

Preliminary Paper

UDC: 658.14

Paper Received: 08/07/2021

Rad Accepted: 10/08/2021

INTEGRATED INFORMATION SYSTEMS AS SUPPORT TO CONTROLLING A FACTOR OF SUCCESSFUL BUSINESS OF THE COMPANY

PhD Valentina Vinšalek Stipić

The Polytechnic "Nikola Tesla" in Gospić, Gospić, Croatia

valentinavinsalek@net.hr

Darko Gambiroža, bacc. oec., student

The Polytechnic „Marko Marulić“ in Knin, Knin, Croatia

darkogambiroza@gmail.com

ABSTRACT

The goal of every profit-oriented company is to meet the needs of customers and thus make a profit. However, business processes are regulated by system regulators that respond to internal and external information. Quality information, that which is timely, accurate, realistic, significantly shortens the time required for the reaction and thus provides a competitive advantage. Integrated information systems use real-time data and thus enable realistic goal setting and control. In parallel with the development of integrated information systems, a new function in the company was developed - controlling. The role of controlling in a modern company is inseparable from management, because it is the controllers who provide the management with quality information for making the right business decisions. It is the process of controlling planned and realized costs that is one of the most important processes within the company that takes place through the function of controlling. Integrated information systems in companies lead to a rationalization of the time required to perform the controlling process because it significantly shortens the time required to enter and process the data necessary for the successful operation of the company. Such a successful integration was demonstrated on the example of the SAP ERP system, which through the FICO module enables the analysis of all data in real time and thus is an in-

dispensable tool for creating information for making adequate business decisions. The aim of this paper is to prove to what extent integrated information systems controlling functions contribute to the profitability of the company's operations.

Keywords: *integrated information systems, controlling, business performance*

1. INTEGRATED BUSINESS SYSTEM

In systems theory, a system is considered a set of objects (system elements or subsystems) united by connections between them, whereby the objects act as a whole.¹ Subsystems can be broken down into their components as needed, but elements cannot. Every system is a subsystem of a supersystem, which is usually characterized by its environment, with which it exchanges substances, energy or information.² That's how the company behaves as a system, and with its organizational units it forms components that are aimed at a common goal.

Timely, accurate and reliable information is a competitive advantage in business. Although all authors do not agree on the qualitative characteristics that each piece of information should have, they agree that all available information is not both high-quality and useful, but can be unusable or even influence the making of a wrong decision.³ The information system (IS) of the company includes everything related to the collection, storage, processing and distribution of data and information.⁴ From the point of view of the connection of components within the system, there are different types of business information systems. Business systems are built in organizational units as partial, parallel and integral.⁵ An integrated business system is primarily an information system, actually an organized set of elements, components that in interaction perform the functions of collecting, processing, storing and disseminating (issuing for use) information.⁶

¹ Teorija sustava. *Hrvatska enciklopedija, mrežno izdanje*. Leksikografski zavod Miroslav Krleža, 2021., from <https://enciklopedija.hr/natuknica.aspx?id=60892>

² Teorija sustava. *Hrvatska enciklopedija, mrežno izdanje*. Leksikografski zavod Miroslav Krleža, 2021., from <https://enciklopedija.hr/natuknica.aspx?id=60892>

³ Oluić, A. (2008). Kvaliteta računovodstvenih informacijskih sustava u Republici Hrvatskoj. Zbornik Ekonomskog fakulteta u Zagrebu, 6 (1), p. 243.

⁴ Sekso, M. (2011). Uloga informacijskih sustava u upravljanju materijalima i zalihama. Zbornik radova Međimurskog veleučilišta u Čakovcu, 2 (1), p. 126.

⁵ Javorović, B. i Bilandžić, M. (2007). Poslovne informacije i business intelligence. Zagreb: Golden marketing-Tehnička knjiga, p. 20.

⁶ Panian, Ž. i Strugar, I. (2013). Informatizacija poslovanja. Zagreb: Ekonomski fakultet, p. 23.

2. BUSINESS SYSTEM MANAGEMENT

Management of the business system is performed at several levels: operational management, tactical management, strategic management.⁷ Operational management is the lowest level of management, which manages daily business activities that are in accordance with the decisions of higher levels. Tactical management represents the middle level of management that deals with medium-term problems such as the allocation of available resources in order to allocate available resources as efficiently as possible, while strategic management refers to the highest level of management.

How well an information system will be developed depends on the needs, size and financial strength of the organization. ERP systems (Enterprise Resource Planning) have a strong influence on the business activities of large multinational companies, but also on small and medium-sized enterprises.⁸ The two basic functions of the information system are the management and development of business processes. The business system management function is further divided into three special functions: documentation function, information function, management function.⁹ The documentation function provides a historical record of events and provides the basis for analysis, the information function provides real-time information, for example the stock status, and the management function provides a complete information base for management. The importance of the information system for the company: it reduces costs, increases efficiency, enables planning, control and evaluation, and reduces uncertainty.

SAP (System Applications Products) is a standard integrated software for planning and monitoring the company's operations with the following characteristics: it is based on a universal economic model which, with own modules and applications, provides a thorough insight into the data and processes within the company, the structure of the modules provides various independent applications where it is possible to select individual functions.¹⁰ All economic functionalities are fully integrated, which avoids duplication of data, high speed of work is provided by online data processing.¹¹

⁷ Garača, Ž. (2004). Poslovna informatika. Split: Sveučilište u Splitu, Ekonomski fakultet, p. 201.

⁸ Garača, Ž. (2011). Factors related to the intended use of ERP systems. *Management*, 16 (2), p. 23.

⁹ Garača, Ž. (2004). Poslovna informatika. Split: Sveučilište u Splitu, Ekonomski fakultet, p. 203.

¹⁰ Sekso, M. (2011). Uloga informacijskih sustava u upravljanju materijalima i zalihama. *Zbornik radova Međimurskog veleučilišta u Čakovcu*, 2 (1), p. 129.

¹¹ Sekso, M. (2011). Uloga informacijskih sustava u upravljanju materijalima i zalihama. *Zbornik radova Međimurskog veleučilišta u Čakovcu*, 2 (1), p. 129.

3. CONTROLLING – FACTOR OF SUCCESSFUL MANAGEMENT

Controlling is knowledge and art, a management philosophy based on the economic logic of rationality. A set of multidisciplinary knowledge that is needed to be based on countless data from companies and beyond, collected the optimal amount of information that managers need for making quality decisions.¹² Controlling processes the collected data and distributes it to the management in the form of information.¹³ The fundamental function of controlling is informational, and its role is derived from management's need for information, which is to provide business indicators that will timely signal unwanted deviations from the plan and also indicate their causes, so that managers can intervene in a timely manner with adequate business decisions.¹⁴ Through the instruments of coordination and integration, controlling influences the optimization of processes and expenditures, and thus the greater success of operations.¹⁵

Calculation and comparison of costs and effects is the most common controlling instrument in domestic business practice and is based on accounting and operational plan data. The application facilitates the calculation process, enables control of business economics, creates a basis for choosing between individual decision-making alternatives, and provides insight into the success of business. The key elements of the calculation of costs and effects are the classification of costs according to different criteria (types, locations, cost bearers) and the choice of the method of cost calculation (full, partial, planned, marginal, target or process costs). Comparison of costs and effects is possible from the aspect of actual, normal (most often average) and planned sizes and forms the basis of operational management and decision-making.¹⁶

4. INTEGRATED INFORMATION SYSTEM AS SUPPORT TO CONTROLLING

The indispensability of the information system in modern business, as well as the function of controlling in a modern company, is not in doubt, but there is a clear link between them. The company is a dynamic system, the growth

¹² Švigir, A. (2009). Kontroleri - dobri dusi menadzera, from <https://www.poduzetnistvo.org/news/kontroleri-dobri-dusi-menadzera>

¹³ Popović Petrušić, H. (2017). Kontroling kao instrument uspješnog upravljanja zalihama. FIP - Financije i pravo, 5 (1), p. 107.

¹⁴ Rupčić, N. i Datković, A. (2013). Kontroling – pretpostavka djelotvornoga rada menadžmenta. Praktični menadžment, 4 (1), p. 44.

¹⁵ Popović Petrušić, H. (2017). Kontroling kao instrument uspješnog upravljanja zalihama. FIP - Financije i pravo, 5 (1), p. 120.

¹⁶ Osmanagić Bedenik, N. (2017). Instrumenti integriranog i kriznog kontrolinga. U: Meter, M. (ur.) Kontroling u praksi Instrumenti kontrolinga. Zagreb: Poslovna učinkovitost d.o.o., p. 32.

and development of which increases its complexity. Developed organizations have a more developed structure and division of labor, so that its whole as the bearer of general functions is broken down into parts with different special functions. Each part is connected and dependent on other parts, and together they form a certain whole. For this reason, differentiation and specialization are linked for the unification and for the subordination of parts, while additional differentiation and specialization require the need for additional integration and coordination.¹⁷

It follows from the above that the development of the controlling function took place in parallel with the development of information business systems. Accurate and timely information is the basis for analysis and therefore the basis for decision-making. In the context of management, a special place in the business system is occupied by controlling, which "produces" information, which is necessary for decision-making.¹⁸ An example of an integrated information system is the SAP ERP information system. SAP ERP system within which is the SAP FICO model used for processes in financial accounting and controlling. FI stands for Financial Accounting and CO stands for Controlling. SAP CO has an important role for decision makers and for creating internal reports.¹⁹

5. RESEARCH METHODOLOGY

Companies always depend on their stakeholders. The figures of business results expected by the management of the company, as well as the analysts themselves, must be oriented towards the future. Management needs numbers, and it is controlling that organizes the planning process by checking whether the information is useful. A company will never be rewarded with excellence if it does not have a well-integrated controlling process.²⁰ The dynamics of changes in the external environment of the company are increasingly pronounced, which results in the need for a whole series of tools and instruments implemented by operational controlling, in order to ensure long-term business success and achieve long-term competitiveness on the market. Numerous authors and researchers study information systems as a support for business decision-making, but there is no knowledge about research on the

¹⁷ Osmanagić Bedenik, N. (2004). *Kontroling-Abeceda poslovnog uspjeha*, Školska knjiga, Zagreb, p. 90.

¹⁸ Bolfek, B. (2010). Model kontrolinga kao podrška menadžmentu pri donošenju odluka. *Ekonomski vjesnik*, XXIII (1), p. 111 .

¹⁹ Preuzeto sa <https://www.saponlinetutorials.com/what-is-sap-fico-about-sap-fico-module/>

²⁰ Vinšalek Stipić, V. i Nakić, S. (2020). Kontroling – čimbenik stvaranja dodane vrijednosti poduzeća. *Oeconomicus* 13, 30(05), p. 4., from <https://www.bib.irb.hr/1090538>

connection between information systems and company performance.²¹ From the above, there was a need to conduct research on the impact of integrated information systems on the controlling function on the success of the company's operations.

5.1. AIM AND HYPOTHESES OF THE RESEARCH

In the modern business environment, the goal of every system is to achieve profitability, and the main goal of the research is to prove to what extent integrated information systems of the controlling function contribute to the profitability of the company's. While the secondary goals of the research are: to prove whether there is a positive attitude of the controller about the importance of integrated information systems for performing the controlling function, and whether the business information systems of Croatian companies are fully adapted to achieve the goals and tasks of the controlling function. Accordingly, the research hypotheses were set:

H1 – integrated information systems of the controlling function significantly contribute to the profitability of the company's

H2 – executors controlling functions have a positive attitude about the importance of an integrated information system for performing the controlling function

H3 – the business information systems of Croatian companies are fully adapted for the execution of controlling goals and tasks

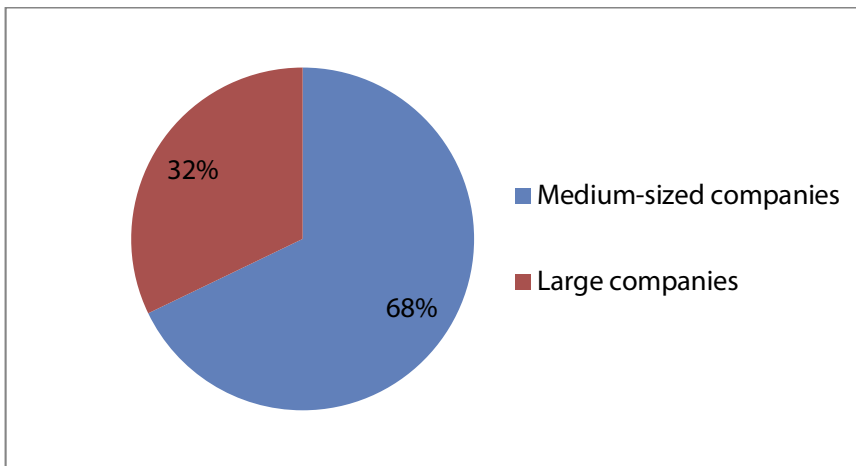
Based on the set hypotheses, the independent variable is the information (integrated) system of the controlling function (IS), which was obtained from the questionnaire using the Likert scale of intensity as follows: 1 – I absolutely disagree; 2 – I do not agree; 3 – I neither agree nor disagree; 4 – I agree; 5 – I absolutely agree. The survey questionnaires were filled out by the executors of the controlling function, randomly selecting large and medium-sized companies, via e-mail or by telephone in the period from June 1 to June 15, 2021. A total of 56 valid survey questionnaires were collected for this empirical research. The dependent variable, the company's profitability, which was obtained from the company's financial statements as of 12/31/2020., it was measured by the indicators Return on sales – ROS, Basic earning power – TSZ and Return on equity – ROE. The analysis of the obtained research results was made using linear correlation and a regression model in the statistical program SPSS Statistics 17.0, and the obtained results are below.

²¹ Pilepić, Lj., i Šimunić, M. (2009). Applying information technology to business decision-making in the hotel enterprises. *Ekonomski misao i praksa*, (2), p. 411-428., from https://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=74938

5.2. RESEARCH RESULTS

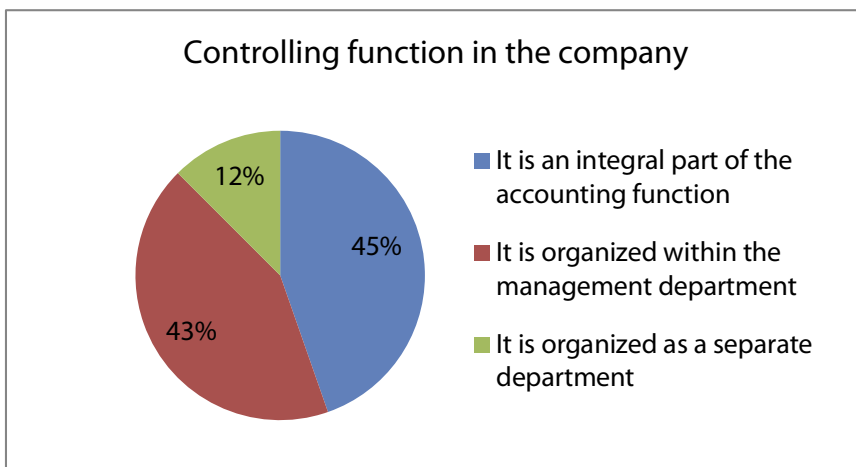
The total research sample is 56 respondents who perform the function of controlling in Croatian companies. The research covered 38 medium-sized companies and 18 large companies, while the relative ratio is shown in graph 1, while graph 2 shows how the controlling function was established in the companies from the observed sample.

Chart 1. Sample of companies by size



Source: Author's research

Graph 2. Establishment of the controlling function in the observed companies



Source: Author's research

In order to fulfill the assumptions of further research, descriptive statistics of all IS, ROS, TSZ, ROE variables were first made, which is shown in table 1. In the display of descriptive statistics, the basic statistical values for each variable are shown: arithmetic mean, median, mode, standard deviation, variance, percentiles, minimum and maximum value.

Table 1. Descriptive statistics of variables IS, ROS, TSZ, ROE

		Statistics			
		IS	ROS	TSZ	ROE
N	Valid	56	56	56	56
	Missing	0	0	0	0
Mean		3,6250	5,4811	1,7971	11,5202
Median		3,7500	4,5000	3,6050	6,3850
Mode		3,75	8,05 ^a	1,55 ^a	1,49
Std. Deviation		,60302	13,50378	13,46612	17,74047
Variance		,364	182,352	181,336	314,724
Minimum		2,25	-31,38	-85,20	-20,94
Maximum		4,75	52,41	27,21	83,64
Percentiles	25	3,0625	,6450	1,5350	1,4975
	50	3,7500	4,5000	3,6050	6,3850
	75	4,0000	9,9475	4,9500	16,4550

Source: Author's research

From the multiple regression model shown in table 2, the multiple correlation coefficient (0.127) is visible, which is a weak positive correlation between the information (integrated) system of the controlling function (IS) and the profitability of the company measured by indicators ROS, TSZ and ROE. That is, the integration of the information systems of the controlling function is not directly correlated with the company's profitability. It is evident from the coefficient of determination that 8.1% of variations in the dependent variable result in variations of the dependent variable. With the given significance level of 0.05 and with the number of degrees of freedom (3.52), the basic hypothesis is partially confirmed, while Durbin-Watson has a value of 2, which indicates the absence of autocorrelation of relational errors.

Table 2. Multiple regression analysis of the connection between the integrated information systems of the controlling function and the company's profitability

Model Summary ^a										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,285 ^a	,081	,028	,59440	,081	1,536	3	52	,216	2,114

a. Predictors: (Constant), ROE, ROS, TSZ
 b. Dependent Variable: IS

Source: Author's research

Multiple regression analysis using the ANOVA table shows an F ratio greater than 0.05 and the number of degrees of freedom ($F_{3, 52} = 1.536, p > 0.001$) indicates that the analyzed variables predict statistical significance, that is, the variations in the regression model are not the result of chance. So from a p-value that is greater than 0.05, it is concluded that the independent variable does not statistically significantly predict the dependent variable, in fact the regression model statistically significantly predicts the variations of the dependent variable.

Table 3. Multiple regression ANOVA analysis

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,628	3	,543	1,536	,216 ^a
	Residual	18,372	52	,353		
	Total	20,000	55			

a. Predictors: (Constant), ROE, ROS, TSZ
 b. Dependent Variable: IS

Source: Author's research

In order to complete the interpretation of the multiple regression model, the obtained data were analyzed in Table 4, which forms the third part of the regression model. Given that the dependent and independent variables were measured in different units of measurement, standardized coefficients were interpreted, thus ensuring the comparability of the variables of the multiple regression model. From the predictive power of significance $p > 0.001$, which partially confirms the hypothesis H1, there is a positive weak statistical connection of the integrated information system with the company's profitability.

Table 4. Multiple regression analysis - coefficients

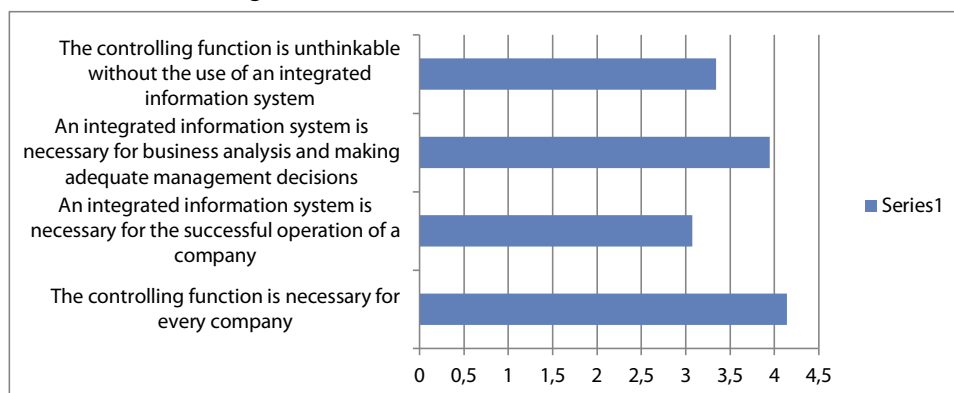
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,618	,100		36,161	,000
	ROS	-,003	,008	-,077	-,421	,676
	TSZ	,015	,008	,333	1,780	,081
	ROE	-3,762E-5	,005	-,001	-,008	,994

a. Dependent Variable: IS

Source: Author's research

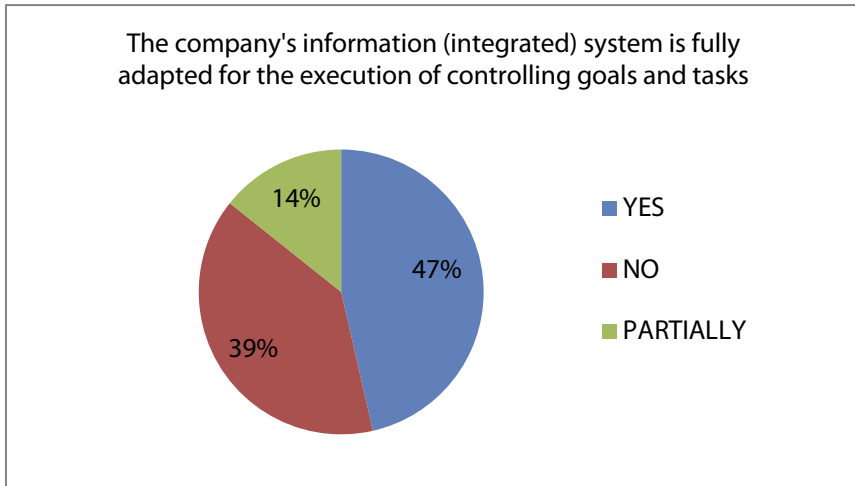
Through the analysis of the survey, Graph 3 shows the data obtained for individual questions about the attitude and importance of the integrated information system for performing the controlling function. It can be seen that the respondents believe that the controlling function is necessary for every company (4.1429), as well as the necessity of an integrated information system for analyzing the company's operations (3.9464). However, the respondents partially agree with the statement that integrated controlling systems are necessary for the success of the company's operations (3.0714), thus confirming the second hypothesis, those performing the controlling function have a positive attitude about the importance of an integrated information system for performing the controlling function.

Graph 3. Importance of integrated information systems for performing the controlling function



Source: Author's research

Graph 4. Adaptation of information systems to the function of controlling



Source: Author's research

The analysis of the survey revealed that the company's integrated information systems are not fully adapted to the execution of controlling goals and tasks, which is graphically shown in graph 4. Based on the results obtained, it can be concluded that hypothesis H3 is partially confirmed.

The development of information systems, especially their role in performing the controlling function, is unquestionable. Precisely because of the aforementioned and obtained research results, there is a visible need to monitor the development of integrated information systems of the controlling function and conduct further research on a more representative sample on the impact of integrated information systems on the success of the company's operations.

6. CONCLUSION

Controlling enables management to manage business results in order to achieve business goals, which are measured by the company's profitability. The research conducted on a sample of 56 respondents, although the hypotheses were partially confirmed, proved that the purpose and goal of the establishment and operation of the controlling function in companies is extremely important, and the necessity of an integrated information system for the analysis of the company's operations. The results of the research were obtained on the importance of integrated information systems for performing the controlling function. Hypothesis H1 was partially confirmed, in fact it was proven that there is a positive weak statistical relationship between the integrated information system and the company's profitability. Based on the obtained research re-

sults, it can be concluded that there is an awareness of the importance of the controlling function, as well as the necessity of integrated controlling information systems to achieve the profitability of company's. However, it is necessary to fully adapt the company's integrated information systems to fulfill the goals and tasks of controlling in order to achieve long-term profitability.

LITERATURE

1. Bolfek, B. (2010). Model kontrolinga kao podrška menadžmentu pri donošenju odluka. *Ekonomski vjesnik*, XXIII (1), 94-112.
2. Garača, Ž. (2004). *Poslovna informatika*. Split: Sveučilište u Splitu, Ekonomski fakultet.
3. Garača, Ž. (2011). Factors related to the intended use of ERP systems. *Management*, 16 (2), 23-42.
4. Javorović, B., & Bilandžić, M. (2007). *Poslovne informacije i business intelligence*. Zagreb: Golden marketing-Tehnička knjiga.
5. Oluić, A. (2008). Kvaliteta računovodstvenih informacijskih sustava u Republici Hrvatskoj. *Zbornik Ekonomskog fakulteta u Zagrebu*, 6 (1), 241-254.
6. Osmanagić Bedenik, N. (2017). Instrumenti integriranog i krznog kontrolinga. U: Meter, M. (ur.) *Kontroling u praksi Instrumenti kontrolinga. Poslovna učinkovitost d.o.o.*, 21-36.
7. Osmanagić, N. B., & Lizzul, A. (2015). Obilježja kontrolinga u dioničkim društvima na Zagrebačkoj burzi. *Zbornik Ekonomskog fakulteta u Zagrebu*, 13 (1), 115-128.
8. Panian, Ž., & Strugar, I. (2013). *Informatizacija poslovanja*. Zagreb: Ekonomski fakultet.
9. Pilepić, Lj., & Šimunić, M. (2009). Applying information technology to bussines decision-making in the hotel enterprises. *Ekonomski misao i praksa*, (2), 411-428.
10. Popović Petrušić, H. (2017). Kontroling kao instrument uspješnog upravljanja zalihama. *FIP - Financije i pravo*, 5 (1), 107-121.
11. Rupčić, N., & Datković, A. (2013). Kontroling – pretpostavka djelotvornoga rada menadžmenta. *Praktični menadžment*, 4 (1), 0-0.
12. Sekso, M. (2011). Uloga informacijskih sustava u upravljanju materijalima i zalihama. *Zbornik radova Međimurskog veleučilišta u Čakovcu*, 2 (1), 125-133.
13. Švigir, A. (2009). Kontroleri - dobri dusi menadžera. Retrieved 03 21, 2021, from <https://www.poduzetnistvo.org/news/kontroleri-dobri-dusi-menadzera>
14. Teorija sustava. *Hrvatska enciklopedija, mrežno izdanje*. Leksikografski zavod Miroslav Krleža, 2021., from <https://enciklopedija.hr/natuknica.aspx?id=60892>
15. Vinšalek Stipić, V. i Nakić, S. (2020). Kontroling – čimbenik stvaranja dodane vrijednosti poduzeća. *Oeconomicus* 13, 30(05), 1-15., from <https://www.bib.irb.hr/1090538>
16. <https://www.saponlinetutorials.com/what-is-sap-fico-about-sap-fico-module/>

INTEGRIRANI INFORMACIJSKI SUSTAVI FUNKCIJE KONTROLINGA KAO ČIMBENIK USPJEŠNOG POSLOVANJA

SAŽETAK RADA

Cilj svakog profitno orijentiranog poduzeća je zadovoljiti potrebe kupaca te na taj način ostvariti profit. Međutim, poslovni procesi su regulirani od strane regulatora sustava koji reaguju na unutarnje i vanjske informacije. Kvalitetna informacija, ona koja je pravodobna, točna, realna, bitno skraćuje vrijeme potrebno za reakciju i samim time pruža konkurentsku prednost. Integrirani informacijski sustavi koriste podatke u realnom vremenu i na taj način omogućuju realno postavljanje ciljeva i kontrolu istih. Usporedno s razvojem integriranih informacijskih sustava razvijala se nova funkcija u poduzeću – kontroling. Uloga kontrolinga u suvremenom poduzeću je neodvojiva od menadžmenta, jer upravo kontroleri pružaju upravi kvalitetne informacije za ispravno donošenje poslovnih odluka. Upravo je proces kontroliranja planiranih i ostvarenih troškova jedan od najvažnijih procesa unutar poduzeća koji se odvija kroz funkciju kontrolinga. Integrirani informacijski sustavi u poduzećima dovode do racionaliziranja vremena potrebnog za obavljanje procesa kontrolinga jer bitno skraćuje vrijeme potrebno za unos i obradu podataka koji su neophodni za uspješno poslovanje poduzeća. Takvu uspješnu integraciju prikazalo se na primjeru SAP ERP sustava koji kroz modul FICO omogućuje analizu svih podataka u realnom vremenu i na taj način je nezaobilazan alat za kreiranje informacija za donošenje adekvatnih poslovnih odluka. Cilj ovog rada je dokazati u kolikoj mjeri integrirani informacijski sustavi funkcije kontrolinga pridonose profitabilnosti poslovanja poduzeća.

***Ključne riječi:** integrirani informacijski sustavi, kontroling, uspješnost poslovanja poduzeća*

