, managers' use of estimated demand and input factor prices. Using behavioral assumptions in productivity analysis is very different from these simple regression models. Regression models examine whether there is a correlation between the dependent and independent variables, while behavioral models attribute this causal relationship. Estimates of production function parameters cannot be interpreted effectively if regression models fail to include information about managerial decisions e.g. managers' use of estimated demand and input factor prices). Using behavioral assumptions in productivity analysis is very different from these simple regression models. While a regression model examines the existence of a correlation between independent and dependent variables, a behavioral model attributes such a causal relationship to (Nirup M. Menon, 2000).

DECISION-MAKING SYSTEMS TOWARD WORK EFFICIENCY

Decision-making systems have a significant impact on work efficiency in organizations. These systems include the methods and processes used to make decisions at the individual, group, or organizational level. Through the use of appropriate decision-making systems, organizations can improve their efficiency in various ways. An important aspect of decision-making systems toward work efficiency is increased transparency and accessible information. By providing convenient access to relevant information, employees can make informed decisions and perform their duties more efficiently. This includes securing important information, distributing it fairly, and facilitating communication and information sharing in the organization. According to the study, decision-making systems in outsourced software development projects serve as a tool to monitor, control and manage work activities and processes. This includes establishing mechanisms to define and monitor the goals, performance, and roles involved in the project. A good decision-making system ensures clear access to information, the definition of rules and procedures, and the division of responsibilities and authority. The study also points out that decision-making systems can help coordinate the work between different organizations and their effective interaction. By defining separate decision-making processes and rules, organizations can facilitate collaboration and communication, improving the time and quality of work delivery. In conclusion, the study proves that decision-making systems have a significant impact on work efficiency in outsourced software development projects. The use of these systems provides the necessary control, process management, and work coordination, bringing benefits to project performance and results. A deep understanding of these systems and their appropriate implementation can improve the efficiency and success of such projects (Vivek Choudhury, 2003) According to him, he explained how decision-making systems lead to work efficiency in organizations. He believes that decision-making systems are essential for managing organizations successfully. These systems give organizations the structure and processes needed to make informed decisions and follow a clear direction. Through the use of decision-making systems, organizations can identify, evaluate and solve the challenges they encounter in their work. This helps them improve their efficiency in various aspects of work, increasing productivity, coordination, and cooperation between team members and different departments. Author J. M. Bryson devotes a paragraph to explaining how decision-making systems lead to work efficiency in public and non-profit organizations. Bryson emphasizes that decision-making systems have the essential purpose of achieving the goals and sustainability of organizations in sectors. Through the strategic planning process, organizations develop structured and informed decision-making systems that help define the organization's goals, discover opportunities and challenges, and determine effective measures to address them. Decision-making systems in public and nonprofit organizations include stakeholder participation, evidence-based data, analysis of external and internal circumstances, and alternative evaluation processes. These systems help improve work efficiency, facilitating informed decision-making, communication, and collaboration between different employees, and the realization of the organization's strategic goals (Bryson, 2018). The authors examine how decision-making systems affect work efficiency through knowledge management. They analyze the role of decision-making systems as support for knowledge management in organizations and their impact on organizational performance. The study identifies some key aspects of decision-making systems for knowledge management. Technological systems, as the basis of decision-making systems,

improve the access and sharing of information within the organization. In addition, organizational systems, such as defined processes and structures, provide direction and guidance for knowledge management. Embedding organizational culture, where knowledge sharing is encouraged and supported, promotes the effective use of employee knowledge and its impact on organizational performance (Lee, 2014).

METHODS

Quantitative research methods are used to explain phenomena, such as statistics, by collecting numerical data that is analyzed using basic mathematical methods. They mainly try to use different tools like tests, interviews, experiments, surveys, etc. Theoretical methods are qualitative and claim to explore meaning, purpose, or reality in relation to the subject of study, ethnography, basic theoretical research, various phenomena, and narratives.

This study uses questionnaires to answer the purpose of this study is to examine how information systems affect labor productivity. The data collected from the questionnaires were filled in by employees working in different companies as well as public and private enterprises operating at the national level. The data were collected throughout the Republic of Kosovo and included 100 respondents, 27 males and 73 females. Data were collected throughout the Republic of Kosovo after an email was sent to managers of various companies operating in several large centers and managers of several public enterprises asking if they would like to complete the questionnaire. The scales focus on three main categories, namely IT system quality impact, satisfaction, and clarity; the questionnaires are written in the Albanian language. These questions were mainly pertaining to employee perceptions of IS, knowledge, their use, ease of use, and whether the use of IS has an impact on work productivity as well as work efficiency. It is worth noting that we included the level of education and gender in addition to the effects of variables such as quality, satisfaction, and clarity of human information systems. These variables of gender and education can explain SI for several reasons. The reason is that by including gender, it is intended to examine whether there are differences in the use of SI between females and males. In terms of educational level, purpose is to investigate the degree to which educational level significantly affects employees' perceptions of the use of Si.

Confidence Level:	95%	
Margin of Error:	5	
Population Proportion:	50	Use 50% if not sure
Population Size:	100	Leave blank if unlimited population size.

Table 1 Description of the sample

Gender * What is your position in the company Cross tabulation

Count		What is your position in the company				Total
		Employee	Low level manager	Middle level manager	High level manager	
Gender	Female	54	7	10	6	77
	Male	6	8	5	4	23
Total		60	15	15	10	100

According to the above Table 1, we can conclude that out of 100 respondents, 60 of them are employees, of which 54 are women and 6 are men, 15 respondents work as low managers, of which 7 are women and 8 are men. We have 10 middle-level managers where 10 of them are women and 5 of them are men. While we have a total of 10 high-level housekeepers, 6 of them are women and 4 are men.

Econometric Model and Variable Design

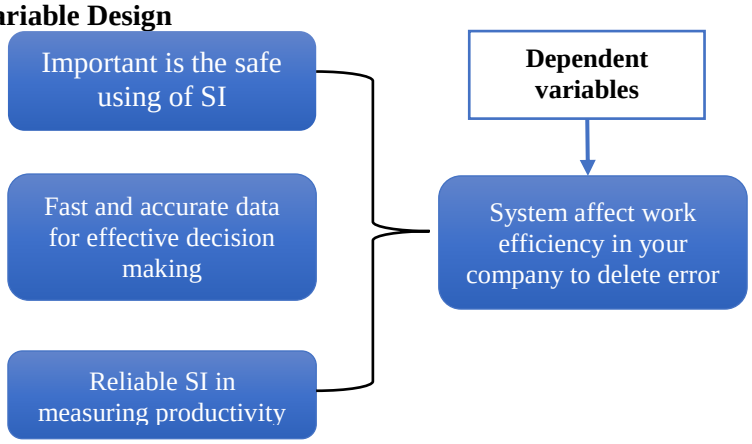

Fig. 1 Econometric model of research variables

RESULTS

To analyze the relationship between the study variables during the design of this study, correlation analysis data will be provided. Through correlation analysis, the value of the parameter r is obtained, which indicates the strength of the relationship and the direction of the relationship between the variables. Since this paper is based on primary data research, the Spearmonovit coefficient in the questionnaire will be used for correlation analysis.

Table 1 Correlation analyses of variables

Correlations			What is your position in the company	Reliable SI in measuring productivity	Fast and accurate data for effective decision making	important is the safe using of SI	system affect work efficiency in your company to delete error
Spearman's rho	What is your position in the company	Correlation Coefficient	1.000	.512**	**.646****	**.587****	.437**
		Sig. (2-tailed)	.	.000	**.000**	**.000**	.000
		N	100	100	100	100	100
	Reliable SI in measuring productivity	Correlation Coefficient	.512**	1.000	**.809****	.779**	.662**
		Sig. (2-tailed)	.000	.	**.000**	.000	.000
		N	100	106	106	106	106
	Fast and accurate data for effective decision making	Correlation Coefficient	.646**	.809**	1.000	**.908****	.704**
		Sig. (2-tailed)	.000	.000	.	**.000**	.000
		N	100	106	106	106	106
	important is the safe using of SI	Correlation Coefficient	.587**	.779**	**.908****	1.000	.713**
		Sig. (2-tailed)	.000	.000	**.000**	.	.000
		N	100	106	106	106	106
	system affect work efficiency in your company to delete erorr	Correlation Coefficient	.437**	.662**	.704**	.713**	1.000
		Sig. (2-tailed)	.000	.000	.000	.000	.
		N	100	106	106	106	106

**. Correlation is significant at the 0.01 level (2-tailed)

From Table 2 it can be concluded that there is a clear positive correlation between the variables and the relationship between the variables is stronger and more important is the safe use of SI Fast and accurate data for effective decision making.908** .000 important is the safe use of S Fast and accurate data for effective decision making 908** .000

Fast and accurate data for effective decision-making Reliable SI in measuring productivity. 809** .000. Fast and accurate data for effective decision making What is your position in the company.646**.000. important is the safe using of SIWhat is your position in the company? 587** .000

Moreover, based on the positive correlations, we have the authority to test these correlations to find the consequences of these variables. For this purpose, regression analysis will be used, as described in the Methods section, where the acceptance of the econometric model or model will first be presented..

Table 2 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.796[a]	.634	.624	.59568792	.634	58.999	3	102	.000

a. Predictors: (Constant), Reliable SI in measuring productivity, important is the safe using of SI, Fast and accurate data for effective decision making

b. Dependent Variable: system affect work efficiency in your company to delete erorr

In the above table, it is concluded that this econometric model is acceptable because r is 624. The independent variables are: What is your position in the company, Reliable SI in measuring productivity, Fast and accurate data for effective decision making, important is the safe use of SI, System affect work efficiency in your company to delete error that affects the variable in System affect work efficiency in your company to delete error. According to this, we find that researchers, based on the details or questions separately of these variables can enrich this model. In the table below, the ANOVA regression model is presented to review the determinism of the model.

Table 3 ANOVA[b] model regression

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	62.806	3	20.935	58.999	.000[a]
	Residual	36.194	102	.355		
	Total	99.000	105			

a. Predictors: (Constant), Reliable SI in measuring productivity, important is the safe using of SI, Fast and accurate data for effective decision making

b. Dependent Variable: system affect work efficiency in your company to delete error

The deterministic model justifies the statement because the coefficient f is 58.999 which shows that the average positivity of the model is acceptable, and the values in the following table showing the coefficient values for the study variables are correct or usable for any other study.

Table 4 Coefficients[a] of regression model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.00416	.058		.000	1.000
	important is the safe using of SI	.363	.171	.363	2.129	.036
	Fast and accurate data for effective decision making	.183	.204	.183	.895	.373
	Reliable SI in measuring productivity	.285	.128	.285	2.229	.028

a. Dependent Variable: system affect work efficiency in your company to delete erorr

In this paper, 3 hypotheses or assumptions are presented as the H0 hypotheses. The hypotheses are:

- *H01 It's important the safe using of SI*
- *H1 It's not important the safe using of SI*
- *H02 Fast and accurate data influence effective decision-making*
- *H1 Fast and accurate data does not affect effective decision making*
- *H03 Reliable SI in measuring productivity*
- *H3• SI is not reliable in productivity measuring*

According to the law of hypothesis analysis which states that if n>30, then the T-test should be used. The above hypotheses were analyzed using the t-test since we had 100 respondents. The table above shows the t values for each hypothesis.

DISCUSSION

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
How reliable is SI in measuring productivity?	43.540	99	.034	3.370	3.22	3.52
How does SI provide you with relevant, fast and accurate data for effective decision making?	41.454	99	.045	3.360	3.20	3.52
How important is the use of SI	41.001	99	.024	3.470	3.30	3.64

In the table above, we can find that the value of the hypothesis: How reliable is SI in measuring productivity is 43,540, where according to this result, we can say that SI is sufficiently reliable in measuring productivity for more efficient decision-making. Reliability is a characteristic of any computer-related component (for example, software, hardware, or network) that it consistently performs to its specifications (Shaft, 2004). In the framework of the information system proposed by Chervany, Dickson, and Kozar, decision effectiveness is used. Other measures such as decision confidence and time to decision were also used. The framework uses decision effectiveness and decision confidence for the construct of satisfaction in decision making (Pratyush Bharati). The second hypothesis is How does SI provide you with relevant, fast, and accurate data for effective decision making, has a value of 41.454, where according to this value SI provides

relevant, fast, and accurate data for effective decision making. Successful managers must make critical decisions—all quick and accurate decisions based on timely, relevant, up-to-date, and organized information. Whether decisions are critically important and complex, or simple and routine, all decisions must be based on information—and must be within the decision maker's reach. Business is not enough that managers must be skilled in functional aspects such as engineering, finance, production, marketing, etc. Or if he or she understands traditional functions such as planning, staff organization, and control, but must be prepared in system and management methods, with the ability to participate effectively in the design, implementation, and use of computer analysis in information system (O'brien, 2006). The third hypothesis is How important the use of SI, also this hypothesis has positive values, its value is 41.001, Skill is vital for the innovative and competitive performance of an organization in the contemporary business environment. This is argued based on current considerations in the IT strategy literature IT Investments and Skills Affect Business Performance Through Three Key Organizational Factors Capabilities (agility, digital options and business vigilance) and strategic processes (skills) development, entrepreneurship and cooperation) (V. Sambamurthy, 2003).

CONCLUSION

The use of information systems can increase the efficiency and performance of work in the organization. These systems provide tools and technologies to collect, store, process, and distribute information efficiently. Through their right use, organizations can take advantage of the advantages of better communication, closer collaboration, coordination of processes, and easier access to information. In terms of labor productivity, information systems have different impacts. For example, they reduce the time to prepare information, making it immediately available to all members of the organization. This helps increase the efficiency and accuracy of decisions, as employees can rely on fresh and accurate information to make informed decisions. Information systems also help in improving business setup and reducing information processing time. By automating routine tasks and processing data in an automated manner, employees can focus on more critical and creative tasks. This increases the efficiency and productivity of work, affecting the performance of the organization in general.

- ✓ Businesses need to have access to innovation, research, planning, and innovative strategic developments.
- ✓ The use of fiscal incentives to encourage investments in the business sector in research and development;
- ✓ Increasing the interest of businesses in the development of employees' knowledge;
- ✓ Get subsidies from the government for the purchase of new machines, and creative products;
- ✓ To cooperate with international companies.

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