

THE ENTERPRISE MANAGEMENT SYSTEM: EVALUATING THE USE OF INFORMATION TECHNOLOGY AND INFORMATION SYSTEMS

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Abstract: The purpose of this study is to complement the existing approaches towards the evaluation of the quality of ITS use in enterprise management. This article explores the point of using information technologies and systems in enterprise management and articulates an evaluation approach that can be applied to it. In this article, a Technology Acceptance Model is used to evaluate the use of information systems and technologies. According to this model, the use of any technology will be effective only if the Perceived Usefulness and the Perceived Ease of Use are high. The study surveys 120 industry experts. The survey sample is composed in accordance with the compatible criteria (competence, area of engagement, and experience of work in the leading companies). The Enterprise-Resource Planning, Customer Relationships Management, and Supplier Relationships Management systems have the highest scores, with the reliability coefficient of 0.89. A comparative assessment has been conducted on information technologies, which are used in operations management. The proposed approach can be used in any enterprise.

Key words: enterprise management, information system, technology acceptance model, optimization

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Introduction

Euroregions In light of the expanding range of challenges that manager's face, effective enterprise management is impossible without making prompt and informed decisions. Decision-making involves analyzing large volumes of information (Norpadzlihatun, 2013; Bhattacharya, 2018). The indicators of enterprise performance can be divided into three categories: financial, economic and social indicators. The balanced scorecard defines enterprise performance in four dimensions including financial, customer, internal business process, and learning/growth (Danaei and Hosseini, 2013). The enterprise's maturity is associated with the level of formalization (Oliva, 2016). However, even formalized

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and automated business processes are not always effective because they are not accepted by employees.

Managing the use of information systems and technologies in one of the most important management tasks (Romero and Vernadat, 2016; Sushil, 2018). The complexity of information processing and the need to establish continuous information flows at all levels of management require the use of modern information technologies. These systems or technologies enable the optimization of decision making at all levels of management. With them, success in managing complex production is a matter of time (Kadiri et al., 2015; Liu et al., 2018). Therefore, the quality of information technology use (or system use) should be evaluated.

In the context of market-based regulation mechanisms, the enterprise is highly interested in controlling and managing the quality of information systems and technologies (Liu et al., 2018; Ozusaglam et al., 2018). Enterprises striving to do so need to evaluate the use of information technology and systems (ITS) from the standpoint of quality. The evaluation process involves collecting data and assessing the quality of an object being studied.

Based on the analysis of existing approaches to performance management and quality management (Lance and Muretta, 2013; Abri and Mahmoudzadeh, 2014), one can conclude that key indicators serve as a tool to formalize the process of managing performance and quality today. The systems that embrace such indicators are in the core of both performance and quality management because indicators within the system are selected concerning enterprise activity. Different systems include different indicators and are designed for different users.

The key quality and key performance indicators help an organization measure the progress towards the attainment of strategic and tactical goals. Key indicators let an enterprise to find a casual relationship between the expected results of operation and the obtained ones. To measure the progress towards the attainment of any goal, the first step is to determine the target value of the indicator, which is between the current value and the reference value.

The purpose of this study is to complement the existing approach towards the evaluation of the quality of ITS use in enterprise management.

Literature Review

Considering the intensive development of information society and the rapid growth of information technology at the beginning of the 21st century, one can assume that information management is the present and the future of the global economy (Eroshkin et al., 2017; Niemi and Pekkola, 2017; Afanasyev and Shash, 2018). The proper and timely use of information ensures the continuous transformation of business environment and defines the success of business.

Modern enterprises use information technologies designed to accomplish various tasks in the range from operations management to the assistance in making managerial decisions (Eroshkin et al., 2017; Nam et al., 2017). Enterprises use

information technologies, which make up various information systems and information complexes, in different segments of the management system.

The enterprise management is carried out when the value of performance indicator and the value of quality indicator are known, but they cannot be taken directly from the system. This problem is about evaluating the quality of ITS use (United Nations Development Programme, 2002; Kusek, 2004). The solution to it requires the creation of a system that would allow performing a multifaceted evaluation of performance and quality indicators. At this point, such a system must be informative and useful for any enterprise.

For example, partner and customer relationship management imply the use of CRM and SCM solutions (Eroshkin et al., 2017; Sushil, 2018). They are focused on sales growth, cost reduction, increasing customer loyalty, and improving service quality. In general, these software solutions increase the competitiveness of enterprise products.

The BPR and ERP technologies are used to manage business processes and improve the economic efficiency of an enterprise (Kadiri et al., 2015; Romero and Vernadat, 2016). They possibly associate it to coordinate innovation, minimize risks, increase scalability and flexibility, and reduce costs (Eroshkin et al., 2017; Saeidi et al., 2019). With those, the economic security of the enterprise increases.

The HR software is used in human resources management to make managing more efficient. In material resources management, MRP software contributes to the rational accumulation and use of material resources. Both systems improve operation and resource efficiency.

The boost to economic efficiency is delivered via ERP, MIS and BI technologies (Chavarria-Barrientos et al., 2017; Saeidi et al., 2019). Systems that are built up from these technologies have the potential to achieve a synergistic effect, automation and coordination across all departments, successful implementation of strategic programs, and increased competitive advantages (Eroğlu and Cakmak, 2016).

The IBM Spectrum Protect (Tivoli Storage Manager) is used to protect enterprise data (Manna et al., 2016; Luo et al., 2018). This platform gives an enterprise a single point of control and administration for backup and recovery, and protects the organization's data from hardware failures and other errors by storing backup and archive in a hierarchy of offline storage (Agostinho et al., 2015; Eroshkin et al., 2017).

In the rapidly changing business environment, the need to integrate business systems and information systems involves the development of new ICT frameworks and solutions that will remain relevant in highly competitive markets (Kadiri et al., 2015). The effect of software technology, the Internet, and electronic data interchange on the competitiveness of enterprises was proven true (Panetto et al., 2015; Rezvani and Khosravi, 2017; Nam et al., 2017).

Due to the high complexity of modern-day business, organizations are forced to adapt to a wide range of cutting-edge developments quickly. These developments

influence the structure and behavior of the business processes that represent the work and of the Business Process Management Systems (BPMS) that support them (Kouziokas, 2016; Pourmirza et al., 2017).

Some authors highlight the problem of employee resistance against information systems (Hou et al., 2016; Haddara and Moen, 2017). According to them, there is a relationship between the organization, its employees and the user attitude towards ITS implementation. Others seek to identify, summarize, and better understand the factors that could cause users to resist (Haddara and Moen, 2017; DeStefano et al., 2018). There are three theoretical perspectives for user resistance: people-oriented, system-oriented, and interaction-oriented. Additionally, perceived risk and habit have been found to be a key reason for why users resist information systems, such as an ERP. The literature provides strategies for overcoming user resistance. However, the discrepancy between ITS specifics and user needs not always results in hostility and resistance.

The effectiveness of technology is often measured using Information and Communication Technology (ICT) indicators or indicators for enterprise communication and network (Koryagin et al., 2015; Gerow et al., 2015; Hinkelmann et al., 2016). However, information technology must be accepted first before implementation. This is when the Technology Acceptance Model (TAM) is used (Surendran, 2012; Durodolu, 2016). This model is based on the assumption that technology must be not only effective when it comes to achieving the goal but also easy in use. In case of a strong imbalance between these factors, the technology is considered ineffective (Chuttur, 2009; Le et al., 2018).

Managerial decisions and their effectiveness are directly related to the quality of corporate information gathering and processing. Different departments of the company require timely receipt of representative information containing reliable facts about corporate activities. Information systems that store such information must be adaptive to the needs of the company, its organizational structure, create levels of access to the information, and limit the possibility of unauthorized entry into the system.

Software providers traditionally offer a variety of products on the market that handle these requests, but the companies have a secondary problem on the rise as well. They need to assess the effectiveness of selected technology before choosing a corporate information system.

Method

The quality of information system use was evaluated using TAM. According to TAM, technology will be effective only if it solves the problem and is easy to use. The technology acceptance is measured using a 25-item questionnaire that consists of 2 parts: the first part to measure Perceived Usefulness and the second part to measure Perceived Ease of Use (Saprykina, 2015). All questions are closed and require only a positive or negative answer. The questionnaire was filled out by an expert – an employee of the enterprise or an independent ICT specialist.

The survey includes 120 experts, who are compatible with work-related duties, areas of engagement, and competence. These respondents represent the top 10 regional leaders in the industry. The survey lasted ten days, which ensures the uniformity of operating conditions for all participants. Because the survey questions are closed-type, the output may be considered reasonable and not influenced by the opinions of others.

A questionnaire that was used contains 25 items to measure Perceived Usefulness and Perceived Ease of Use. Questions in the questionnaire were formed as yes/no questions, where "yes" is 1 point and "no" is 0 points.

Evaluation can be carried out only on few ITS at a time because they are compared with each other. ITS that are used at the enterprise can be evaluated next to the alternative ones.

In this paper, ITS evaluation was performed using a questionnaire survey in two different enterprises.

This paper proposes the evaluation of information systems and technologies under the Item Response Theory (IRT) model. The IRT makes it possible to evaluate the probability of a correct response to items of various difficulty. With IRT model, a questionnaire can be improved by eliminating the non-informative questions, selecting questions with adequate difficulty and points (Mislevy et al., 2001; Crocker and Algina, 2006).

The advantages that IRT offers are the following (Singh, 2004):

1. Under IRT, dichotomous and ordinal observations are transformed into linear measures, so that data are analyzed by means of quantitative methods.
2. The IRT model is linear in parameters, so a wide range of statistical procedures can be used to analyze measurements.
3. Item difficulty evaluation does not depend on the person accomplishing it.
4. Indicator level assessment does not depend on items.
5. Nonresponse is not critical.

The latent variable can be specified using its indicators, which can be observed directly. The main task of IRT is to transform observed variables into latent variables.

The IRT embraces many models, but the basic models are the following (Reeve, 2009):

- The Rasch/One-Parameter Logistic Model,
- The Two-Parameter Logistic Model,
- The Three-Parameter Logistic Model,
- The Graded Model (GM),
- The Nominal model,
- The Partial Credit Model (PCM),
- The Rating Scale Model (RSM).

This paper will use the Rasch/One-Parameter Logistic Model to measure the values of ITS indicators. The Rasch/one-parameter model trace line is (Reeve, 2009):

$$P(x_{ij} = 1 | \alpha_i, \sigma_j) = \frac{\exp(\alpha_i - \sigma_j)}{1 + \exp(\alpha_i - \sigma_j)}, \quad (1)$$

Where: x_{ij} – j indicator of the i th ITS;

α_i – the quality of i th ITS;

σ_j – j indicator difficulty.

For features with two or more ordered categories, it is advisable to apply the Partial Credit Model (PCM) (Johnson, 2006; Reeve, 2009). According to this model with ordered categories $0 < 1 < 2, \dots, < m$, the conditional probability of obtaining an estimate in category x , not $x-1$, should grow monotonically in the domain of a latent variable. The PCM model is (Fox, 2010):

$$P_i = P(u_j = x \in \{1, \dots, m_j\} | \alpha_i, \sigma_{jk}) = \frac{\exp \sum_{k=0}^x (\alpha_i - \sigma_{jk})}{\sum_{h=0}^{m_j} \exp \sum_{k=0}^h (\alpha_i - \sigma_{jk})} \quad (2)$$

Where: u_j – j indicator of the i th ITS;

x – category of j indicator, characterizing ITS in use, $x \in \{1, \dots, m_j\}$;

σ_{jk} – k category of j indicator difficulty;

P_i – probability of obtaining i th ITS with j indicator in k category

The PROX algorithm was used to calculate the initial values of model (1) parameters (Wright and Stone, 1999; Fox, 2010). Parameter evaluation was carried out under the assumption that empirical data distribution is normal by both the set of objects and the set of indicators. The indicator values are considered normally distributed. The PROX algorithm consists of the following steps.

Step 1. Calculating total positives and negatives. The share of positive values is:

$$p_i = \frac{X_i}{n}, \quad (3)$$

Where: $i = 1, 2, \dots, N$ – the number of objects was evaluated; n – number of indicators.

The share of negative values is $q_i = 1 - p_i$.

Step 2. Measuring the value of indicators in logits. The value of α_i^0 indicator was determined by:

$$\alpha_i^0 = \ln \frac{p_i}{q_i}, \quad (4)$$

Where: p_i, q_i – total positive and negative values of indicators that characterise the i th object.

Step 3. Calculating total positives P_j and negatives Q_j for each particular item:

$$p_j = \frac{R_j}{N}, q_j = 1 - p_j, \quad (5)$$

Where R_j – positive values of indicator $j, j = 1, 2, \dots, n$.

Step 4. The difficulty of items in logits is preliminary measured. The logit function

of j indicator difficulty σ_j^0 is calculated by:

$$\sigma_j^0 = \ln \frac{q_j}{p_j}, \quad (6)$$

Where: p_j, q_j – the share of positive values of j indicator.

Under IRT, the initial values of parameters α and σ can vary in the interval $(-\infty, +\infty)$, but at $\alpha_i - \sigma_j < -5$, the P_{ij} value is close to zero. A similar border situation can be observed at $\alpha_i - \sigma_j < 5$, when P_{ij} is close to 1.

Step 5. Calculating mean indicator value and mean indicator difficulty. For the set α_i^0 ($i = 1, 2, \dots, N$), the mean value $\bar{\alpha}$ is:

$$\bar{\alpha} = \frac{\sum_{i=1}^N \alpha_i^0}{N}, \quad (7)$$

For the set σ_j^0 ($j = 1, 2, \dots, n$), the mean value $\bar{\sigma}$ is:

$$\bar{\sigma} = \frac{\sum_{j=1}^n \sigma_j^0}{n}, \quad (8)$$

Step 6. Putting measurements with different mean values and different standard deviations on a single interval scale. Standardization is achieved with a number of special transformations, which implies the calculation of variance within the set of values α_i^0 , ($i = 1, 2, \dots, N$):

$$V = \frac{\sum_{i=1}^N (\alpha_i^0)^2 - N(\bar{\alpha})^2}{N-1}; \quad (9)$$

and within the set of values σ_j^0 , ($j = 1, 2, \dots, n$):

$$U = \frac{\sum_{j=1}^n (\sigma_j^0)^2 - n(\bar{\sigma})^2}{n-1}, \quad (10)$$

With calculated variance, a correction factor is determined:

$$X = \sqrt{\frac{1+U/2,89}{1-UV/8,35}}, \quad (11)$$

On a single interval scale, parameters α and σ are measured by formulas:

$$\alpha_i = \bar{\sigma} + X\alpha_i^o, \quad (12)$$

$$\sigma_j = \bar{\alpha} + Y\sigma_j^o. \quad (13)$$

Step 7. Calculating the standard error of measurement $S_e(\alpha_i)$ for each value α_i , ($i = 1, 2, \dots, N$):

$$S_e(\alpha_i) = \frac{X}{\sqrt{np_i q_i}}. \quad (14)$$

The maximum likelihood estimation is used to find the final values of the Rasch model parameters. The large sample sizes make it possible to estimate α_i and σ_j values, then α_i and σ_j will tend to them due to interaction. The likelihood function L of a discrete random variable x_{ij} is a function with arguments α_i and σ_j as a product of probabilities for all possible values of i ($i = 1, \dots, N$) and j ($j = 1, \dots, M$) (Li 2012):

$$L(x_{ij}, \alpha_i, \sigma_j) = \exp\left[\sum_{i=1}^N \sum_{j=1}^M x_{ij}(a_i - \sigma_j)\right] \cdot \left[\prod_{i=1}^N \prod_{j=1}^M (1 + \exp(a_i - \sigma_j))\right]^{-1} \quad (15)$$

The point estimates of latent parameters are values for which the likelihood function reaches its global maximum (Li, 2012). These estimates are called the maximum likelihood estimates. Because functions L and $\ln L$ reach a maximum with the same arguments, it is convenient to search for the maximum of the function $\ln L$, which is known as the logarithmic likelihood function:

In

$$L = \sum_{i=1}^N \sum_{j=1}^M x_{ij} a_i - \sum_{j=1}^M \sum_{i=1}^N \sigma_j - \sum_{i=1}^N \sum_{j=1}^M \ln[1 + \exp(a_i - \sigma_j)] \quad (16)$$

To determine the maximum of the logarithmic likelihood function, partial derivatives must be found for argument and then set to zero:

$$\frac{\partial \ln L}{\partial a_i} = \sum_{j=1}^M x_{ij} - \sum_{i=1}^N p_{ij} = 0 \quad (17)$$

$$\frac{\partial \ln L}{\partial \sigma_i} = -\sum_{i=1}^N x_{ij} + \sum_{j=1}^M p_{ij} = 0 \quad (18)$$

The resulting system of equations is solved iteratively by successively substituting the found arguments as initial. This process continues until the difference in arguments become less than the specified value. The system of likelihood equations is nonlinear, so the iterative procedure implies the use of computing hardware.

Results and Discussion

The quality of information technology use in the enterprise management was evaluated using the following systems (Eroshkin et al., 2017; Appiahene et al., 2018):

- ERP (Enterprise Resource Planning) – enterprise resource planning,
- CRM (Customer Relationships Management) – customer relationship management,
- SRM (Supplier Relationships Management) – relationship management with suppliers,
- SCM (Supply Chain Management) – supply chain management,
- MES (Manufacturing Execution System) system operational (shop) control of production processes (production - maintenance),
- WMS (Warehouse Management System – warehouse management system,
- CMMS (Computerized Maintenance Management System) – computerized maintenance management (repairs),
- EAM (Enterprise Asset Management) – transformation of CMMS systems, EAM implementing the strategy (reducing the cost of maintenance, repair and logistical support without compromising reliability or the operational parameters of the equipment without increasing costs),
- SCADA (Supervisory Control and Data Acquisition) – Supervisory control and data acquisition, programs for automated control of technological processes, analogous to the automated control systems of technological processes.

The answers given by industry experts form indicators and the object-indicator matrix. The indicator independence estimation states that the correlation coefficients are below the specified threshold value of 0.33. This is traced in the table below, reflecting the interrelation of various variables, where positive numbers confirm the dependence between variables, negative numbers show a negative correlation, and units cut off the comparison of identical indicators to each other. This may be traced in Table 1, which reflects the correlation of different variables. As it can be seen, positive values validate the dependence between variables, the negative values show a negative correlation, and units disprove it. Calculation accuracy: the measure of symmetry is 0.2; the measure of kurtosis is 1.2.

Table 1: The Correlation of Indicators

Indicator	x_1	x_2	x_3	x_4	x_5	...	x_{23}	x_{24}	x_{25}
x_1	1	0.21	-0.03	0.31	0.06	...	0.17	-0.2	0.19
x_2		1	0.05	0.12	-0.04	...	0.32	0.14	-0.1
x_3			1	-0.09	0.14	...	0.26	0.01	0.11
x_4				1	-0.11	...	0.15	0.16	-0.31

x_5					1	...	0.17	0.08	-0.12
...						1	-0.23	0.25	0.07
x_{23}							1	0.16	0.04
x_{24}								1	0.27
x_{25}									1

The results of ITS use evaluation are presented in Tables 2 and 3. Results of reliability assessment are presented in Table 4.

Table 2: Evaluation Results - Enterprise 1

Information Technology/System	Initial value of α , logit	Final value of α , logit	SE
ERP	2.33	2.54	0.46
CRM	2.23	2.44	0.41
SRM	2.33	2.54	0.46
SCM	2.1	2.25	0.40
MES	2.23	2.44	0.41
WMS	1.86	1.93	0.43
CMMS	1.47	1.69	0.43
EAM	1.86	1.93	0.43
SCADA	2.16	2.32	0.46

Table 3: Evaluation Results - Enterprise 2

Information Technology/System	Initial value of α , logit	Final value of α , logit	SE
ERP	1.98	2.05	0.44
CRM	2.48	2.61	0.41
SRM	2.17	2.24	0.43
SCM	2.26	2.35	0.40
MES	2.26	2.35	0.40
WMS	1.76	1.83	0.43
CMMS	1.98	2.05	0.44
EAM	1.98	2.05	0.44
SCADA	1.76	1.83	0.43

The coefficient of reliability is 0.89.

Table 4: Reliability Assessment

Statistical significance of measurements made for enterprises		Statistical significance of measurements made for indicators	
Acceptance	Reliability	Acceptance	Reliability
PSI	PSR	ISI	ISR
1.64	0.89	1.02	0.78

Thus, evaluation results indicate the high quality of ITS use.

However, there are some difficulties associated with the implementation of this approach. First, a separate study is needed to formulate the questions for the questionnaire correctly. If questions touch upon the wrong factors or none of them at all, then the whole approach will not work. In the context of the classical theory of tests, listing specific questions is challenging, but without an adequate list, the questionnaire cannot be considered valid (Kline, 1994).

Secondly, the model that was suggested for evaluating the quality of ITS use involves the experts. An expert is a qualified specialist, who has professional and qualimetric competence, who is interested in participation, and is able to give cold answers. An expert group is a group of specialists organized for peer review. The group members should decide on the number of experts needed (is it one or more?), on their origins (are they internal or independent?), on the person, who will check their qualification level, and on the way of interaction.

The quality of ITS use is evaluated using models that are based on the information infrastructure of an enterprise (Cavdar and Aydin, 2015). The information infrastructure covers the level of automation (Kappelman et al., 2014; Taherdoost, 2018), the number of computers and programs in use (Dorokhov, 2010; Pushkar and Garkin, 2014; DeLone and McLean, 2016), and the number of employees, who use information systems and technologies (Pushkar and Garkin, 2014; Malyzhenkov and Ivanova, 2017). However, the presence of information technology in the enterprise does not mean that the quality of its use is high because user resistance may be significant.

Methodologies for assessing the maturity of ITS in the enterprise are also used to evaluate management activities, including the evaluation of information technology. Some maturity models, such as the Capability Maturity Model, the Control Objectives for Information Technology, and the Infrastructure Maturity Model, found many applications (Persse, 2001).

The project-based approach is another scientific approach to evaluating the quality and economic efficiency of ITS (Cavdar and Aydin, 2015). This approach is focused on the payback period, internal profitability, and net profit from the project. The disadvantage of this approach is that it is very difficult within a particular subdivision to quantify the qualitative change in the business process.

The use of such an approach enables the company's management to make reasonable decisions while choosing an information technology or system to support an enterprise management system. Moreover, evaluation can be carried out before the purchasing ITS.

Conclusions

The analysis of existing approaches towards the assessment of management effectiveness showed that no universal and ideal approach would not have flaws. They differ depending on the object of evaluation, which can be the control system, management apparatus, and production. The major disadvantage of most

approaches is the narrow range of assessment objects and the lack of a universal control system. The study provides evidence on the significant role of information technology in enterprise management. The use of modern software products is a way to operate an enterprise and increase its competitiveness efficiently. The quality of information system use has been evaluated using the Technology Acceptance Model (Perceived Usefulness and Perceived Ease of Use). The quality of information technology use in enterprise management has been evaluated on the following technologies: Enterprise Resource Planning, Customer Relationships Management, Supplier Relationships Management, Supply Chain Management, Manufacturing Execution System, Warehouse Management System, Computerized Maintenance Management System, Enterprise Asset Management, and Supervisory Control and Data Acquisition.

The answers given by the experts form indicators and the object-characteristic matrix. The indicator independence estimation states that the correlation coefficients are below the specified threshold value of 0.33. The measure of symmetry is 0.2; the measure of kurtosis is 1.2. This approach has allowed obtaining quantitative values of indicators in the system of ITS quality management with the reliability coefficient of 0.89.

Thus, before choosing an information system for managerial decision-making, evaluate the effectiveness of available information systems using primarily mathematical approaches and calculations. This will minimize the errors that occur during technology adaptation to the company's operational requirements. Hence, companies will reach a higher accuracy of information processing. They will minimize the human factor and will remove emotions from the process of managerial decision-making for the benefit of corporate efficiency.

Difficulties associated with the implementation and management of information systems are (1) the system adaptation demands imposed by the changing operating environment, (2) human resource training, (3) system updating and maintenance (expenditure item approval), (4) data storage security, (5) the omni-channel integration of big data.

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SYSTEM ZARZĄDZANIA PRZEDSIĘBIORSTWEM: OCENA WYKORZYSTANIA TECHNOLOGII INFORMACYJNEJ I SYSTEMÓW INFORMACYJNYCH

Streszczenie: Celem tego badania jest uzupełnienie istniejących podejść do oceny jakości wykorzystania ITS w zarządzaniu przedsiębiorstwem. W tym artykule bada się zastosowanie technologii i systemów informatycznych w zarządzaniu przedsiębiorstwem oraz przedstawia podejście ewaluacyjne, które można do niego zastosować. W tym artykule zastosowano model akceptacji technologii do oceny wykorzystania systemów i technologii informatycznych. Zgodnie z tym modelem korzystanie z dowolnej technologii będzie skuteczne tylko wtedy, gdy postrzegana użyteczność i odczuwalna łatwość użytkowania będą wysokie. W badaniu wzięło udział 120 ekspertów branżowych. Próbkę ankiety składa się zgodnie z kompatybilnymi kryteriami (kompetencje, obszar zaangażowania i doświadczenie w pracy w wiodących firmach). Systemy planowania przedsiębiorstwa i zarządzania relacjami z klientami oraz zarządzania relacjami z dostawcami mają najwyższe wyniki, a współczynnik niezawodności wynosi 0,89. Przeprowadzono ocenę porównawczą technologii informatycznych wykorzystywanych w zarządzaniu operacjami. Proponowane podejście można zastosować w dowolnym przedsiębiorstwie.

Słowa kluczowe: zarządzanie przedsiębiorstwem, system informacyjny, model akceptacji technologii, optymalizacja

企业管理系统: 评估信息技术和信息系统的的使用

摘要: 本研究的目的是补充现有方法以评估企业管理中ITS使用的质量。本文探讨了在企业管理中使用信息技术和系统的要点, 并阐明了可以应用于其的评估方法。在本文中, 技术接受模型用于评估信息系统和技术的使用。根据此模型, 只有在感知的有用性和感知的易用性很高的情况下, 任何技术的使用才有效。该研究调查了120位行业专家。调查样本是根据兼容的标准(胜任力, 参与范围和领先公司的工作经验)组成的。企业资源计划, 客户关系管理和供应商关系管理系统得分最高, 可靠性系数为0.89。已经对运行管理中使用的信息技术进行了比较评估。所提出的方法可以在任何企业中使用。

关键词: 企业管理, 信息系统, 技术接受模型, 优化