The Effects of the Application of Production Information Systems

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Abstract – **The authors show you in this paper definition and functions of information systems, information systems development methodologies and stages of development. Also, the authors will show the effects of the application of production information systems. Authors also include SWOT analysis in which show the influence of the external and internal environment on the implementation of IS in business.**

Keywords – **IS, production, environment, economy.**

1. Introduction

Organization's information system can be defined in the following way - as a group of people and technical means by which a certain organization and methodology of the data collection, storage, processing and delivery to the use of data and information [1].

If we observe a systematic information system is then defined as follows: "The information system is arranged set of methods, processes and operations for the collection, storage, processing, transmission, and distribution of data within an organization, including equipment which is used for this purpose and people who are engaged in these activities [2]."

Information system within an organization, allowing the organization has internal and external communications. Thus, the existence of any condition of organization is eligible to dispose of the information system, in which the procedures were developed information activities. Some of organizations and the procedures carried out by people, and in others, it uses modern information technology.

The information system should be set so that be understandable to all users, easy to presenting information, reliable and enabling the expression of information processed in very short time intervals.

Every information system is essential functions of information and documentation functions. The information system provides its informing relevant information for operational management and development organization. It shows us that the function

achieves the purpose of information management organization. The function of information is of great importance for assessing the quality of the information system. The function is used to inform users with adequate information for management purposes. She is the main reason for the existence of information systems in the business system.

In order to daily activities conducted by all of a company should be provided by the information system and the proper documentation. Documentation is the result of the needs and demands of the environment and the entities it controls and information exchange [3]. In any business, system is necessary to provide an audit of the possibility at any time to be able to reconstruct the events business. Function documentation serves to provide documentation that enables communication between the various subsystems of a business system and its environment.

From the point of access to the system, the information system includes the following components:

1. Hardware computer system makes material-technical component of the information system, i.e. physical units of a computer system designed for the processing and transfer of data. Hardware components include the computer systems that support the work of technical information system. Hardware devices are computers and other telecommunications equipment. The personal computer hardware is a motherboard, secondary memory, communication, network, and input-output devices.
2. Software computer system is an intangible component of the information system. These are computer programs that are built into the hardware that dictate how data processing. It includes all kinds of instruction and procedures. The software includes operating system, translators, and many user programs. The two main types of software are: System software (consists of programs that are used for the direct management of the physical part of the computer or hardware. For system, software is now considered the operating system) and Application

software (consists of programs designed for end users of computer systems. The users of computer systems process information with these programs).

3. Data ware includes data, information and knowledge, which can be thought of as an information resource, and thus become a valuable asset for any organization.

4. Life ware component consists of all the people who in any way participate in the information technology. Human resources are very important for functioning of information system. Human resources of specialists and end-users of information systems may include information system designers, analysts, programmers, and software engineers, specialists in hardware and networks, and experts who perform a variety of tasks.

5. Orgware or organizational component includes organizational procedures, methods, and ways to coordinate the work of all components of the information system, so that they formed a harmonious and functional unit.

6. Netware or network component is related to computer networks to connect computers, all in order to exchange data and communication between physically remote computers [4].

Modern information system is focused on the decision-making process. When designing and building a modern information system determinant in the design and selection of subsystem the integrity of the data. Data integrity ensures the connection of business processes and functions. The information system cannot exist apart from the subsystems that are oriented towards the execution of certain categories of tasks and activities.

Information systems can be classified in different ways. Classification can be done by processing. According to this classification, we can talk about the packet, serial and random processes, the interactive work, working in real time.

Useful classification is according to the degree of automation: non-automatic information systems, automatic data processing systems, management information systems, executive information systems, decision support systems, expert systems [4].

2. Information systems development methodologies and stages of development

There are two main groups of information systems development methodology [5]. The first group consists of methodology-aimed representation, design and implementation of information systems and the second group consists of methodology for monitoring, control, and evaluation of the results of the construction of information systems. Both groups provide qualitative methodology and approach to solving the problem of adequate information systems development [5].

Today, in practice there are likely:

1. Methodology for the life cycle - that analogous life cycle includes the processes of living beings formation, development, operation, and end use of the information system.

2. Prototype development methodology - consists in the process of rapid development of several variants of initial information system solutions, which are then analyzed and adjusted together with the users and thus lead to the implementation phase.
3. Methodology for the rapid design of information system - which is the structural synthesis techniques, data models and software tools using the fourth generation, which is developing the information system.

3. Object-oriented methodology is based on the principles of modern methods and techniques of object-oriented approach to the development of databases and software. It is implemented through the phases of design, and programming.

In the framework of these methodologies have been developed and some methods and techniques for the implementation of certain activities of information systems development, mostly in the form of the model [6]. Models that are commonly used are:

- Model Falls (Water flow), which involves a series of activities that take turns in a row in the form of a cascade waterfall, where the next transition to the next activity, the possible return of the previous year.

- The cascade model is a collection of waterfall model applied to small parts of the system that occur one time after another.

- Nonlinear waterfall model in which the conceptual stages apply to the entire system by a linear model falls to the point where it is possible to divide the system into smaller subsystems when the subsystem development takes place individually, so that each of the subsystems developed by its life cycle, again waterfall model.

- Iterative - incremental model used to develop the first subset of the initial system, and then a series of steps to form a more complex version of his. This model is realized by the principle plan on a

little - a little analyze - design-implement little bit.

- Prototype development model that supports the early development of system components that are based on the functional specification of the prototype to simulate, analyze and execute.
- Spiral model where the development takes place by a spiral so that each loop is a series of the same activities, which often include defining system requirements, design, and development of verification. It then develops and implements a prototype simulation models and define the testing. Only after rounding activities in one loop, it goes to the planning and implementation of the following.
- CASE (Computer Aided Software Engineering) is model of the development of fourth generation techniques. The development team performs specify the characteristics of the information system at a high level of abstraction, primarily through the modeling of processes and data, and based on the entered specifications, using special software tool automatically generates the source code of the application (BP win, Erwin, Oracle Designer, Rational Rose).
- The combined model based on the combination of the above models, as well as some others, which encourages good effects of each.

Systems development life cycle (Systems Development Life Cycle - SDLC) is the process through which system analysts, software engineers, developers and users build information systems and computer applications. This process used a variety of methods, techniques, and tools for information system development.

The method presented here is as comprehensive and detailed version of the system development life cycle, which includes the steps at each stage of development, individual, and group roles for all tasks, predefined performance, and quality standards for all operations, development techniques that will be used in each of the tasks.

The technique is seen as an approach that applies specific tools and rules in order to complete one or more sub-phases in the life cycle of systems development. While the tools include procedures and technical tools that, automate some tasks of information systems development.

Strategic planning of information system begins recording sheet, which contributes to defining business objectives, identifying problems and ideas, determining how their solution, which represents the overall definition of the requirements posed to the system.

Functional modeling or monitoring existing covers two approaches. In the first approach, the application of the procedure bottom-up (up-down) view entry documents, files, folders, document output, sample reports, organizational regulations mode (regulations) and define requirements and user needs. More immediate actions are defined and data flows with concretization tasks. In the second approach, the top-down method (top-down) looks at the business of top management. In this decomposition, process consists of objectives, functions, processes, and needs of the organization from the perspective of the management team.

In this cycle, the most commonly used methods of structural analysis system, which is based on the development of context diagrams, decomposition of system functions, defining and building activity diagrams Data Dictionary. These techniques are used to produce a clear graphical specification of the system, which is suitable for communication with the user. This is a modeling solution, which is gradually developing a system for top-down, starting from the highest, most general level with all the details of the scheme. Because at this stage of information systems development defines the logical basis of information needs, regardless of the physical solutions of the system, this phase is called the logical design (logical design).

Phase analysis of the information system is based on a physical model of the existing system, the perception that the current system is working, then analyzes what the current system works, and based on defining what the future system should work, and ultimately how future system to do. When recording the current state using some basic techniques for gathering information such as the analysis of official documents, surveys, interviews, observation and making assumptions. Because of this phase of the life cycle of information system should be design studies or design of building information systems, which is the basis for further action.

Information modeling is a key step in the construction of information systems. It includes activities on defining detailed user requirements, creating flow diagrams (Data Flow), entity identification systems, and the development of ER diagram (entity-relationship), creating entity attributes, and business rules [3]. These are two basic processes of information modeling and designing the information system:

- Analysis of the scheme, which includes the identification process in the system, defining the flow of data, define data warehouse, identifying sites that participate in the flow of data and
- Development of a model system, which includes defining the objects of the system and defining relationships between objects and relations of the system.

Application modeling involves several activities: defining the physical design, database generation, application development (programming logic applications, create a graphical interface to the user, defining menus, layout forms, queries, define standard reports, test applications, defining the distribution of software components).

The implementation includes the introduction of an information system, its testing and maintenance. Major activities of the setting and the physical connection of equipment, software installation, database setup, install applications, the initial establishment of a database, making additional applications for the establishment of a database, data collection for the database, enter data in the help files, control and data sorting, filling database and user training at all levels.

Testing and documenting is the final phase in which the testing of all functions of the information system in real environment shall be monitoring the operation of the system and eliminate the inadequacies and problems at work. In addition, at this stage of the draft the complete documentation of all elements of the information system, in the form in which the system can later analyze the quality and upgraded in line with changes in the system and its environment [7].

Maintenance of information systems has changed the system to improve its operating performance, improvement, or adjustment of use. Maintenance includes support equipment suppliers, technical assistance to the information system users during its use, as well as the creation of the maintenance plan. New development cycle is implemented after review of the entire system and the claim that major changes are necessary due to changes in the business or change their business goals. A new development cycle is usually a new project.

3. Production Information System

Information system is a connection between the economy and the real man as entrepreneur's better relationship, better business, strategic decision-making, and economic planning [8]. Their application is essentially improves vision and mission statements that are often unattainable and unachievable. The assumption is that the information systems on a global scale, improve operations by 30-40% and growing. Their main feature is the implementation of all aspects of the business with an emphasis on controlling and planning. So in today's business we also have the assistance of the following areas: Marketing Information Systems, Enterprise Information Systems, Production Information System, Financial Information System, Technological Information System, Personnel Information System, Information system of suppliers of materials and supplies, Information system on competition.

Designing an information system of production is based on the concept of an integrated information system, which consists of sub-systems marketing, finance, and human resources. Manufacturing information systems are based on the efficiency of the management and control of the production process. The flow of information in the information system of the production process must be continuous and constant replenishing. Databases and knowledge in this case is constantly connected to the result. Each production system shall comprise two types of information - incoming and outgoing.

Input carry the following documents: the order for production, operations list, a list of materials or parts, tools and other requisitions, documents - information carriers. Output information obtained from the workshop documentation, such as a report on the work and flow, material flow, receiving, materials or purchased parts, construction materials, supplies and junk [8].

Jobs and procedures for planning, preparation, and marketing of produce are developing towards automation of the process, with the main aim of data processing in real-time and with the required quality. In this sense, for the purposes of planning and production programs have been developed block diagrams as separate software packages. Their function in the information system is a documentary nature. Represent database information, and the holders are automatically placed in the second set of simple information systems, in addition to the knowledge base. Production control by using the computer ethnology developed and the corresponding information systems and programs that maintain the entire system life. These systems cover a partial business and production functions, but the entire production if so requested by top management. Of course, the systems that are responsible for monitoring, planning, executing the entire production systems is much more complex.

General model of production management refers to the design, control, inventory management, with feedback that this system seems infinite chain of utility. The ideal model for the application of computer systems in the production of computer automation means of production, i.e. preparation, management and control, and computer system is integrated into the network. This system is able to perform a number of tasks: sales planning, preparing orders for production, construction processing, production of technical documentation, design of technological processes, production control in the workshop.

All functions are technical, mathematical, and operational executed with great precision, which is the biggest advantage of information systems. This mode of operation is likely to bring benefits because they themselves experts in certain fields replaced by systems of high power and efficiency. The optimal performance of manufacturing information system for a period of one year compared to an expert in the field of production is proportionately greater.

4. The effects of the application of production information systems

Effect means the sphere of influence of objects to subjects, either directly or indirectly. Their use, in general, implements to work when you need a higher level of productivity, business profitability. That is, their work is included in a given period of success the business. Information systems as a synthetic form of the decision, along with the planning application effects have installed more efficient use value and scholarliness specific project [9].

The effects of the application of production information systems create two branches of the global division, which in practice can be, said that:

- Measurable effects are those, which are in fact faster and better decision-making, management and the costs, and provide a higher level of liquidity and profitability. It divided into direct and indirect.
- Immeasurable effects are not quantified in it already, but their activities are mainly in the end, produce economic growth. It is extremely important to have a sense of momentum effects in installing the system. For the selected time can be determined by the transition function in the business such as, cooperation, expand operations, hire new workers, the introduction of marketing.

From the psychological point of view determination and direction of the business in the form of efficiency, and creates a better idea, expanding the knowledge base and come to a greater utilization of all operating entities [10]. General functionality of measurable and immeasurable effects is of great importance. Adding active objects is shaped and directed operations.

4.1. S.W.O.T. analysis

S.W.O.T. analysis of an open approach to the analysis of particular phenomena, conditions, effects, factors of a system. Depth review of the subsystems are analyzed all project activities. The analysis is performed realistic and relevant evaluation of

opportunities, threats, strengths, and weaknesses and the way it approaches the open and exposes all the problems of a system [11]. Ratings should be based on statistical, objective and above all Nauen foundations in order to properly and gradually result could make positive. Upon proper evaluation, the real strategy with which at any moment can see the internal and external influences on the system and what are the positive and negative items of strategic orient. This procedure is easily determines the main directions and goals of a project or system.

Table 1. The influence of the external environment on the implementation of IS in Business.

External environment	Chances	Threats	Importance
Economic and business environment			
Stage in the economic cycle	9	3	8
Economic confidence	5	8	8
Competitors			
Biggest competitor	4	8	9
Consumer loyalty	8	9	8
Technology			
Changes in the social environment	10	4	9
Innovation in IS	9	3	10
Standard of living	2	8	10
Legal aspects			
The Action plan	10	1	9
Regulation of IS	6	3	6
Guidelines for further development of IS	8	2	7

Table 2. The influence of the internal environment on the implementation of IS in Business

Internal environment	Power	Weakness	Importance
Performance			
Pricing politic IS	8	3	6
Level of customer satisfaction of desire	3	9	8
Sales with IS	8	5	8
Level of profit with IS	5	8	9
Personnel			
Training for experts	9	2	10
The degree of utilization of experts	8	3	9
Regular conferences, seminars	7	2	7
External experts	6	8	8
Physical resources			
Efficiency of IS	9	6	9
Financial resources	5	8	9
Timeliness of financial statements for IS	7	4	8
Comparison of average earnings with an average participation of IS project	8	4	7
Potential development of IS	8	4	8

A strategy that provides improved privacy IS clearly defined social movements to innovation and to the legal laws that currently apply to information systems. The advantage of monitoring trends and

innovation flows allows a constant flow of information that is crucial to the development of IS.

4.2. New solutions in information systems in the entrepreneurial economy

Ambitious plans and solutions in terms of IT function in an entrepreneurial economy are largely underdeveloped and backward. Opportunities that prevail in the world and even in the countries around us (Bosnia and Herzegovina, Montenegro, Croatia, Slovenia) argue that the function of entrepreneurship in ICT is necessary for three reasons: Accelerating business, Quality business and Market competition.

All three reasons are compelling evidence that the organization, planning, marketing products using ICT easier, more profitable and more focused strategy. The basis for this definition is a set of software and hardware solutions that will help both in production and in the organization, management, planning, controlling, and connect business processes and goal-setting business [4].

The biggest advantage of information systems in the enterprises is to reduce the risk by reducing cost of operations.

4.3. Information system in production

Meaning increases in the operating system functionality, along with a small risk we can cite the example of a company that produces juices and is based in Serbia. The company is the preferred branch processing fruit and vegetables, production of juices, spices and other tomato products. The company is focused on the markets of Serbia, but also it has an export. It is a large manufacturing new information system to be implemented had to meet five basic requirements:

1. that covers all aspects of the business of a company, including the launch of reckoning and production orders, bills, regulations,
2. that the Serbian language but offers the possibility of using the English language, as they are employed in a company party
3. be formatted according to user needs
4. the software is flexible in that it can follow the expansion of the company
5. the team that implements the software has experience with large and complex enterprises and to provide quality local, online and onsite support.

This list was finally enlarge already be every day like let's say that the system should not depend on a few people, upgrade, fast implementation of the necessary requirements defined.

It is certain that it is developing its own information system were impossible, first because of the amount of risk and high cost. On the other hand, it was necessary to find a solution that will be reliable, promising, tested, proven internationally and locally supported, customized and specific legislation to consolidate all the functionality, offer more, and adapt the system to grow along with it.

From the economic aspect of the system is fulfilling all the necessary requirements automatically meet the economic needs of all. Proportionality equal information and economic interests is an advantage in a clear vision of what needs to be improved in the business.

General Manager says that the implementation of the new system successfully achieved the following business activities: acceleration, advancement, and synchronization of all processes, modernization of enterprise organization, dynamics, growth, efficiency and profitability, better strategic decision-making level report and review of the options and process control are infinitely greater.

Training and promotion of innovative information technology content is obtained to increase the production amount of product per unit of time, reduce the amount of labor and the company itself automatically comes to the level of Western European competitive market. Profit becomes larger and easier operation.

5. Conclusions

General overview of the most essential points is safe to conclude, starting from the first thesis, that the state of information systems and society in general words an ambitious, slightly unimaginatively and it was said on the sidelines of world events. The analysis of the results obtained statistics put the research to be aware that the further development of the IS, and especially in the function of entrepreneurship in a very difficult position.

Accelerating the development is a practically impossible because the funding is limited. Business is in the same condition as it IS the company, not their fault, it was realized the economy as a way of pervading corruption and lies. Proper implementation of the scientific work, training personnel on expert systems could be accelerated level of current definitions of the company to a much more ambitious. Expert systems are the future prospects of IS as installing this type of artificial intelligence reduces risk, increases business efficiency and allows entry into the European market. The development of such systems in institutions, schools, colleges and training for young employees can be recognized: the quality of the state, the resources in the foreground,

and allow the economy to entrepreneurship and to rely on deep scientific results, create great relationships with international partners and to use their experiences to easier to avoid initial mistakes.

According to the decision of the SWOT IS implementation strategies in entrepreneurship is feasible utilizing all of these strengths and opportunities, while not ignoring weaknesses and threats.

New solutions and information's are generally available to the public on the Internet. One of them is presented in the paper, and should be used for the study, explanation, and example. In Step Project Management Edition, software is of exceptionally high quality software that makes it easy to do business. The advantage is the automation of the particular sphere of work so that the user is free from unnecessary for the execution of the instruction.

Our opinion is that the information systems, entrepreneurial economy IS in PE, new solutions, so state. Progress and further development of consciousness is impossible because the world is biggest investment in these very areas. Corporations that have managerial information system in the world cannot compete in the market and thus automatically fail. Determination in building products such company shall be inviolable and without prejudice. In this way, the only possible change in the global development of information systems in the entrepreneurial economy.

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