

Satisfaction, understanding and Efficiency for the Assessment of Enterprise Software

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ABSTRACT: *The survey study in the current paper was performed to determine quality evaluation procedures for enterprise software packages used in Small and Medium Enterprises (SMEs) in Kazakhstan. Insufficient or misleading information about specialized software is a big problem businesses often don't discuss openly. Some managers are forced to spend time determining if the software is appropriate for their business without a trial period, because there is a lack of entry-level information about the new enterprise software. Business owners without the appropriate technical knowledge often miss crucial indicators in the software substitution process. Thus, the survey investigates the types of enterprise software used and who selects SME software in Kazakhstan businesses. The study represents three different criteria such as satisfaction, understanding and efficiency. Organizations rated their experience with enterprise software using these metrics. The results from the survey provide important insight to software vendors and organizations that develop enterprise systems in the surveyed region.*

Keywords: Software Selection, Enterprise Software, Software Evaluation, Software Substitution, SME, Kazakhstan

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1. Introduction

Enterprise software is a common necessity for Small and Medium Enterprises (SMEs). Most organizations cannot afford to reinvent the wheel when specific enterprise software is available and ready to use as an alternative. To choose the right enterprise software, organizations need to evaluate existing types of software available in the market to satisfy their needs. Evaluating software that they will use to improve and streamline their business is critical. The importance of this topic was mentioned in variety of studies (Mark Keil & Amrit Tiwana, 2006); especially when it is widely used for broad functionalities. Enterprise software attracts managers with non-technical product marketing and as a result, the software's business relevance is poorly estimated.

Maintenance plays an important role in the life cycle of a software product (ISO/IEC-12207, 1995). Evaluation instruments provides a wider vision of the maintenance of the existing software. Having clear communication with end-users and creating requirements from this interaction helps enterprise software developers sort out potential software improvements. Furthermore, this communication will provide the SME with a real understanding of when the enterprise software needs to be substituted, updated or used in a different way. By interacting with clients in this way, enterprise software developers can streamline the software while SMEs can benefit from business specific software improvements.

Kazakhstan is one of the fast-growing economies in the post-Soviet Union region. The private and state enterprises are growing and developing at a high pace. In 2014, the number of registered small and medium-sized businesses increased 2.2 times compared with 2005. The share of small and medium-sized businesses in the production of gross domestic product in 2005 was 10.5%, in 2010 - 20.6% and in 2014 - 26.2% (Zamanbekov S., 2017). Therefore, Kazakhstan's government has been stressing the importance of facilitating business development to increase business competitiveness and move from a "raw material economy" to a knowledge-based economy. The goal of the survey is to assess the current enterprise management software evaluation process available to SMEs in Kazakhstan.

The survey covered 64 organizations across the country, from a variety of industries, which use 77 distinct types of enterprise software. The research was conducted by contributing interview with 29 questions and sending it to businesses. The results showed that most organizations use accounting software, Enterprise Resource Planning (ERP) systems and make collective decisions in software selection. The difference in estimation by organizations on the three given criteria was not significant. Detailed discussion of the results is performed in the conclusion of the paper.

2. SME Definition

The SMEs have an important role in a country's economy all over the world as to their contribution to the total output and job opportunities(Wang C. H., 2008). The term "SME" encompasses a broad variety of definitions. Different countries and organizations give different definitions to SMEs, they often based on a number of employees, sales or assets. European Commission defines SMEs in the following way; The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million(European Commission, 2003).

Determination of the status of the small and medium-sized businesses in Kazakhstan is based on the Entrepreneurial Codex of the Republic of Kazakhstan(Government of Kazakhstan, 2016). Kazakhstan defines medium-sized entities as enterprises with •2.4 million assets and 250 employees. Small entities are •0.4 million in assets and 50 employees and both criteria above should exceed the limit. Therefore, SMEs have an important role in a country's economy, which is associated with a country's total financial health and job market (Gunasekaran A., 1999).

3. Enterprise Software

Enterprises use many kinds of software, but not all of them can be defined as enterprise software. If an employee buys software used by another company as enterprise software, but uses it for his personal needs, then it cannot be considered enterprise software (Sitaker K., 2005). Enterprise software is considered as software used for organization needs rather than personal needs. Enterprise software can also be described as a specialized integrated suite of software applications that can provide a common data model and processes at different levels and units of the organization.

4. Importance of the Information and Communication Technology in the Small and Medium Enterprises

The role of small and medium enterprises (SMEs) in a national economy has been accentuated all over the world for their contribution to total productivity and to job opportunities(Wang C. H., 2008).

The importance of SMEs is being increased according to countries economic growth. At the same time, the rapid growth of the information and communication technologies (ICT) determines the performance and competitiveness of the SMEs. It is believed that ICT became a necessity in the SMEs' contemporary management in order to survive in the modern business environment. According to Porter's theory, there is the particular potential of ICT to attain a competitive advantage (Cardona M. Kretschmer T. & Strobel, 2013).

The main goal of the implementation of the ICT in SME was optimization of the enterprise operational processes. Cardona, Kretschmer, and Strobel (2013) asserted that the high growth rate in the US economy during the 1990s, which saw productivity and employment rise, was due to the early and fast adoption of ICT (Cardona M. Kretschmer T. & Strobel, 2013). However, Carr (2003) argued that due to the fact that the ICT is now being widely used by enterprises, it has lost its effectiveness as a strategic instrument of a company's differentiation and companies no longer are advantaged as they were at the onset of ICT (Carr N. G., 2003).

IT Management is important in the following respect in that it improves efficiency through ensuring service delivery is faster as well as succinct. In addition to that, it helps companies align business operations in an effective manner.

Cloud computing on its part is important in the sense that it is cost effective in nature and stores an unlimited amount of information, in addition, to backup and recovery. On the other hand, mobile computing is important because it saves time for the users reducing the incurred expenses in addition to its location flexibility as the users are able to use it anywhere so long as there is a connection.

In a similar fashion, social networking leads to an increase in traffic in a given site consequently increasing the awareness for the site hence making more people be aware of the given site.

While external sources of software and maintenance present other possible and potentially economical alternatives for organizations, choosing the best alternative is an easy decision process which must be understood and supported. As application acquisition and maintenance constitute a majority of the present-day IT budget of most organizations application sourcing and maintenance decisions have to be thoroughly studied. In some cases, software maintenance can reach 60% of organization's IT budget (Middlemiss J., 2004).

5. Perspectives of ICT Sector Development in Kazakhstan

After the global crisis, there was a sharp increase in the volume of direct investment in the information and communication sector. However, in 2012-2013, according to the data by "Taldau" (Taldau, 2015), there is a slight decrease in the share of investments in the information and communication sector in the total volume of investments. The reasons for this trend are the accentuated attention of the state of investment stimulation of the development of the industrial sectors (processing and extractive industries). In 2014, the venture fund "ICT Development Fund" was formed at the expense of private capital, as well as the capital of international companies. The Fund will invest in projects from 100 thousand to 3 million US dollars. With the fall in energy prices that began in 2014, the state has sought to find ways for new projects, including in the ICT field.

On the way to the development of the ICT industry, along with the challenges of time, there are organizational, economic, and regulatory issues:

- Regulatory and legal inadequacy of the legislative framework;
- Weak level of work on the adoption of standards;
- Unattractiveness for foreign direct investment;
- Low profitability of the IT industry;
- Lack of qualified personnel;
- The lack of a clear vertical management of the industry;
- Lack of information infrastructure;
- The presence of administrative barriers;
- Weak specialization of IT companies, including in subject areas;
- Low level of statistics of the industry;

Low domestic demand for information technology from citizens and businesses is a factor restraining the development of domestic companies. The low penetration of broadband Internet access among the population, the scarcity of Kazakhstan's

web resources and the lack of original content in the Kazakh segment of the Internet reduces the investment activity of the business regarding the development of e-business and e-commerce. However, the gradual development of communication technologies makes their own adjustments: cable and satellite broadcasting is expanding, increasing confidence in electronic mass media as an important source of information about events in the world.

The transition of Kazakhstan to the information society depends on the consolidation of the efforts of business and the state on the wide application of ICT and provision of electronic services.

6. Methodology

The survey was in the form of interview and was conducted by creating and distributing a 29-question. Three different types of answers were expected: Yes/No, 5-point scale and free response. The survey took place on March 2016.

The surveyed enterprises were randomly selected from online public sources according to the industry’s share in total economy using data from the Committee of Statistics of Kazakhstan (KazSTAT) (The Agency of Statistics of the Republic of Kazakhstan, 2016) (Figure 1, Table 1). The proportion of surveyed organizations was in line with representativeness of each industry sector in the whole economy.

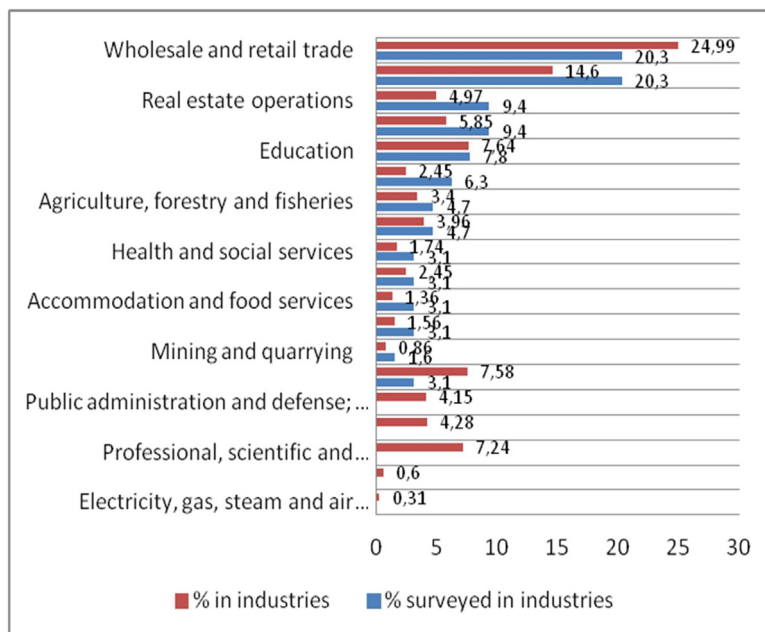


Figure 1. Number of surveyed organizations related to industries, Source: calculations based on data supplied by the KazSTAT

Eleven regions out of fourteen were represented in the survey (see Table 1).

The interview was conducted by telephone. Out of the 64 organizations that participated in the survey, only 55 organizations, from different industries, and 77 software types were analyzed. The additional 9 organizations were withdrawn since they did not have any type of enterprise software.

A structured interview was used. Structuring the interview included optimization of the types of responses received for data processing reasons. The advantage of conducting the survey over the phone was that I could explain the questions to the respondents and assure that they understood the question. My initial attempts to run the survey via other means such as social networks, survey-monkey and email showed that some of the respondents did not clearly understand the questions.

The interview consisted of 29 questions, which were divided into three groups:

Region	Number of surveyed organizations
Astana city	8
Almaty city	20
Akmola region	1
Almaty region	7
Aktobe region	2
West Kazakhstan region	2
Zhambyl region	2
Karaganda region	11
Kostanay region	4
South Kazakhstan region	4
East Kazakhstan region	3

Table 1. Regions represented in survey, Source: Geographical

- **General** – The questions can be collected from the internet and they consist of general information about the organization.
- **Main** – The questions were in open form and required discussion. This helped to identify the actual software in use at the organization, estimated criteria, its evaluation method and other metrics.
- **Additional** – Questions helped to organize the respondents by group and type. They also helped to identify broader information about the organizations.

7. Results

Table 2 shows the survey call statistics. One third of the total organizations agreed to participate in the survey. The average speaking time with each individual organization was about four minutes. The time which was spent to identify the right person to talk to, within an organization, was not counted. Several persons within the organization who works with particular enterprise software could be questioned. The time it took for the respondent to answer the main questions was less than three minutes.

Number of organizations participated	64
Number of organizations contacted	187
Average call time with respondents in organizations:	-00:04:03
Average time to answer the main part of the interview:	-00:02:42

Table 2. Survey call statistics, Source: investigator

Figure 2 shows that the most used software in the surveyed SMEs is accounting software. The second place was Enterprise resource planning (ERP) software. Hence, we can see that 11.5 % of organizations do not use any enterprise software.

Table 3 describes the answers that satisfied the three criteria designed within the survey. The three criteria are provided in the right part of Table 3. There are only six organizations that had evaluated their existing enterprise software for fitness and applicability to their business needs. The clear majority of organizations pointed that they did not evaluate their software prior to purchase. Most companies did not perform any software evaluation and was considered as “not needed”. Each estimated

criterion (Satisfaction, Understanding and Efficiency) were rated by organizations on a scale from 1 to 5. There was a system approach was used to define the scale. Different people in each organization who operate with enterprise software collectively evaluated their experience with it. Satisfaction with enterprise software in the current survey means implies that the organizations were satisfied by the performance of their software. Understanding is how organizations rated their proficiency with the enterprise software, which they use. Efficiency is the functional level that the software completes the given tasks.

Evaluation	Organizations	Software	Satisfaction	Understanding	Efficiency
			mean	mean	mean
Yes	6	7	4,1429	4,4286	4,2857
No	49	70	4,1429	4,0429	4,1286

Table 3. Evaluation of software by organizations, Source: Investigator

Table 3 shows that understanding of the software is higher in those organizations that evaluate their software. The other criteria are almost at the same level, which was proven by T-test analysis. Table 4 shows the difference between the answers of two groups for all three criteria is not statistically significant.

t-statistic	2,051696
P-value	0,066274
t-critical	2,353363
	Not significant

Table 4. T-test of the results on three given criteria, Source: Investigator

Table 5 describes the ratio of software selection groups in organizations, which can be structured into three main groups by their relation to the software. These are: Top management, IT department and Working (operating) department (group of people who directly work with the software, e.g. accountants). The Collective group here means the combination of two or more groups.

Selection groups	Number of software selected
Top management	17
IT department	19
Working Department	15
Collective	26

Table 5. Software selection groups in the organizations, Source: Investigator

The result showed that 17 software across the surveyed organizations are being selected by Top management group, 19 by the IT department, 15 by the Working department group in 26 cases the decision was made collectively.

8. Discussion

The survey provides information that a clear majority of SMEs in Kazakhstan do not evaluate their software. Even if there is no statistically significant difference between the two groups, the evidence show that the companies that evaluate their software have shown higher understanding of their enterprise, compared to those who did not evaluate. Nearly most organizations quite

often do not understand in depth their enterprise software. Sometimes, they consider existing functions as non-existing. Therefore, the evaluation process could support them to better understand their software. They can clearly sort out what they have, what they need and the ways to achieve the required level.

Another important outcome of the survey is that organizations who evaluate their software do not use any well-known software evaluation standards. Furthermore, most of the organizations use their own staff and own methods to run the evaluation process. Practically, no one from the list of the organizations used external specialists to evaluate the software or information systems. That shows that small and medium enterprises prefer to trust their own personnel rather than external professionals. The evaluation approach used by the surveyed SMEs is quite reasonable however, a specifically designed evaluation method for the enterprise software would benefit them even more as it would be less complicated, reduce time and budget costs.

The greater majority of organizations in the list pointed that they collectively select the software. At the same time, we can see from the results that Top management chooses which software to use in more cases than the department that directly works with that software. The phrase “who pays the piper calls the tune” is highly relevant. In fact, there are people who work with the software and whose satisfaction with it will have a great impact to enterprise software productivity. Therefore, we highly recommended that organizations aim to have a “collective” decision pool, where the greater voice given to the Working group, who is the main user of enterprise software.

9. Conclusion and way Forward

Enterprise software packages are attracting more and more attention because of their standardization, practicality, simplicity and effectiveness. These characteristics can support cost reduction and time saving for enterprises. The software selection process can also become strained and choosing the proper software is often costly. Enterprise software evaluations can provide an advantage for organizations; they can acquire software which better fits their business needs.

The survey showed that most of the SME software in Kazakhstan is used to support business processes. From this research, we can conclude that most of the SMEs in Kazakhstan do not evaluate their enterprise software for fitness during the usage. At the same time, we found out that organizations who evaluate their enterprise software find themselves able to better understand their software. According to results of the survey, there is no significant difference in responses provided by SME regarding the given three criteria. The software evaluation was answered by people who use the software directly.

There is no doubt that the evaluation process of enterprise software systems provides organizations with additional knowledge about the strengths and weaknesses of the software integration process and the organization’s processes. But the evaluation process should not be an expensive and difficult process which will consume a lot more effort than produce benefits. Therefore, there should be handy evaluation processes that will give benefits for small and medium organizations that have less capabilities and financial recourses.

As a next step of the research, clarifying the impact of enterprise software evaluation for fitness when using management decisions in software selection, maintenance and substitution processes.

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