TANGIBLE LONG-TERM ASSET ACCOUNTING SOFTWARE SELECTION IN UKRAINE: CASE STUDY

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One of the important management decisions is the selection of computer program that will ensure the effective functioning of accounting system in any company with minimal costs. As a result, the topicality of the study is to evaluate packaged software selection and satisfaction of users. The purpose of the paper is to develop the methodical approach of evaluation of the software selection for accounting of tangible long-term assets in Ukrainian ferroconcrete structure plants. To achieve this aim the method of experts’ evaluations is used. The methodical criteria of evaluation of the software selection for accounting of tangible long-term assets are suggested which based on this method. These criteria involve a number of quality characteristics which represented in the form of points to evaluate selection of the most effective accounting computer program. A case example for ferroconcrete structure plant demonstrates the applicable use of such methodical tools for evaluation of the accounting software selection to the business segment which is specialized in the manufacture of concrete products.

Keywords: tangible long-term assets, experts’ evaluations, software selection, software evaluation, ERP-systems, EAM-systems, MRO-systems.

JEL codes: M41, M15.

Introduction

Top managers of great industrial companies have to analyze large volumes of information on financial and economic activities to make important management decisions. Such actions are difficult to perform in the present conditions of uncertainty and risk. Therefore, there is a need to use modern information technologies, particularly for accounting in an automated mode. Such software use reduces the processing time and minimizes company’s expenditures.

Tangible long-term assets occupy a large share in total company assets, especially in heavy industry despite the high rates of development of a service sphere and increase of a share of intangible assets under globalization. Accounting of tangible long-term assets is complicated by the fact that their location changes frequently. In addition, amount of such assets in industrial companies is large enough. Therefore, the effective software should be used to improve the quality of the information concerning tangible long-term assets and its operational obtaining by the management.

Ukrainian modern computer programs that are used for accounting of tangible long-term assets have a number of drawbacks. There are their incompatibilities with other software, inability of flexible reporting about tangible long-term assets for internal management purposes, the problems with accounting of tangible long-term as-
sets in various financial reporting regimes, the impossibility of constant online vendor support. These factors of influence should be considered when managers evaluate the efficiency of appropriate software for accounting of tangible long-term assets.

The problem is that most managers of Ukrainian ferroconcrete structure plants when choosing software for accounting tangible long-term assets are not using scientifically based methods to assess the most effective selection of the appropriate computer program. So they do not evaluate in quantitative terms their selection of accounting computer programs. Furthermore, the price is primary factor that determines this selection. Accordingly, software specifications and other program attributes are considered by Ukrainian industrial companies as secondary factors of influence. Therefore, the development of methodical approach for evaluation of software selection for accounting of tangible long-term assets is a key issue of the research.

Many scholars examine importance of factors that influence on the decision to select the appropriate software for business (Andersen, 1997; Chau, 1995; Gamblin, 1997; Little, 2006; Sahay, 2003 etc.). Some scholars conduct research in the field of information technologies to automate the process of identifying factors that may influence the choice of specific software (Bandini, 2001; Grau, 2004; Kathuria, 1999 etc.). There are also attempts by some scientists to propose methodologies for evaluating the effectiveness of software selection for business (Carpenter, 2005; Ivanchevich, 2007; Saaty, 1980 etc.). However, these methods are quite difficult for use as it contains complex mathematical apparatus. Their approaches are acceptable in developed countries. But in conditions of transitional economies many additional factors need to be considered that may influence selection and implementation of accounting software. In addition, most research papers is devoted to general problems of software selection and implementation for business and management, not paying enough attention to evaluation of efficiency of software selection for accounting. Therefore, the problem of evaluating of accounting software selection needs to be solved.

The object of the research is software for accounting of tangible long-term assets.

The aim of the research is development of practical recommendations for evaluation of selection of the most appropriate computer program for efficient accounting of long-term assets in developing countries, including Ukraine.

To achieve the aim the following specific tasks need to be solved:

• to analyze the studies of various scholars who have considered the problems of software selection decisions and their evaluation;

• to consider classification of selection and implementation approaches for automation of accounting of tangible long-term assets;

• to offer the methodical criteria of evaluation of the software selection for accounting of tangible long-term for Ukrainian ferroconcrete structure plants designed to provide the most efficient possibility to account long-term tangible assets with lowest costs.
Methodology of the research

In the research the historical method is used to analyze studies of various scholars on the issue of software evaluation which based on screening factors that influence on the selection of appropriate computer programs by managers.

The method of grouping and comparative method are used for classification and disclosure characteristics of accounting software for tangible long-term assets.

In addition, in the study the method of experts’ evaluations are used to develop an approach for evaluation of selection of the most appropriate software by ferro-concrete structure plant for accounting of tangible long-term assets with minimal costs. This approach incorporates two stages: 1) pre-selection of a list of software packages; 2) evaluation of selection of several suitable computer programs.

Initially, managers develop a list of accounting computer programs and narrow a number of products for detailed consideration. In the second stage managers determine a number of quality characteristics which represented in the form of points to compare and evaluate various products. Then the most effective computer program for accounting of tangible long-term assets is chosen.

Results

1. Analysis of reviewed scientific literature
Most scholars who deal with issues of evaluating and selecting of business software assume that the goals of evaluation software criteria are (Mollaghanemi, 1997):

- to help sort out the most appropriate alternatives from all software packages;
- to help rank the selected programs according to a specific methodology;
- to help customers choose the best business computer program.

At the present stage of science there is no general methodology for software selection and implementation for business activities. The most consistent scholars in this issue is A. S. Jadhav and R. M. Sonar. In particular, they develop a generic stage based methodology for selection of any business software package which consists of following seven stages (Jadhav, 2008):

- definition of the purpose for the selection, acquisition and implementation of appropriate software;
- developing the selection list of suitable computer programs;
- deviation most packages that do not have required attributive features;
- using an evaluation approach to obtain a score and ranking list;
- scrutiny of appropriate software trial copy and its testing in business environment;
- agreement to purchase the appropriate software that contains information about number of licenses, payment schedule, vendor support, repair responsibilities, external consultants etc;
- purchasing and implementation of the most appropriate computer program.
The process of evaluation of software selection for business activities requires sometimes the use of appropriate computer programs. Some software packages already exist to partially support these activities.

P. Kathuria examined a knowledge-based system that is designed to help managers in effective selection of appropriate business software that are consistent with competitive priorities and process structure of a company. This program is developed using KBSs (Knowledge Based Systems). KBSs are computer information systems which comprise the expert knowledge and manipulate this expertise to solve problems at an expert level of performance. These systems have the ability to encode the management information and produce expert diagnosis. Such selection software are used in the cases where there is a need to quickly choose the appropriate computer program that best match company’s business strategy (Kathuria, 1999).

S. Bandini presented the software tool to help managers and engineers in the design process of COTS system (commercial-off-the-shelf software) solutions. This tool is designed for selection and implementation of COTS components to deliver tailored complex business software packages (Bandini, 2001).

G. Grau developed the software system that called DesCOTS (description, evaluation and selection of commercial-off-the-shelf software). This system includes various tools for COTS evaluation and selection: the quality model tool for definition of user requirements (functionality, reliability, usability, efficiency, maintainability, portability etc.), the COTS evaluation tool for definition of the hierarchy of quality factors and evaluation of the program using the quality model; the COTS selection tool for definition drivers of the software selection (analysis of the stated requirements), the taxonomy tool for reuse use of the quality model (Grau, 2004).

All these software tools do not support all stages of the software selection and evaluation for business activities. In addition, such tools for software evaluation are acceptable only in general cases when business computer programs do not take into account specifics in production of output.

Development of the methodology for software selection, evaluating and implementation is a very important issue too. There are several approaches for software selection and evaluation that help managers to make preference decisions over the available alternatives. The first approach is based on the analytic hierarchy process (APC) which was developed by T. L. Saaty (Saaty, 1980). This approach consists of several levels of hierarchy. The highest level considers the goal of software selection. The next level examines the factors which are subdivided into the smaller components in lower levels. The alternatives are contained in the lowest levels of the hierarchy. The separate estimates are established for each factor on appropriate level with respect to each factor on the level immediately above it. This is done by pair-wise comparison between the factors at each level. Such comparisons are the basis for calculation of weight for each factor. The second approach is based on weighted scoring method. In this approach weights and estimates are assigned for each criterion (factor) where weights reflect importance of each criterion. All rating scales are calculated by multiplying corresponding weight and estimate of each criterion. Finally all rating scales are compared to calculate an overall tool score (Jadhav, 2008). The author’s research is based on this approach.
The analysis of research papers reveals that many scholars involved in evaluation of selection and implementation of business software consider factors that affect the decision on selection of the appropriate software in a company. However, the problem is that most of developments do not include many factors that can significantly affect the decision. Besides, in these researches there is no systematic approach i.e. the simultaneous effect of external and internal factors on the management decision of the company are not considered by managers. Also, in the most studies the regression analysis is used which requires a large amount of data that the sample will be representative. On the following samples a number of restrictions is imposed which can significantly distort the result (Chau, 1995). Most of the proposed methods do not take into account the specifics of accounting objects including accounting of tangible long-term assets which significantly affects the quality of the company information system. Therefore, these approaches do not allow determine how the particular company may determine what software should be bought that its accounting system operates efficiently and with minimal costs.

Some scholars consider the relatively limited range of the factors that influence the company's decision to purchase the computer program for its business: compatibility with other software, advanced features, ease of use and price (Gamblin, 1997). Some approaches of accounting software selection do not include alternatives for the best management selection which limits their use (Andersen, 1997). Other scholars assume that there is a need to consider only the organizational structure of the company in a process of accounting software selection (Mattingly, 2001). Some researchers also assume that the company should consider what computer programs are used by competitors and whether such programs will maximize its profits taking into account the relationship with the provider of this software – training possibility for the staff concerning program use (Little, 2006).

There are some approaches that include in their models more factors that are ranked by the criteria of the importance. Thus, the most important factors include price, technical features of the software, technical support and services. The secondary factors include possibilities of accounting software venders of the software, industry covering etc. (Sahay, 2003).

However, one of the first scholars who systematically started to explore the importance of factors in management software selection decisions is P. Y. K. Chau. In the study, he examined the importance of more than 20 factors, including: compatibility, easy of use, price, popularity, user training, user skills, reputation, potential vendors, external consultations etc. The scholar used the method of experts' evaluations which include a sample of 500 small enterprises and econometric equations to calculate the impact of each factor of importance. The scientific originality of this approach is that it has been proven that views of owners and managers about the selection of software solutions for business activities differ. For owners of the most important selection attributes are the ability of user training, technical skills and experience of using products developed by the same vendor. Instead, for the managers of the companies the most important factors of influence are technical support, price and user training. It should be noted that the groups of the important factors for software selection evaluation is considered including factors related to the vendor, factors re-
lated to the packaged software and factors related to the opinion (for example business external consultants) (Chau, 1995). But Chau’s approach has some limitations. First, most business computer programs are used in small companies. Second, the econometric model operates with average variables which can significantly distort the economic results.

Some American scientists including S. H. Ivancevich, D. M. Ivancevich and F. Elikai made a detailed analysis of accounting software selection. Its scientific originality lies in comparing of the factors impact on the selection of users of such software and their vendors. The made research showed that users and vendors of accounting computer programs have slightly different criteria for their selection. In particular, the main characteristics that are paid attention by users are the accounting software compatibility with other programs and price. While vendors of accounting software consider that the main factors for accounting software selection are functionality, price, service and technical vendor support (Ivancevich, 2007). However, this analysis of accounting software selection does not give any information concerning the ranking criteria of these programs for selection of the best management decision.

The approach of accounting software selection proposed by C. G. Carpenter, L. A. Le Blanco and G. S. Robson can be considered as the most appropriate for software selection. This approach aims to find the most important selection criteria which are estimated by the method of the experts` evaluations (Carpenter, 2005). Besides, this research takes into account the specifics of accounting objects because it is created to select the fixed asset accounting software. However, this approach uses averaged variables of trading companies which can lead to erroneous results applying this method to other activities for implementation of specific management decisions. It is also should be noticed that this approach was proposed for companies that operate in developed countries such as the U.S.

In the research the above mentioned approach will be used as a basis which will take into account factors that are inherent for the heavy industry in developing countries, including Ukraine.

2. Classification of approaches concerning organization of tangible long-term asset accounting software

Before the accounting software will be bought typical organizational approaches to its selection and implementation for accounting should be considered. At the present stage of accounting development there are several approaches to the automation of tangible long-term asset accounting (Сидоренко, 2011):

- automation of all accounting objects on the basis of one universal computer program (ERP-system, complex accounting computer programs etc);
- use of several computer programs each of which automates its operation scope, for example, EAM-system and MRO-systems for the management and accounting of tangible long-term assets.

At the present stage of development of accounting system in Ukraine most industrial companies use complex computer programs for accounting of all objects. Such products cannot provide the functions that can be implemented in special software packages for accounting of separate objects considering the needs of manage-
ment in specific economic activities. For example, managers of ferroconcrete structure plants need such software solutions in accounting of tangible long-term assets:

- opportunity to track changes in the current location of tangible long-term assets that will help to reduce thieves of property in a company;
- ability to plan repairs of tangible long-term assets;
- registration of technical data for these repairs;
- availability of modules for accounting and management of acquisition of spare parts to repairing tangible long-term assets which enables automatically record the receipt of such details;
- opportunity to collect technical information about the status of tangible long-term assets using bar codes;
- ability for financial calculations regarding the decision of the purchase utility of tangible long-term assets or taking them in financial leasing.

These software solutions for accounting of tangible long-term assets in Ukrainian ferroconcrete structure plants can provide ERP- and EAM-systems. The main differences between ERP- and EAM-systems are reflected in Table 1.

Table 1. Analysis of the main differences between ERP and EAM-systems

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>ERP-systems</th>
<th>EAM-systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of the information technology</td>
<td>Universal Computer Information System</td>
<td>Specialized Computer Program</td>
</tr>
<tr>
<td>Level of business processes’ management</td>
<td>Strategic, tactical, operational</td>
<td>Operational</td>
</tr>
<tr>
<td>Management objects</td>
<td>All economic activities of a company and its structural elements</td>
<td>Property, plant, equipment (fixed assets)</td>
</tr>
<tr>
<td>System functions</td>
<td>Company resource planning, collection of all manufacturing and financial information, accounting</td>
<td>Company material resources planning, collection of the information about fixed assets, organization of documents circulation concerning the maintains and repair of fixed assets</td>
</tr>
<tr>
<td>Main faults</td>
<td>High price of licenses to use the program, introduction takes about 3 - 9 months</td>
<td>Presence necessity for all documents for each unit of the equipment</td>
</tr>
<tr>
<td>Examples of accounting software</td>
<td>SAP R/3, Oracle E-Business Suite, Parus – Enterprise 8 (Парус-Предпринятие 8), Galaktika ERP (Галактика ERP), 1C: Accounting 8 (1C: Бухгалтерия 8)</td>
<td>SAP EAM, IFS Applications, TRIM, 1C: TOYR (1C: TOHP), SOLAX, iMaint, Galaktika EAM (Галактика EAM)</td>
</tr>
</tbody>
</table>

More functional computer programs are MRO-systems (Maintenance, Repair & Operations) EAM-systems. They are mainly used to automate maintenance and repair of complex technical systems. The main advantages of such programs are creation of databases on the configuration of all units of serving facilities, resources for storing the entire history of breakdowns, repairs and modifications of tangible long-
term assets, all operation specifications in a systematic and chronological sequence (Чимшир, 2009).

In addition to the purchase of standard software packages the option is possible when the company may order from the vendor of accounting software for development of a special product to be used only by the one company (Івахненков, 2008). This will allow the program to take into account all the specifics of the business activity. But the development of such computer program is an expensive pleasure which only large corporations can afford. Therefore, for most companies on the territory of the former the Soviet Union it is advisable to purchase standardized accounting software.

3. Methodical approach

The problem is in the fact what the software should be purchased for the particular company that its accounting system will operate efficiently and at the minimal cost. To answer this question the use of the methodical approach is suggested which will be used for accounting of tangible long-term assets on the example of PAT “Bilotserkivskiy ferroconcrete structure plant” (ПАТ “Белоцерковский завод железобетонных конструкций”).

In this company the program 1C: Enterprise 8 (1С: Предприятие) is used which is designed to automate all objects of accounting. However, company’s management is planning to expand analytical capabilities of the software concerning the information about tangible long-term assets that will help make effective management decisions in the future. This is because the significant share in the company is taken by tangible long-term assets which are constantly changing their location. It complicates to track their location during the inventorying. Besides, the company plans to improve policy of the maintenance and repair of the production equipment. This will help reduce operating costs. That is why the administration to improve the accounting of tangible long-term assets needs to decide which program to buy on the platform of EAM-systems.

Proposed methodical approach consists of two phases:

1) pre-selection of a list of software packages which help accounting of tangible long-term assets can be made;

2) selection of several suitable computer programs and implementation of an expert study to select the most appropriate information support.

The initial selection there is a need to determine the reason of purchasing of accounting software (for growth of analyticity and functioning of tangible long-term asset accounting system). This initial software selection is important step on which the future selection of the program depends, especially in situations where there are a large number of vendors and software packages for accounting of tangible long-term assets. For such situation it is proposed to define the following selection criteria:

a) compatibility of the software package with Windows (XP, 7, 8) or LINUX depending on the preferences of a company;

b) possibility of the independent operation of individual modules from the general accounting ledger;
c) availability of the information about program products and their providers. Such criteria can quickly reduce the number of “questionable” products offered on the markets of developing countries.

The accounting software market in Ukraine as in other post-Soviet countries is represented by the limited number of programs, specifically 1C, Galaktika (Галактика), Parus (Парус). Those vendors are the market leaders in Ukraine. Ukrainian companies are increasingly starting to use SAP, Oracle, BAAN, etc. However, it should be noticed that the market sector of EAM-systems in Ukraine is only gaining momentum. Besides, there is a problem of the constant support from the vendor of the computer products. Taking into account the above mentioned criteria for the studied company the most appropriate computer programs are 1C: TOYR (1C: ТОИР), Galaktika EAM (Галактика EAM) and SAP EAM.

On the second stage when several most suitable programs are selected it is offered to estimate them using calculates based on certain criteria that are the most important for the company. In particular, for an industrial company which is engaged in manufacturing of concrete products it is offered to estimate by three groups of factors, namely:

- functional factors;
- expendable factors;
- vendor information

Companies engaged in the production of concrete products have a wide range of tangible long-term assets and therefore records on the accounts concerning their accounting occupy a fairly large share in the accounting system. Besides, it should be noticed that these companies have subsidiaries and it complicates the work by permanent changes of the location of corresponding objects (vehicles, cranes, equipment, etc.) for which it is very hard to follow. The appropriate information support by which it is planned to account long-term assets should be able quickly to handle large amounts of data to provide the relevant and accurate information about them to managers. It would be appropriate that the software will have technical capabilities needed for the forecast financial analysis of future investment projects.

Quite a large role expendable factors play by selecting and implementing of computer programs especially expenses for the purchase of the relevant information product, annual (monthly) operational costs for servicing such information product, training costs and expenses for the improvement.

Equally important group of factors is the information about the software vendor especially the information about his products, information about the financial situation of the vendor, duration of his existence in the market, possibility of the constant online customer support in case of technical issues related to the use of the accounting software, possibility of the further service, etc.

Each group of factors proposed to divide into the characteristics which are listed in Table. 2.
Table 2. Block of characteristics by which the selection of the software for the accounting of long-term assets is made

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Functional factors</strong></td>
<td></td>
</tr>
<tr>
<td>Flexible reporting about tangible long-term assets</td>
<td>Ability to report not only by forms approved by the state but also by internal reports for the management. Ability to comply statistical reports about long-term assets.</td>
</tr>
<tr>
<td>Export / Import of data</td>
<td>Ability to transfer data from other software products concerning the information about long-term assets. Compatibility with other software products.</td>
</tr>
<tr>
<td>Leasing operations (purchase)</td>
<td>Ability for financial calculations regarding the decision of the purchase utility of tangible long-term assets or taking them in financial leasing.</td>
</tr>
<tr>
<td>Improvement (flexibility)</td>
<td>Ability to improve the software by adding new modules or improving the functional quality of the program.</td>
</tr>
<tr>
<td>Bar-code</td>
<td>Ability to use devices for barcode sensing where inventory numbers of objects of tangible long-term assets are indicated to conduct inventories.</td>
</tr>
<tr>
<td>Access</td>
<td>Ability to differentiate the access for the information about long-term assets through personalized access codes.</td>
</tr>
<tr>
<td>Online mode</td>
<td>Ability for functioning of the information product in the Internet network and ability to work in the real time mode.</td>
</tr>
<tr>
<td>Parallel accounting</td>
<td>Ability to account parallel under IFRS, GAAP US and Ukrainian accounting standards.</td>
</tr>
<tr>
<td><strong>Expendable factors</strong></td>
<td></td>
</tr>
<tr>
<td>Expenses by the purchase</td>
<td>Purchase price; duty; indirect taxes which are not reimbursable by the state; other expenses directly attributable to the purchase of the software and bringing it to a state in which it is useful.</td>
</tr>
<tr>
<td>Training costs</td>
<td>Expenses associated with trainings of the staff who will account long-term assets with the acquired information product.</td>
</tr>
<tr>
<td>Improvement costs</td>
<td>Expenses associated with an increase of corresponding computer program modules for the accounting of long-term assets or update to a new version, etc.</td>
</tr>
<tr>
<td>Monthly (annual) operational maintenance costs</td>
<td>Expenses associated with the maintenance.</td>
</tr>
<tr>
<td><strong>Information about the vendor</strong></td>
<td></td>
</tr>
<tr>
<td>Duration of the vendor presence on the market</td>
<td>Duration of the presence of the vendor on the market of accounting software, vendor information support for accounting of long-term assets in the corresponding market segment at least for three years.</td>
</tr>
<tr>
<td>Ability of the online support</td>
<td>Support with the help of the Internet network of client companies if they have some technical problems or questions about the use of the program. Existence of detailed on-line instructions for the use of the program.</td>
</tr>
<tr>
<td>Financial situation</td>
<td>Ability to provide the information about the financial position and incomes level and expenses of the vendor of the software (taking into account his reputation) for potential customers.</td>
</tr>
<tr>
<td>Subsidiaries</td>
<td>Existence of subsidiaries of the vendor in the region where customers perform their business activities who purchase the software for accounting of long-term assets.</td>
</tr>
</tbody>
</table>

Every characteristic is proposed to estimate by multiplying the total score (scale from 0 to 10) and weights from 1 to 3 (minor – 1, significant – 2, very significant – 3).
3) which provides the appropriate characteristic with the significance. Therefore, the overall score for each selected computer program for accounting of tangible long-term assets is calculated using the following formula:

\[ X_i = \sum_{a=1}^{n} w_a x_a + \sum_{b=1}^{m} w_b x_b + \sum_{c=1}^{p} w_c x_c, \]  

(1)

where \( X_i \) – total score of i-information product; \( a, b, c \) – characteristics of the functional factors block, block of expendable factors and block of the vendor information; \( w_a, w_b, w_c \) – scales of each characteristic of functional factors, expendable factors and factors of the vendor information; \( x_a, x_b, x_c \) – total score of each characteristic of the functional factors block, block of expendable factors and block of the vendor information; \( n, m, p \) – number of characteristics of the functional factors, the expendable factors and the vendor information.

The estimates calculation of software products for PAT „Bilotserkivskiy ferro-concrete structure plant” presented in Table. 3.

Table 3. Calculation of estimates for software products for the accounting of tangible long-term assets

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Scale</th>
<th>SAP EAM</th>
<th>1С: TOYR</th>
<th>Galaktika EAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Point</td>
<td>Result</td>
<td>Point</td>
</tr>
<tr>
<td><strong>Functional factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexible reporting about tangible long-term assets</td>
<td>2</td>
<td>9</td>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td>Export/Import of data</td>
<td>3</td>
<td>7</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>Leasing operations (purchase)</td>
<td>2</td>
<td>8</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>Improvement (flexibility)</td>
<td>3</td>
<td>9</td>
<td>27</td>
<td>9</td>
</tr>
<tr>
<td>Bar-code</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Access</td>
<td>3</td>
<td>9</td>
<td>27</td>
<td>9</td>
</tr>
<tr>
<td>Online mode</td>
<td>3</td>
<td>10</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td>Parallel accounting</td>
<td>2</td>
<td>8</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td><strong>Expenses factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expenses by the purchase</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Training costs</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Improvement costs</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Monthly (annual) operational maintenance costs</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td><strong>Vendor information</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duration of the vendor presence on the market</td>
<td>2</td>
<td>6</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Ability of the online support</td>
<td>3</td>
<td>10</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td>Financial situation</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>Subsidiaries</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Total points, points (( X_i ))</td>
<td>269</td>
<td>X</td>
<td>288</td>
<td>X</td>
</tr>
</tbody>
</table>

Thus, basing on experts’ valuations the most acceptable solution is the selection of 1С: TOYR which has 288 points and the least attractive program is Galaktika.
EAM. Without a doubt SAP EAM is the most functional information product that provides the management of tangible long-term assets throughout the asset life cycle providing the strong analytical basis for economic analysis. However, the main representative office of the company SAP in post-Soviet countries is situated in Moscow. This complicates company’s cooperation with the vendor concerning the constant maintenance. Moreover, this decision can be a separate module of the program SAP R/3 which is very expensive. It is not profitable for PAT “Bilotserkivskiy ferroconcrete structure plant” to buy such program. Also it should be noticed that the company uses 1C: Accounting 8 which together with 1C: TOYR built on the same platform (information products from one vendor). It facilitates their compatibility.

If at this stage much more software packages will be, for more efficient selection of the necessary computer program for accounting of tangible long-term assets also it is proposed to assume the minimum threshold \( X_i^{\text{min}} \). This will also reduce the number of selected products. However, for this example this is inappropriate because there is small number of selected programs. It would also be advisable to calculate how much costs are per one estimate unit. This figure is calculated by the following formula:

\[
Y_i = \frac{X_i}{C_i},
\]

(2)

where \( X_i \) - total score of i-information product; \( C_i \) - total costs for the purchase of i-information product.

However, for the studied company it is impossible to calculate this figure because of the lack of information about the pricing of these products due to the commercial secrets and individual approach to clients from the vendor position.

**Conclusions**

1. The majority of Ukrainian users of software for accounting of tangible long-term assets do not pay attention to the impact of the selection of appropriate information products. This is because the biggest arguments for choosing of computer programs are only the price while technical specifications are minor characteristics. This may increase the risk of software implementation failure and result in wrong strategic decisions with subsequent economic loss to the organization.

2. The proposed methodical approach for evaluation of software selection for accounting of tangible long-term assets is a simple to use because it does not require deep mathematical calculations. This approach takes into account software costs, program specifications and information about software vendor as equally important factors influencing the total rate of evaluating of software selection. In addition, this methodical approach takes into account alternative software evaluations that help to reduce the risks of software implementation failure. It enables to choose the best software alternative with minimal costs.

3. Based on results of analysis, the author concludes that the proposed methodical approach for evaluation of accounting software selection can be applied to any Ukrainian company that produces ferroconcrete structures.
References

ВЫБОР ПРОГРАММНОГО ОБЕСПЕЧЕНИЯ ДЛЯ ВЕДЕНИЯ УЧЕТА МАТЕРИАЛЬНЫХ ДОЛГОСРОЧНЫХ АКТИВОВ В УКРАИНЕ

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Аннотация

Выбор компьютерной программы, которая обеспечит эффективное функционирование системы бухгалтерского учета на предприятии с минимальными затратами, является одним из главных управленческих решений. Вследствие этого актуальность данного исследования заключается в оценке результативности выбора таких программ на предприятии. Целью статьи является разработка подхода для оценки выбора компьютерных программ для ведения бухгалтерского учета долгосрочных активов на украинских заводах железобетонных конструкций. Для достижения этой цели использован метод экспертных оценок. Автором предложен методический инструментарий на основе использования этого метода, который включает огромное количество качественных характеристик, представленных в форме баллов, для оценки выбора наиболее эффективного пакета программного обеспечения, реализованного на конкретном примере. Этот пример показывает применение такого инструментария ко всем предприятиям, которые специализируются на производстве железобетонных изделий.

Ключевые слова: материальные долгосрочные активы, экспертные оценки, выбор программного обеспечения, оценка программного обеспечения, ERP-системы, EAM-системы, MRO-системы.
JEL коды: M15, M41.