USING THE INNOVATIVE SOFTWARE PRODUCTS IN THE COMPANIES MANAGEMENT

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In a market economy that constantly changes, companies are constrained to adopt efficient solutions to facilitate the achievement of the medium and long term objectives and also to run faster management processes. One of the most efficient methods in this direction is the usage of "innovative products". Those products are distinguished by the high degree of originality and innovation, providing thus a more dynamic framework in management decisions. In order for the usage of innovative products to become successful, they must reach certain stages related to: development of a strategy for creating a new innovative product; valorization of the internal resources of a company regarding the innovation; creating and launching the innovative product on market; engrossment of new market segments. This paper focuses on software-based products which facilitates making management decision based on obtained high utility data and information. The product that we refer to is an ERP software (Enterprise Resource Planner) adapted to agricultural entrepreneurs. The product has a high degree of inoovation and aplicability.

Key words: Innovation, Innovative Software, SME`S Management,

Jel codes: Q1, M1

1. Introduction

Innovation is generally the main engine of economic growth in the world economy of today. Thanks to innovations implementation processes, products can be obtained with improved characteristics regarding quality, high quality services, new more efficient and cleaner production processes (green), improved models of business management system, modern management methods for improving labor etc. Can be highlighted various types of incentives for businesses and organizations to innovate, including: increasing the market share, conquest of new markets, improvement in the product quality, widening the range of products, replacement of obsolete products, reducing the environmental impact etc. Innovation is based on creativity and innovation and creativity are processes that are interrelated because finding solutions to problems that arise in the process of innovation requires creativity[43].

OSLO Manual Version 3 of 2005[44] proposes classification of innovations into four categories: 1) product innovation; 2) innovation process; 3) marketing innovation; 4) organizational innovation. OSLO Manual recommends the following definition conceptual innovation (technical): "An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in the business practice, in organizing employment places or external relations ". The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new (or significantly improved) for the company.

The innovative product represents an "evolved" product both in terms of news that it brings to the senior management of companies, enabling ways of meeting customer expectations. An innovative product may fall in the following categories:

- for the market - the product can be known on the market in some form and degree of novelty is given by certain changes in its structure;
- for the company - the product can represent an absolute novelty.

Therefore the purpose of publication and continuous improvement of innovative products is to facilitate the managerial decision making processes; to create conditions to increase profitability, and / or satisfaction of customer and manufacturer; to facilitate the identification and entering on new markets and new categories of customers.

[43] http://www.iem.ro/orizont2020/wp-content/uploads/2014 /07/Activitati-inovative-7.1.pdf
[44] OSLO for collecting and interpreting innovation Manual.Guidelines data.3rd ed.OECD / European Community in 2005 http://www.iem.ro/orizont2020/wp-content/uploads/2014/07/Activitati- innovative-7.1.pdf

The reasons that can decisively influence companies in choosing an innovative product could be:

- culture of the company is oriented towards success
- cooperation strategy in technological development
- products well defined and consumer oriented
- effective project management
- team with multidisciplinary competence
- efficient innovation process
- integrated development methods
- optimal conditions for stimulating creativity
- simultaneously of development processes of product, production and marketing
- management of quality assurance

"Successful products may be obtained by those companies which are capable of organize innovation in line with policy and ensure successful implementation them efficently in Perspective of timetable and costs.

All the components that are needed to create successful goods and services form together the system of goods and services (Figure 1). The interaction between these components is critical to the success of new product"[45].

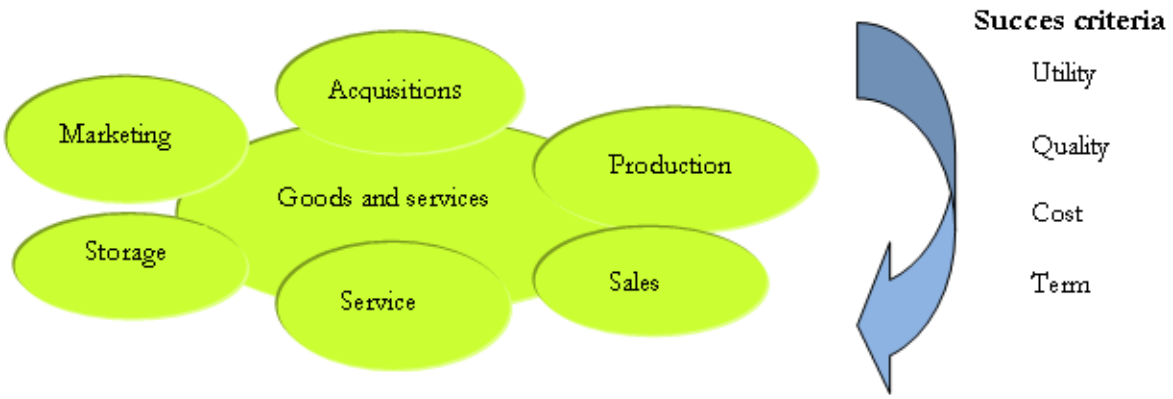

Figure 1: Goods and services system

2. Types of innovative software products

Software products and services, although they have become common and practically involved in all human activities differ significantly from other products and services used daily by humans. First, these products are placed on the market by a large number of participants. Small companies were quickly successful in this field since their entry into the market. Technical innovation in this area, played by strong market dynamics, increases the competition in the software domain, which automatically leads to competition putting increased emphasis on the novelty, but also shorten the product life cycle.

For a software-based product to be classified as innovative product it must complete the following characteristics:

- Aspects regarding the information technology
- GUI, of great significance for users
- Improvement of existing applications that can face progress and innovation in hardware
- Integration software aplications for companies
- Aspects regarding the networking,
- Aspects regarding the business
- Facilitating the access to essentials informations such as stock of the products, structure of the customer, the presence of the equipment in line of work, time off work and possible delays when resuming work,
- Speed up the management decision process
- Generally the consumer market for the software-based product consists of two segments:

[45] http://www.cviu.ro/documents/02_CVIU_Curs_Bazele_mangementului_ITT.pdf

- Organizational consumers (fewer in number than the individual). In this case manufacturers market applications in business should focus its attention on the utility of the products offered to them because, as these organizations, on product requirements are much clearer and more concise. Therefore, for these organizational customers the important points that should be met by software may be: accessible graphics, traceability of several economic indicators, software must be able to issue reports for many key points of the company, subsidiaries or agencies pursuing activities (if applicable)
- Individual consumers (more in number and diversified). Unlike organizational customers, individual customers are more interested in graphics programs for carrying out a large number of tasks by programs and a strong customization of software used.

3. Srategic approach for developing to innovative ERP software - case study CRISTALSOFT Company

Cristalsoft Company is specialized in the creation of informational products and holds the necessary competences needed to create software and hardware architecture of such a product. However, Cristalsoft needs to purchase foreign competences to provide the necessary input for the product development phase needed in clarifying and defining theme design, development solution principle, and assistance in development of product structure, assistance in finalizing the structure of the product, preparing the user manual and market introduction.

One of its strategies is to increase competitiveness of the company by developing an innovative software product and release it on the market. The products that Cristalsoft will develop and launch it on the market is software Enterprise Resource Planner (ERP) centered on the economic activities of major manufacturers of primary agricultural products. To successfully realize this type of product, the company management has set the following objectives:

- developing a strategy for creating a innovative product
- valorization of the internal innovation resources of the company
- creating and launching the innovative product on the market
- diversification of the company's range of products
- entering a new market segment, little exploited so far

The product that will by realized by Cristalsoft that needs the acquirer of outside competences is an innovative product, by the fact that such a product is not found on the market, at least from the datas that are available at Cristalsoft at this time. ERP systems that are available in the market are "Consumers all" systems made to meet the needs of a large range of clients. Most of these systems are optimized for customers such services, trade and production in a simple and linear process. Basic modules are accounting, human resources management, procurement, CRM. Production Module and databases they use are generated as general logical architecture, allowing customization in the implementation process, a process that can extend for over 2 years. Often, the results of this process are questionable. If in the beginning, automatic data processing represented one of the targets - designed to automate the process and eliminate some costs of human resources – on the route appears the impossibility of quasi-total automation, thus reducing production costs, as the production flow increases in complexity and diversifies. Keeping human factor influence brings the possibility of introducing errors and exceptions that affect the quality of management decision support information made available through the dashboard. Another challenge that must answer an all customer ERP implementation process is the integration of all components of hardware architecture. A this type of system is hosted on one or more dedicated servers for client, that adds fixed and mobile workstations and mobile and fixed and mobiles devices - mobile or stationary sensors, barcode readers, etc. For each of these terminals, the programs have to be special created so that it facilitate the collaboration and to avoid conflicts between terminals and their software.

The main purpose of implementing such a system is the following: supllying the evidence and information for policy makers strategic and tactical decision making.. If the degree of accuracy of the information is not high, the error increases with a significant impact on the further development of the company. There are enough cases on market where companies have purchased expensive ERP systems - initial costs of licenses, implementation consulting costs, investments in hardware- that later became unnecessary or very unnecessary, companies were forced to change them or work with them in emergency situations or in a permanent adaptation process.

"The main beneficiaries of such a product would be companies from the agricultural domain. These companies have their own needs and characteristics that clearly differentiates them from other companies that activate in other industries. Agricultural activity has a very high degree of seasonality,

seasonal workers tend often to outnumber stable working force, productivity is extremely varied, agricultural works involve high consumption of resources with a high degree of relativity - diesel consumptions, oil, spare parts - data entry, to be made in real time, involves taking data from different locations, remote and without physical network infrastructure"[46].

4. Reasons to realise the product

An important cause of high prices of food products characteristic of our agriculture is the low productivity aside once a socialist mentality that persists in agriculture and on the other hand the poor organization of agricultural units and hence a poor work organization. Selling prices, sometimes excessive, are given in the end by an imbalance that exists between the supply and demand which can result in certain moments at specular prices. This would not be possible with consistently good yields obtained at some cost prices reasonable. Last but not least we have to be realistic and honest and admit that in our agriculture and waste materials thefts and inefficient work still persist. These shortcomings can much reduce by an online monitoring system of land both manual activities and those mechanization so as to obtain in every moment information provided on the workload of each agricultural area manually or mechanically workload. Online is also determined the fuel consumption and other materials used in the mechanical work. It is also made a thorough accounting of fungicides and insecticides materials consumed in performing activities of the treatment plant, and the quantities of chemical and natural fertilizers used. It is clearly that the problem of reducing the cost of these products is a goal in the context of the general situation described above.

The solution that we propose is developing an ERP system dedicated to the activities in the primary production sector of agricultural products. Acest product is in the early stages of conception; our ideas about how it should look are presented in the following part.

To realise this application all used equipment will be equipped with GPS devices in order to determine the areas in which are executed mechanized agricultural works,also transducers probes that determines in every moment the fuel consumption needed when performing this type of work. All these data will be transmitted via an existing intranet to the databases stored on the main server. Operation in the application is made by the head of the farm or by authorized persons directly on the field by using tablets, light equipment that can be used under theses circumstances. These tablets are interconnected by intranet to the central server.

If we permanently have information over the position, the workload performed by machines, we can calculate the necessary resources and time needed to perform the working process, if needed, necessary machinery can be redirected to other working areas, and we can control their functionality or performed tasks.

The system is not only efficient in the controlling process but also in the operability of the employees, resulting in cost savings and working time.

Tracking system in the agricultural work is a management system based on mobile communication. It is a satellite tracking system that by applying the latest technology, gives users significant cost savings and competitive advantages in the market. The system interconnects with the existing logistics systems and applications that already exist within the company. So the material consumption is given to other subsystems of the integrated information system: purchasing, materials management values, management of fixed assets and depreciation calculation, cost prices. The workload is transmitted to other subsystems: standardization, monthly payments, and cost prices. All these subsystems that interact contain information that will be included in the general accounts of the company and can generate reports reflecting the cost price, yield, various analyzes, etc. Those reports will be useful when making decisions aimed to increase the productivity, reducing costs, increasing production, the ultimate goal pursued is of course the increasing of profits.

Using the system, although it incorporates the most modern technology, is simple, cheap and universal.

Application tracking and standardization of agricultural works is a web application, plays a direct data collection in the field, their transmission to the central server and to set up their in a database designed to be used by other subsystems of the system The information presented above. As computer subsystem app is a three-tier application (application 3Tier). There is a client-side (display of information, where the client chooses its functionality), part of the server where the application is stored all the functionality (Business Logic) and some modules access the database.

[46] Arcadie Hinescu, Radu Matei Todoran, Maria Ureche, Vasile Cimpean, Emilia Cimpean, Business management, Altip Publisher, Alba Iulia, 2010, pp. 57-60.

The web application is mainly used by farm managers (data entry, generating periodic reports) and by administrators (users' list management, rights management and user passwords).

To use the application, users (farm managers and administrators) are provided directly in the field where tablets client application accesses through authentication. After a successful login access to a main menu where they can access all the functionality of the application. User access to application functionality is achieved by setting an administrator rights. This would ensure or deny a user access to any part of the functionality.

The main features offered by the application users (farm managers) are the following[47]:

- Vizualisation of the list with employees associated with the head of farm,
- Record daily attendance of employees,
- Recording and management of manual work,
- Confirmation of mechanical works sent by the working equipments by the GPS equipment
- Generating a report with all the work generated by the employees on manual work.

Another feature offered by the application (transparent to users) is synchronizing geographical structure (plots) and mechanized work submitted by another application that monitors the GPS work by employees and more managed and geographical division list work areas (farms) plots.

The information managed by the web application is taken over by another desktop application that structures the entered data used by other applications in the company: accounting, management property values, balance, HR - payroll, etc.

Functionalities:

- users can login (login) and logout.
- prohibiting or guarantee the users access to the application's functionality.
- personal data - it provides a list of all employees associated to a certain leader of the farm. From this list an employee can be choosen, for which it can be displayed detailed information.
- manual work – the manager of the farm work can add a new manuall work, can visualise already added manual work, from where he can delete or add other employees.
- mechanized work - Head of farm see a list of mechanized works, which he can confirme as correct, or he can set them as being false or can change the mechanical work. At the time of confirmation he can add some comments on that mechanized work.
- Synchronization of mechanized works - farm manager can start a synchronization of the works

In this process the updated list of mechanical works reported by GPS is required to be confirmed.

- timekeeping - head of farm can present the same day the present employees and at the end of the day he can specific the work realized by each of them. The agreed hours are calculated automatically with the working hours of the employee during manual work. These hours can not be modified in the time sheet. Personnal transport - the farm manager can specify the number of persons and registration number of the vehicles used to transport the employees from the working area to the farm headquarters.
- personal report - gives to the users a list of all employees of a company or farm. The report can be exported to CSV.
- Labor achievement report - provides users with a centralized list of all the work realized by the employees on manual work.
- collective sheet - this paper gives to the user the number of hours worked daily and the total presence of employees in a one month period.
- report of employees working hours in a month provides the number of hours worked by employees in a month,
- presence report – provides to the users with a report of employees condfimed as being present by the heads of farm
- report for manual work – gives to the users the last time (date and time) when a manual work was modified,
- report for mechanized work that provides to the users the timeline in which the mechanized works were confirmed by the heads of the farm,
- manage users and passwords – the administrators can use this feature to add, modify and delete users and modify user passwords.

[47] Arcadie Hinescu, Radu Matei Todoran, Services Management, Altip Publisher, Alba Iulia, 2009, pp. 35-39.

- user rights management - administrators can use this functionality to add, modify or delete users rights on certain functionality.
- Rights are the following:
- no right (right 0) user can not access a functionality,
- as normal (right 1) users can use a functionality, but not entirely,
- as superuser (right 2) can use a 100% functionality.
- timing plots - administrators can synchronize plots on an external server (managed by someone else).
- restriction for modifiying the data by users (managers of the farm), if the data is older than a predetermined number of days.
- restriction for changing the data values if the new value is not in a tolerance range (eg the manager of the farm changes the surface worked for manual work, such a change can be made if the new surface is higher or lower by 10 % compared to the old surface).

Most reports behave differently if the user has the right 1 or 2 over the report. Also, most reports are multifiltre and each filter can be applied independently from the others. The application will also take confirmation over the mechanized work reported by GPS and can send all fuel consumption recorded by GPS sensor probes mounted on agricultural machines.

Cristalsoft holds technical skills - licenses and programmers - needed to develop such an innovative software product. Cristalsoft has no experience in product development of this scale. The developed information products developed till now were realized on small scale or have been developed for a single customer, adapted to its needs.

From experience till now, however, results in the need for a strategic approach in the development of this new software product. In the absence of a strategic approach in the product development the risks are the following:

- inadequacy or only partial suitability of the product for the final user
- promote a sale price too low or too high compared to the market possibilites
- insufficient flexibility of the product towards its potential - Product circumscribing on some national markets could cause difficulties for regional market penetration due to the lack of flexibility of specific modules, namely language, accounting law, reporting templates, currency, etc.
- imbalanced usage of internal resources - financial, human, knowledge - with impact on the economic competitiveness of the company.
- Choosing a inadequate marketing model, both in terms of market capitalization and in terms of adaptation and subsequent maintenance for the customer.

Applying these risks to further performances of the product and the company's results the following possible consequences:

- development costs higher than optimum
- incomes lower than market potential
- barriers to entry in other markets

This is the motive why we consider necessary the acquisition of external competences needed to achieve the strategic approach for the development of the new software product realized by Cristalsoft. The strategy for developing the information product should provide Cristalsoft the following data, information and tools:

- Generating the concept
- Evaluation of the concept
- Market analysis
- Strategic orientation
- Management of product development
- Optimization of the process
- Economic analysis
- Cost analysis
- Marketing strategy

Normally, our estimate is that in normal development of such a product should be performed in two years, which means only development costs associated human resources amounting to 469,440 lei, which means total salary expense to pay is 3000 lei net for the programmers for a team of 4 persons for 2 years. Given the risks have outlined above, such an investment is too important to rely only on our internal resources. In the case of purchased outside competences to realize the product development strategy, we estimate that development time is reduced by half, with significant impact on the development costs. The mentioned discount will be the effect of a better organization of research and product development and reducing the time needed and the resources involved in testing

and in the process of "learning by doing" to address issues that transcend programming, respectively estimating the market, cost estimates, organization of production, testing, market launch, creating the commercial identity of the product, sales strategy and so on.

Our estimate is that such a product, well made and well sold, can generate alone a growth of the company's turnover by 20%. as can be seen in the projection of the profit and loss account attached.

Realizing with external resources the product development strategy will have an impact as a process of transfer of good practice from the team that will develop the strategy to Cristalsoft, allowing the company to approach with more confidence in the future development this types of products.

5. Potential beneficiaries of the product

The direct beneficiaries of this project are: the employees of the company, in total of 28
Indirect Beneficiaries:

- employees' families by keeping their jobs
- clients through developing a good and useful product
- providers for hardware solutions
- local budget through collection of taxes
- general budget through collection of taxes
- business associations by increasing the companys profit
- local community, both directly by its taxes and by the horizontal development that increases the turnover determined by additional injection of capital into the local economy.

6. Resources involved in the realization of the product

Cristalsoft company will provide for the project both material, financial, and human resources.

Material resources consist in the office located in Alba Iulia, at Nicolae Titulescu 8, premises containing offices, data systems - computers, servers - printers and communication systems, their usage is necessary to achieve the objectives of the project but not included as acquisitions in the project and do not constitute as input at project costs.

Human resources involved in the realization of the project's implementation team are, are consisting in the project manager, technical manager and economic manager and acquisitions, also the team that will be formed for placing in practice the project's results.

Cristalsoft has specialized staff in sales, programmers, engineers and economic staff. According to our initial estimates, the implementation of the strategy we will need at least two engineers, two programmers, one economist and one specialist in marketing. The financial resources that we provide are made up of contributions paid to the eligible costs, payment of ineligible costs and coverage of the expenses for the internal implementation team during the time allocated for the implementation of the project.

7. Project management

The integrated approach towards project management in the company management practice is the key to a proper implementation and its success.

The successs of the project is ensured by applying coherence in the specific objective (purpose) and the activities described and human resources, financial and logistics provided by the financier, the applicant and subcontractors. The overview of the project is ensured by integrating elements identified in the preparatory phase of the project and in the implementation phase.

Implementation of the investment project is designed on three reference level with clear interactions between them, namely: level of funding, implementation level and control level. They are defined in a relational assembly, both vertically through the tasks and responsibilities, as well as through sectoral collaboration and information.

It will consider the following: monitoring compliance with procurement procedures; monitoring of technical work; monitoring the making of the reports to the Managing Authority / Intermediate Body; monitoring the production of technical and accounting records; supervision of payment; supervision of all activities.

The implementation mechanism

We consider that the success of the project is based on the quality performance of the members of the team. The mechanism of implementation is based on three key elements: adequate project structure and an efficient organization - effective management of the project team skills and quality of services project team members.

Project team structure was determined from the key areas of responsibility necessary for the project:

a. Coordination, management team, internal and external relationships

b. Procedures for procurement, specific implementation procedures
c. Financial and accounting activity

Based on these three areas of responsibility were determined or 3 operational key positions:
1. Project manager
2. Financial manager
3. technical manager

Table 1 Sources of funding

Nr. Item.	Sources of funding	Value (lei)
i	**The total value of the project**	298840
ii	**The ineligible value of the project**	58840
iii	**The eligibile value of the project**	240000
1	**The grant requested**	168000
2	**Contribution of the applicant**	72000
2.1	**Contribution in cash**	72000
2.2	**Contribution by debt**	0

Source: author processing

8. Conclusions

In the presented article we presented a strategic approach to product development for innovative SMEs in the context of realization of projects supported by funding from the European Union. The case study from the IT Company Cristalsoft is an example of good practice in approaching the projects for innovative products.

It should be noted that besides the strategy formulated in the article was developed an financial application which was filed to ADR and Center an approved the budget presented above.

Type software applications have become very important for any economic agent and for a very large number of employees, employers, and researchers, academics, students or students. Therefore the software products permanently contribute to economic growth, but is an area strongly marked by fierce competition. This led to the shortening of the life cycle of software products and services, and manufacturers, many in numbers, their entire business based on innovation and competitive advantage.

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