
The Use of Information and Communication Technologies (ICT) as a Factor of Employees Satisfaction: A Case Study of the Greek Public Administration Sector

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Abstract:

Purpose: The paper aims to investigate the degree of employee satisfaction from the use of the information systems taking as an example the employees from the Electronic National Social Security Fund in the Prefecture of Attica, Greece.

Design/Methodology/Approach: At a theoretical level, a new model was formed based on the synthesis of two others from the literature, forming in this way an innovative research approach. To conduct empirical research, the quantitative method was chosen through the use of a structured questionnaire. For the analysis of the results, methods and techniques of both descriptive and inductive statistics were used.

Findings: The results show that the overall degree of users' satisfaction with the existing information systems directly depends on the degree of satisfaction that users receive from the individual independent variables of the proposed combined evaluation model (system quality, information quality, service quality, perceived ease of use and perceived usefulness).

Practical Implications: The results of this research can be used by organizations in the public administration sector to redesign the existing information systems aiming to increase the organization's efficiency and effectiveness through increased employee satisfaction.

Originality/Value: In the existing literature, studies in which an information system is evaluated by employees as users of these systems are limited. This study searches to fill the gap that exists in the bibliography.

Keywords: Information and Communication Technologies, Public Administration, employee satisfaction.

JEL Classification: H8, O3.

Paper type: Research paper.

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1. Introduction

The environment of contemporary social and economic systems, in industry 4.0 era, becomes more and more complex. Changes that we can observe affect the functioning of all sectors of the economy. Among them is the public administration sector. In these circumstances, a basic condition for the survival of any organization is continuous improvement and adaptation to new environment. As for the rest of the organizations, so for the public ones, this is imperative, to respond to modern needs.

One of the most important features of the external environment nowadays is the intensification of technological progress and the increasing use of information and communication systems. In recent years, the Greek government has been making significant efforts to reform the public sector's structure, organization and operation, making use of new technologies and information systems, although as reflected in the main indicators of digital public services at the European level (European Commission, 2022) the country is still significantly lagging behind the European average.

Information systems are a useful tool for any business or public organization. For this reason, the study of their application both in businesses and in public administration is one of the most important research topics. However, most studies of information systems focus their research on the satisfaction of the citizen as an end user. On the contrary, not many research efforts have been done to evaluate the acceptance and satisfaction of employees as users of these systems. In this context, this research aims to evaluate the information systems from the employee's point of view. In particular, the main objective of the present study is to investigate the degree of satisfaction of the Electronic National Social Security Fund (e-EFKA) employees in the Prefecture of Attica from the use of the existing integrated information system (IIS).

In 2016 the largest agency in the social insurance sector in Greece named Unified Social Security Agency (EFKA) was created as a result of a merger of the social insurance agencies. The economic crisis highlighted the necessity of changing the social security system of Greece and the immediate implementation of its reforms. Thus, the merger of all social security agencies in the Unified Social Security Agency aimed to create economies of scale to save human resources and reduce administrative costs.

Also, by integrating the relevant information systems of the former social security institutions into that of the EFKA, a single integrated information system was created, making the information available to all the institution's employees for the benefit of the insured and pensioners. The new information system was chosen to be based on the system of one of the merged entities (Social Insurance Institution, IKA), which was modified and adapted to the new data and then extended to all merged entities. From the beginning of 2020, the Unified Social Security Agency

was renamed to the Electronic National Social Security Agency (e-EFKA) marking the start of the digital transformation process and transition to a new era.

This paper focuses on the evaluation of the existing Integrated Information System (IIS). The research approach is based on the bibliographic review with a study of the academic literature, publications in scientific journals, but also online sources. It was also chosen to carry out primary research by conducting a quantitative method using a structured questionnaire as a research tool. The research questions of the present research emerged mainly from the literature review and are related to the investigation and capture of the experience of use and acceptance of the existing Integrated Information System by e-EFKA employees in the pension departments.

The research questions that will be examined concern: 1/. the investigation of the effect of the following factors on the satisfaction of users of the existing information system: quality of the information system, quality of information, quality of service, perceived ease of use of the system and perceived usefulness of the system, and 2/. the investigation of the possible differentiation of the level of satisfaction between the employees coming from the merged institutions.

The paper is organized into the following sections: the first one describes the information and communication technologies as well as information systems, and the second one analyzes the concept of electronic government, its main benefits and the basic conditions for its implementation. In the third section, two of the most widespread information systems evaluation models are presented and their comparative study, from which the combined factor model used in this research is derived. The fourth section includes the methodological approach and the research results. Finally, the fifth section discusses the conclusions and suggests new policies for the future.

2. Main Features of Information and Communication Technologies (ICTs) and the Concept of Information System

One of the key characteristics of the modern environment is the high speed with which changes are made, especially technological ones. Indeed, in modern societies, the rapid development of technology affects the daily life of citizens and determines to a significant extent the quality of their lives.

2.1 Information and Communication Technologies

The term *information and communication technologies (ICTs)* according to Papathanasiou and Kardaras (2011) refers to the set of different technologies that serve the information processes (collection, transmission, processing of information data and creation of information). ICTs shape a new environment for addressing the critical issues more broadly related to the development process at all levels (local, national, supranational). This important expectation is largely attributed to the

characterization given to ICTs by international organizations such as the UN or the OECD, for more than ten years with the term "*New Paradigm*" (United Nations, 2008). In the context of this specific approach, the main characteristics of ICTs are the following:

- Decisive contribution to the development process, especially to economic growth, through the creation of positive external economies and multiplier effects in all branches of economic activity. The contribution of ICTs, through the above multiplier effects in the formation of GDP, can be considered even more important than the direct contribution of the sector itself to it.
- The fact that ICTs have a radical effect on the processes of organization, production and consumption, with the main result being the reduction of transaction costs, the increase in productivity, and faster and better communication between economic units and individuals.
- The rapid rate of innovation development in the ICT sector itself has allowed a significant reduction in the cost of access to specific technologies, thus democratizing their use for a large part of the population, even the economically weaker social groups, giving them this way, the possibility to take advantage of the advantages that ICT can provide to its users. At the same time, their use was also adopted for the implementation of various programs to combat poverty.
- ICT constituted the appropriate infrastructure, but also largely contributed to the creation of the appropriate conditions for the creation of new services, such as e-commerce, e-government, distance learning and several others, which are characterized by greater efficiency. Nevertheless, it cannot be overlooked that various questions arise regarding the security of specific transactions in several subjects (such as electronic fraud, the security of personal data, electronic crime, etc.).
- ICT requires a high level of expertise and in this context the importance of education and training, to create a knowledge economy in which ICT is a necessary condition, is constantly reinforced.
- Finally, ICTs constitute the appropriate platform for the formation of new models of diffusion and transfer of innovation and knowledge, through which the collective production of ideas and innovation is promoted. These freely accessible models, whether in the form of open software or the organization of knowledge-related collectives, can be the channels for the diffusion of knowledge in less developed regions or countries.

It could be argued that it is now common to believe that ICTs can be included, in terms of the impact they cause on society, in the same group as the technological achievements of the past, which have had a decisive effect on the way of life and also on increasing the level of well-being of people, as were electricity and transport networks. These technologies were characterized as general-purpose technologies

(UN, 2008; OECD, 2008). In this context, ICTs contribute to the transformation of the social-economic system not only as a productive factor or economic sector but by reshaping the nature of daily operations at the level of individuals and households.

What could be argued is that the factors that led to the formation of the ICT industry, but also the wider recognition of its importance, are related to both the spectacular technological achievements and the wider changes in the global economic system (Terrovitis, 2005). In addition, to a large extent, ICTs constituted an alternative background to address contemporary needs of social organization and networking as they were formed in a mesh of interaction with the wider economic and environmental conditions, primarily in the societies of the Western world and secondarily in the rest of the planet.

In this context, it is now commonly accepted that ICT belongs to the category of General-Purpose Technologies (UN, 2008; OECD, 2008), compared to technologies that had a decisive influence on the evolution of human society such as electricity in the energy sector or the car in the transport sector.

In the period we are going through, which is characterized as the 4th industrial revolution, the development and importance of technology are perhaps considered more crucial than ever. «Mobility, cloud computing, the Internet of Things (IoT), artificial intelligence (AI) and big data analytics are among the most important technologies in the digital economy today. Collectively they are enabling a future of «smart everything», and empowering businesses, consumers and society as a whole» (OECD, 2017).

Businesses and more broadly organizations are facing many challenges. For this reason, they cannot overlook the use of ICT and its potential. After all, ICT is an important means of improving both their operations and their goals.

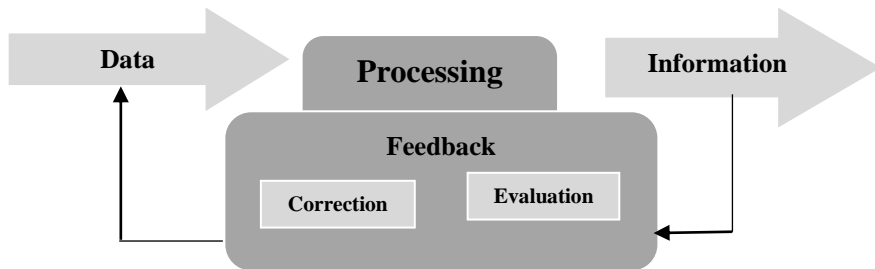
2.2 The Information System

The concept of information is often defined as the concept of data. According to Dendrinou and Kouis (2015) data are "*elements without meaning and value, without context and interpretation*", they can be letters, numbers, images and sounds. But they are not organized in a certain way to convey a specific meaning. In other words, "*data by itself is not information*" (Kioudouzis, 2009). On the other hand, information "*is data, which has been organized so that it has some meaning and value to its recipient*" (Rainer and Watson, 2013).

The term information systems refer to *an organized set of interrelated elements, consisting of people, hardware, software, data and processes, which receive, process, store and distribute information to the users of an organization, to assist its operation* (Fitzgerald, 1997; Siasiakos, 2008). Every information system is a

communication system between people (Robson, 1994). For this reason, it should be designed and created by man to help him in his information processes. The data flow process of an information system is presented in Figure 1.

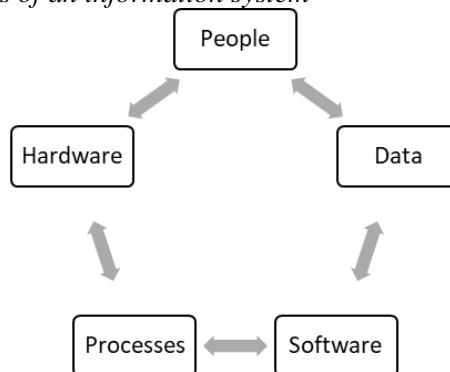
Figure 1. Information system data flow



Source: Mitakos (2015).

In information systems, input refers to various functions of collecting data and entering them into the system. Processing is the set of processes during which data is converted into information and subsequently the information comes out of the output of the information system. The output is the set of information produced and attributed to the recipients of the information system. Feedback is the effect of information an information system produces on its input. An information system, as shown in Figure 2, consists of five basic elements: hardware, software, data, processes and people.

Figure 2. The elements of an information system



Source: Kioudouzis (2009).

These five elements, as shown in Figure 2, interact with each other to produce and manage information to support human activities within an organization (Preece, 1994).

In the context of the transmission and processing of information, the importance of networks is decisive. Paraskevas *et al.* (2015) define networks as «systems that

support the transmission, storage and processing of information. They consist of transmission devices and support services, and a wide range of applications and terminal equipment are connected to them».

An important reliability issue of information systems is integration. The concept of the integration of an information system can be seen from various perspectives. According to Fitsilis (2015), the main perspectives are the following: data integration, operation integration, process integration and software integration. A modern information system must provide integration at all the above levels to be able to offer integrated and personalized services to both citizens and organizations.

3. The Framework of Electronic Government

Nowadays, information and communication technologies have been recognized as a key condition for the modernization of public administration. The electronic government is defined by the OECD as the use of ICTs by governments and particularly the Internet, as a tool to achieve better government (OECD, 2014). In particular, it reflects the recognition that the networking potential provided by the Internet and related technologies can transform the structures and operation of governments, and therefore the electronic government constitutes a dynamic and decisive factor in the adoption of good governance practices.

In the definition of the World Bank electronic government refers to the use of ICT (such as broadband networks, the Internet and mobile digital applications) by government agencies, which provides the possibility of transforming relations with citizens, businesses and all government bodies (World Bank, 2022). Electronic government serves a multitude of different purposes: better delivery of public services to citizens, improved interactions with business and industry, empowerment of citizens through access to information, and more efficient government management.

It is worth noting the evolution of electronic government into digital government. The last refers to the use of digital technologies, as an integrated part of governments' modernization strategies, to create public value. It relies on a digital government ecosystem comprised of government actors, non-governmental organizations, businesses, citizens' associations and individuals which supports the production of and access to data, services and content through interactions with the government (OECD, 2014).

According to the European Commission (2016), e-government "*supports administrative processes, improves the quality of services and increases the internal efficiency of the public sector. Digital public services reduce the administrative burden for businesses and citizens by making their dealings with public administrations faster and more efficient, more convenient and transparent and less expensive*".

According to the Greek Ministry of Interior (2020) electronic government (e-Government) "*concerns the modernization of the State and Public Administration, using information and communication technologies (ICT) as a vehicle, to radically transform existing processes and upgrade the services provided, into value-added services, for the Administration to become more effective and efficient, ensuring the satisfaction of the needs of society and promoting the active participation of citizens*".

Depending on what it is addressed to, e-governance is divided into the following basic categories: Public to the citizen, Public to business, and Public to public (Mitropoulos and Douligeris, 2015).

The stages of e-government are scaled, into five levels: simple information, interaction, two-way interaction, e-transactions and the last level is proactive e-transactions, (Mamoukaris, 2012).

It is a fact that the introduction of e-government in Public Administration requires changes both within public services and in the way of thinking of citizens. A basic condition is the reorganization of the operation of the public administration through the utilization of information and communication technologies.

4. Information Systems Evaluation Models

Nowadays, there is a constant need to define appropriate parameters based on which the successful operation of an information system can be evaluated and measured. According to Garrity and Sanders (1998), the success of an information system can be measured at three levels: the organizational level, at process or operation level, and the individual level. The key factors of the success of these systems are the people who use them, in other words, their end users. The term "end user" means the user for whom the system was designed and who will be the final recipient of the services (Mitakos, 2015).

Thus, employees in an organization or a business have a significant role in the success or failure of the information system they use (Garrity and Sanders, 1998). For this reason, the design and development of a system must consider the parameters related to the characteristics of the users and focus mainly on their needs and their abilities. Key parameters are perceived usefulness, self-efficacy, level of management, education, age and computer experience (Ives *et al.*, 1983; Ives *et al.*, 1986).

The evaluation of an information system is a necessary condition to measure its degree of success and acceptance by users. For this reason, first, it must be determined what should be evaluated in an information system. According to Cronholm and Goldkuhl (2003), two evaluation strategies can be distinguished. The first evaluates the IT system as such and the second IT system in use. Next, it must

be determined how an information system is evaluated. Cronholm and Goldkuhl (2003) distinguish three categories of strategies: goal-based evaluation, goal-free evaluation and criteria-based evaluation. The differentiation of the above three strategies lies in the factors that are used in the evaluation process.

There are various evaluation models used to measure the performance, quality and effectiveness of an information system. Two of the most important approaches are Technology Acceptance Model (TAM) developed by Davis (1986) and Information Systems Success (IS Success) developed by DeLone and McLean (1992). The first model aims to explain and predict those factors that lead to the acceptance or rejection of information technology by users.

In particular, it examines the intention to use (prediction) by linking and evaluating the behaviours, attitudes and beliefs of users towards the use of an information system. TAM was based on the Theory of Reasoned Action (TRA) of Ajzen and Fishbein (1980). This theory focuses on measuring intention and interprets human behaviour by exploring factors that influence a person's decision to behave in a certain way in terms of the degree of acceptance of technology.

According to Davis *et al.* (1989), the TAM in its original version is based on two main variables: perceived usefulness and perceived ease of use. The first variable is determined by the following measurable factors: work more quickly, job performance, increase productivity, effectiveness, make a job easier, and usefulness. Accordingly, the examination of the second variable is based on the following factors: easy to learn, controllable, clear and understandable, flexible, easy to become skillful, and easy to use. This model examines the relationship between these two variables, finding that the perceived ease of use of a system affects the perceived usefulness of the system.

The model of Davis *et al.* (1989) is completed by the following concepts: (1) External Variables, (2) Attitude Toward Using, (3) Behavioral Intention to Use and (4) Actual System Use. The relationship between factors (2) and (3) is interpreted (all other factors constant) that people form behavioural intentions from which they will have a positive effect. In this constant Davis (1993) concluded that some of the above evaluation factors were overlapping or difficult to measure.

As a result, the revised TAM was proposed where the factor «behavioral intention to use» is integrated and included as a concept in the factors "attitude toward using" and "actual system use". In addition, three phases of implementation of the system are defined: cognitive response, affective response and behavioral response. Venkatesh and Davis (2000) extended TAM by adding social factors that play an important role in an individual's attitude. The resulting model was named TAM2 and additionally includes the following factors: subjective norm, voluntariness, experience, job relevance, output quality and result demonstrability.

One of the most effective and widely applied methods of measuring the quality of an information system is Information Systems Success (IS Success) developed by DeLone and McLean (1992). In the original model, the researchers considered the following factors: System Quality, Information Quality, User Satisfaction, Individual Impact and Organizational Impact. User satisfaction is determined by two factors: system quality and information quality.

This model posits that system quality and information quality individually but also jointly affect user satisfaction as well as usage (Livari, 2005). In addition, the usage and the degree of user satisfaction interact with each other. Usage and user satisfaction affect individual performance and finally, this effect on individual performance ultimately affects the organization's performance. Almost a decade later, DeLone and McLean (2003) modified this model by considering service quality as another determinant of user satisfaction and usage. The service quality factor refers to the quality of user support from the IT department of the organization or business and the Internet service provider (Lederer *et al.*, 2000).

Specifically, service quality according to Parasuraman *et al.* (1998) is evaluated in five dimensions: firmness, reliability, responsiveness, assurance and empathy. According to the modified model, information quality, system quality and service quality affect both usage and user satisfaction. Finally, as Net Benefits in the modified model were grouped all the factors which referred to an individual impact and organizational impact.

In summary, we can say that both proposed models contribute to the evaluation and measurement of the degree of user satisfaction from the information systems. The Technology Acceptance Model focuses on the study of technology acceptance and measures the degree of acceptance of information systems from the user's side. The Information Systems Success model measures user satisfaction with the information system itself. We may conclude that the presented models approach the concept of user satisfaction from different perspectives.

In the present research, which attempts to examine user satisfaction with the existing integrated information system (IIS) in the Electronic National Social Security Fund (e-EFKA) we propose a combined model for the users' evaluation of the existing information system. The proposed combined model integrates parameters from both basic research approaches, i.e., from the Technology Acceptance Model (TAM) and the Information Systems Success (IS Success) model. The specific two research approaches have a valuable contribution to the understanding of the evaluation of information systems, but they each deal with a part of the issue.

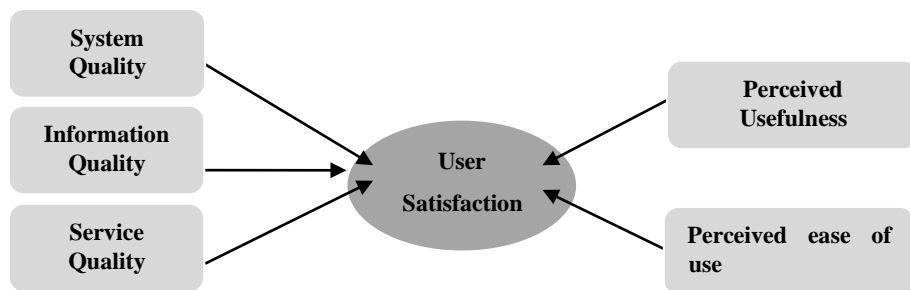
As shown in Figure 3, the proposed combination model uses five parameters: system quality, information quality and service quality from the modified IS Success model of DeLone and McLean (2003) and combines them with the parameters: perceived ease of use and perceived usefulness of Davis's (1986) TAM model. The specific

variables are basic categories of evaluation factors of both the success and the efficiency of an information system and, by extension, the overall satisfaction received by the user.

The parameter system quality is determined by the following dimensions: Ease of Learning, Ease of Use, Ease of Access, Response Time, Reliability, Accuracy, Flexibility, and Interoperability. The parameter Information Quality depends on Accuracy, Usefulness, Clarity, Timeliness, Reliability, Completeness, and Absence of Errors. Finally, the Service quality is influenced by Available Hardware, Technical Staff, Telephone Support by the Help Desk, Willingness of Help Desk Employees, Timely troubleshooting of the Help Desk, and Knowledge and Skills of Help Desk Employees.

As far as the variable Perceived ease of use is concerned, it depends on the following factors: Perceived Ease of Learning, Perceived Clarity, Perceived Flexibility, and Perceived Skill Improvement. Examining the Perceived usefulness as a factor of user satisfaction as determining factors, we accept in our model the following: Ability to Complete Tasks Faster, Improve Performance, Increase Productivity, Improve Efficiency, and Make My Work Easier.

Figure 3. *The proposed combined evaluation model*



Source: Own study.

5. Research Methodology and Results

The main objective of the present study is to investigate the degree of satisfaction of the employees of the pension departments of the e -EFKA in the Prefecture of Attica with the use of the existing Integrated Information System (IIS). Based on the bibliographic review and taking into account the proposed combined evaluation model the following research hypotheses were formulated:

Hypothesis 1: The higher the degree of system quality of the existing IIS, the greater the overall employee satisfaction with its use.

Hypothesis 2: The higher the degree of quality of the information extracted from the existing IIS, the greater the overall satisfaction of the employees with its use.

Hypothesis 3: The higher the level of quality of services provided by the existing IIS, the greater the overall employee satisfaction with its use.

Hypothesis 4: The higher the score of the perceived ease of use of the existing IIS, the higher the overall employee satisfaction with its use.

Hypothesis 5: The higher the rating of the perceived usefulness of the existing IIS, the greater the overall employee satisfaction with its use.

The quantitative research method was chosen and a structured questionnaire was used as the research tool. The design of the structured questionnaire used in this research was based on the variables of the proposed combined evaluation model. In particular, the specific questionnaire consists of two sections:

- The first section contains questions regarding user satisfaction according to the five aforementioned criteria (system quality, information quality and service quality, perceived ease of use and perceived usefulness). Respondents are asked to express their degree of satisfaction with each variable included in the specific criteria
- The second section of the questionnaire includes the demographic characteristics of the research participants.

In the first part of the questionnaire, the five-point Likert scale was used, while in the second part the questions are multiple-choice and closed type.

The sample was selected by simple random sampling. The total number of employees working in the pension departments of the e -EFKA in the Prefecture of Attica amounts to approximately 350. The sample consists of 201 employees (58% of the total population of employees). The research was conducted in March 2021. The questionnaires were personally distributed by the researcher to the target population.

The reliability of the questionnaire was tested using Cronbach's α reliability coefficient. The results obtained for each subset of questions that assess each factor, as well as the results of the overall reliability of the questionnaire, were particularly high (approaching unity) reflecting the complete reliability of the questionnaire as well as the coherence of the research questions.

According to the results the vast majority consists of women who contribute 78.6% (N=158) of the entire sample (N=201). This finding confirms that pension departments are mostly staffed by women. The results regarding the age distribution of the sample are extremely interesting. The largest percentage of employees is in the age group from 50 to 59 years (43.8%), while in the age group up to 29 years the sample was zero. The specific range is extremely worrying for the organization as it is a resounding message to the administration for immediate staffing.

This is a usual phenomenon in the Greek public administration sector and is linked to the recruitment restrictions for about a decade due to the fiscal problems that the country has faced. The total percentage of those who have a higher education degree and a master's degree amounts to 59.7%. Taking into account the years of service, 33.8% have been working in the organization for 11 to 20 years. Next, come the respondents with 31 years of service and over, who represent 32.8% of the sample, while employees with 21 to 30 years of service reach the rate of 26.9%.

Regarding the distribution of employees based on access to electronic services, we observe that 96.5% of the sample has access to and uses the e-EFKA website. Intranet applications are used by 53.7% of employees. Only employees who come from the former Social Insurance Institution (IKA) and have a connection through the intranet have this specific option. The official e-mail is used by only 54.7% of the employees. More than 50% of the employees who took part in the survey come from one of the biggest merged entities, i.e., that of Social Insurance Institution, IKA. Table 1 presents the descriptive statistics of the results from the second part of the questionnaire.

Table 1. Descriptive statistics

System quality								
	Easy of Learning	Ease of Use	Ease of Access	Response Time	Reliability	Accuracy	Flexibility	Interoperability
Average	3.53	3.49	3.45	3.07	3.11	3.00	2.92	2.84
St. Dev.	.700	.794	.842	.771	.799	.758	.799	.815
Information Quality								
	Accuracy	Usefulness	Clarity	Timeliness	Reliability	Completeness	Absence of Errors	
Average	3.08	3.02	2.97	2.92	2.98	2.92	2.85	
St. Dev.	.733	.728	.692	.703	.721	.706	.686	
Service quality								
	Available Hardware	Technical Staff	Telephone Support by the Help Desk	The willingness of Help Desk Employees	Timely troubleshooting of Help Desk	Knowledge and Skills of Help Desk Employees		
Average	1.85	2.69	3.22	3.52	3.49	3.58		
St. Dev.	.775	.828	.890	.837	.855	.791		
Perceived ease of use								
	Perceived ease of Learning	Perceived Clarity	Perceived Flexibility	Perceived Skill Improvement				
Average	3.63	3.29	3.24	3.57				
St. Dev.	.710	.712	.763	.739				
Perceived usefulness								
	Ability to Complete Tasks Faster	Improve Performance	Increase Productivity	Improve Efficiency	Make Work Easier			
Average	3.30	3.30	3.21	3.25	3.26			
Standard deviation	.728	.755	.774	.733	.704			

Source: Own study.

To further explore the degree of employee satisfaction with the system per merged entity and per independent variable based on cross-tabulation, we observe that employees coming from IKA are satisfied with the information system in total and from its five characteristics to a degree of "quite" (53.6%) to "very » (42.9%). On

the contrary, for the employees coming from the other merged entities the percentage of overall satisfaction ranges from "a little" to "quite".

Based on the result of the Kolmogorov-Smirnov normality test, a non-parametric Spearman correlation coefficient will be used. Then the degree of correlation of overall satisfaction with the existing information system with its determining factors is presented. In particular, the five research hypotheses as presented in the previous sections of the article are tested. The results show the following statistically significant correlations at the 0.01 significance level:

- i. Positive correlation (0.643) between system quality and overall satisfaction with the existing information system (IIS).
- ii. Positive correlation (0.595) between information quality and overall satisfaction with the existing IIS.
- iii. Positive correlation (0.657) between service quality and overall satisfaction with the existing IIS.
- iv. Positive correlation (0.609) between perceived ease of use and overall satisfaction with the existing IIS.
- v. Positive correlation (0.737) between perceived usefulness and overall satisfaction with the existing IIS.

Based on the regression of the dependent variable "overall satisfaction with the existing information system" and the five independent variables we find that according to the coefficient of determination R^2 the five independent variables interpret the dependent by 67.3%. The results of the regression model are presented in Table 2.

Table 2. Regression coefficients

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.312	.173		-1.807	.072
	System quality	.224	.060	.215	3.727	.000
	Information quality	.143	.061	.134	2.328	.021
	Service quality	.158	.055	.165	2.877	.004
	Perceived ease of use	.141	.054	.142	2.606	.010
	Perceived usefulness	.375	.063	.355	6.006	.000

a. Dependent Variable: Overall satisfaction with the existing information system

Source: Own study.

The next step of the research concerns the investigation of multicollinearity using the stepwise method. The stepwise method ranks the independent variables according to the improvement they bring to the ability to predict the dependent

variable. It is carried out in steps, while the maximum number of models tested is equal to the number of independent variables entered.

Table 3 shows the models created by the stepwise method. Observing the results of the method we see that the ΔR^2 increased from 0.531 to 0.621 between the two steps [Perceived Usefulness, System Quality]. In other words, the two independent variables together interpret the dependent variable by 62.1%, a fairly high percentage. Then, in the next steps, the next variables are added to the model it is observed that the interpretation of the dependent variable increases, but to a lesser extent. Thus, reaching the fifth step of the model, the interpretation of the dependent variable from the set of five independents reaches 67.3%. From the model, the two most important independent variables that cumulatively affect more the ability to predict the dependent variable are perceived usefulness and system quality.

Table 3. Results of the stepwise method

Model Summary									
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	.729 _a	.531	.529	.487	.531	225.601	1	199	.000
2	.788 _b	.621	.617	.439	.090	46.983	1	198	.000
3	.808 _c	.652	.647	.422	.031	17.726	1	197	.000
4	.815 _d	.664	.657	.416	.011	6.698	1	196	.010
5	.820 _e	.673	.665	.411	.009	5.418	1	195	.021
a. Predictors: (Constant), Perceived Usefulness									
b. Predictors: (Constant), Perceived Usefulness, System Quality									
c. Predictors: (Constant), Perceived Usefulness, System Quality, Service Quality									
d. Predictors: (Constant), Perceived Usefulness, System Quality, Service Quality, Perceived Ease to Use									
e. Predictors: (Constant), Perceived Usefulness, System Quality, Service Quality, Perceived Ease to Use, Information Quality									

Source: Own study.

6. Conclusions

Information systems are a valuable tool for any organization especially in the digital era we are going through. For this reason, public administration entities should take steps to design and implement well-equipped and at the same time highly functional information systems adapted to the needs of both organizations and users.

Despite any lag, it presents compared to the rest of the EU countries (European Commission, 2022) the Greek public administration sector has not remained unaffected by technological developments and is making significant efforts to implement reforms in its structure, organization and operation. It is a fact, that many positive steps were observed with the development of information systems and the corresponding strengthening in the provision of digital services, an element that was largely strengthened amid the pandemic. There are still many chronic problems of public administration such as bureaucracy and insufficient staffing of services that create obstacles to the successful introduction and assimilation of new technologies in the public sector.

The case of e -EFKA, the main social security institution in the country, on which our research is focused and the effort to investigate the degree of employee satisfaction with the use of an information system, reflects a significant extent many of the above issues. The existing IIS in e -EFKA was based on the infrastructures of one of the merged entities (IKA), having undergone the necessary interventions and modifications, to support the operational requirements of the new body.

Important conclusions came from the verification of all the research hypotheses. In practice, this means that as the degree of satisfaction of the independent variables (system quality, information quality, service quality, perceived ease of use and perceived usefulness) increases, so does the degree of satisfaction of the dependent variable, i.e., overall satisfaction with the existing ISS. Also, it was found that the independent variables of the model can affect the value of the dependent variable but to a different extent. In particular, the five independent variables of the combined model are responsible for 66.5% of the total satisfaction received by respondents from the existing IIS.

This may be because the proposed combined evaluation model for measuring the satisfaction of users of the existing IIS in the e -EFKA, is correctly specified. Finally, based on further analysis it was found that the two most important independent variables that most affect the users' satisfaction are perceived usefulness and system quality. The overall satisfaction with the existing IIS who come from the IKA is higher than the overall satisfaction of the employees who come from the other merged entities. It means that the employees of the former IKA treat the existing IIS more positively than the employees coming from the other merged entities.

From the research, it emerged that in addition to the existing integrated information system the employees of the merged entities also use their computerized systems to support its operations. This specific observation highlights the necessity of the essential integration (transition) of the individual information systems to the new one of the e -EFKA.

The administrative and organizational integration of the funds of the entities which consists the e-EFKA now is an essential reform, which should be supported by a modern information infrastructure. Consequently, this infrastructure should be able to automate efficiently, all the functions of the new body. In other words, the specific observation highlights the necessity of the essential integration (data transition) of the separate information systems in that of the e -EFKA. In particular, it is proposed:

- The interconnection of the existing Integrated Information System with information systems of other public bodies.
- The supply and installation of modern technological equipment such as computers, data centers, etc.
- The modernization of the existing infrastructure such as networks.
- The optimization of citizen service, through the utilization of new technologies and the digitization of data will lead to the facilitation of data exchange between the e -EFKA and the insured/pensioners.
- The use of big data and analytics, artificial intelligence and cloud computing.

Finally, human resources are capital in any organization. For this reason, staff training plays an important role since without it it is not possible to achieve its goals. The adoption of such research by public bodies is important because its findings can help in the future planning of information systems in public administration. This will have a positive impact not only on the employees of the agencies but also on the citizens and businesses that do business with them.

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