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## **IMPACT OF ICT ON THE BUYING BEHAVIOUR OF LITHUANIAN CONSTRUCTION COMPANIES**

### **Abstract**

Peculiarities of the impact of information communication technologies (ICT) on the buying behaviour of companies are analyzed in the report. An empirical study of the impact of ITC on the organisational buying behaviour has also been performed involving construction companies in Lithuania. Theoretical concepts of the impact of ICT on the organisational buying behaviour is analysed in this paper. On this basis, a theoretical organisational buying decision making model influenced by the ICT was concluded. The report also includes the methodology and results of the research of the impact of the ICT on organisational buying behaviour.

### **Keywords**

ICT, organisational buying behaviour, Internet, organisational buying process, construction companies.

### **Introduction**

*Relevance:* Companies operating in competitive and dynamic environment and aiming to consolidate their positions in the market have to understand the essentials of the behaviour of individual consumers and organisations as well as their decision making process. Organisational decisions are collegial, determined by the environment, participants of the buying centre and their interpersonal relations. This allows us to state that organisational behaviour is a distinctive target of a complex research. The use and the benefits of the information communication technologies in the process of purchase of goods and services by the organisations are constantly increasing. The use of the ICT influences organisational buying behaviour, therefore it is equally important to analyse the potential of the ICT and try to benefit of them in the creation of effective marketing strategies.

The organisational purchase behaviour covers many elements, but according to P. J. Robinson, C. W. Faris and Y. Wind (1967), the organisational buying behaviour is best studied through the analysis of the buying process. J. N.

Sheth (1996) states that the main trend of the studies influenced by the organisational buying process model presented by P. J. Robinson *et al* (1967) is the emphasis and use of information communication technologies. Most of the authors have noticed that various changes have taken place in the buying behaviour during the last decades; some of them contradict the organisational buying behaviour described by P. J. Robinson *et al* (1967). Recently, the development of ICT has been extremely active and the use of the Internet has spread rapidly in organisational activities. G. L. Mannerstrale and P. M. Pons (1999) believe that the stage 7 of the organisational buying process - selection of a particular order routine - should shrink in the future due to the use of the Internet in the organisational buying process. R. A. Lancioni, M. F. Smith and T. A. Oliva (2000) have stated that many companies using the Internet in the buying process have rationalised it during the last decades.

The analysis of theoretical and empirical studies shows that there are several ways for the company to benefit of the Internet. The use of the Internet allows buyers and sellers to consolidate their positions and barter for better terms. The results of a study performed by P. G. Patterson and L. D. Dawes (1999) reveal that in order to reduce uncertainty in the buying decisions, the buyers aim to gather as much information as possible about potential suppliers. According to M. E. Porter (2001), the Internet can serve as a very effective tool for this purpose, if used properly in the company's strategic decision making process. With the Internet integrated in the company's strategy, the company can eliminate many market entry barriers such as marketing costs, distribution and shelf placement.

P. Berthon, R. Lane, L. Pitt and R. T. Warson (1998) propose that the Internet is the most effective in the stage 4 of the buying process - search for suppliers. A. C. Samli, J. R. Wills and P. Herbig (1997) state that better communication offered by the Internet determine higher satisfaction of companies and consumers.

Many scholars conclude that effective use of the Internet allows reduction of time expenditures and transaction costs thus giving the company competitive advantage. Although studies are performed on this subject, T. N. Martin and J. C. Hafer (2002) state that empirical studies on the impact of the Internet on the buying behaviour are hard to come by as this is a rather new phenomenon. On the other hand, summing-up of theoretical and empirical studies of various scholars shows that the application of the Internet in the organisational activities has increased significantly since its first use. Hereunder, it is believed that a deeper analysis is needed of how this ICT implement has influenced the change of organisational buying behaviour.

*Problem:* In the modern context of the development of information communication technologies, scholars as well as practitioners are engaged in an active discussion on the potential and benefit of the application of information communication technologies. On the other hand, the base of comprehensive theoretical studies revealing the role of information communication technologies factor in the organisational buying behaviour and empirical studies based on these theoretical works is quite limited. Therefore, this paper deals with a relevant and timely issue of how the information communication technologies influence the organisational buying behaviour in individual stages of the buying process.

### **Task Definition**

*Goal of the article:* A theoretical study of the role of information communication technologies factor in the organisational buying behaviour, empirical testing of an organisational buying process model, based on the impact of information communication technologies, in construction companies.

#### *Tasks:*

- Performance of a theoretical study of the use of information communication technologies in the organisational buying process.
- Study of organisational buying process models and empirical testing of a chosen model in construction

companies.

- Identification of peculiarities of the role of the information communication technologies factor in the buying behaviour of construction companies.

### Theoretical Grounding of the Impact of Information Communication Technologies on the Organisational Buying Behaviour

*Information communication technologies and organisational buying decisions.* The development of the Internet has given even the smallest companies an opportunity to benefit from the ICT. With the help of the Internet, companies of various sizes may communicate with each other, install intranets and value-generating systems inside the company or cooperate with business partners through extranets. In many business branches, companies use the Internet for financial transfers, establishment of communication with investors, partners and consumers as well as introduction of their goods to the market.

Analysis of the recent studies shows that modern organisations do not limit themselves to the widely spread Internet. A lot of attention is also given to new information communication technologies that enhance the benefit of the Internet. Business-to-business e-commerce can take place among business partners as well as among individual subdivisions of the same company (Lim, Wen, 2002). G. M. Zinkham (2002) has proposed three types of implements currently used in the organisational buying - Internet, intranet and extranet.

In summary, it can be said that all three types are an effective part of the company's activity and offer an opportunity to enhance many of the organisational processes. However, the Internet is the most widespread in the organisational activities and therefore this paper mostly focuses on the use and the benefits of this ICT implement.

The potential of the Internet use is revealed in Figure 1 below.

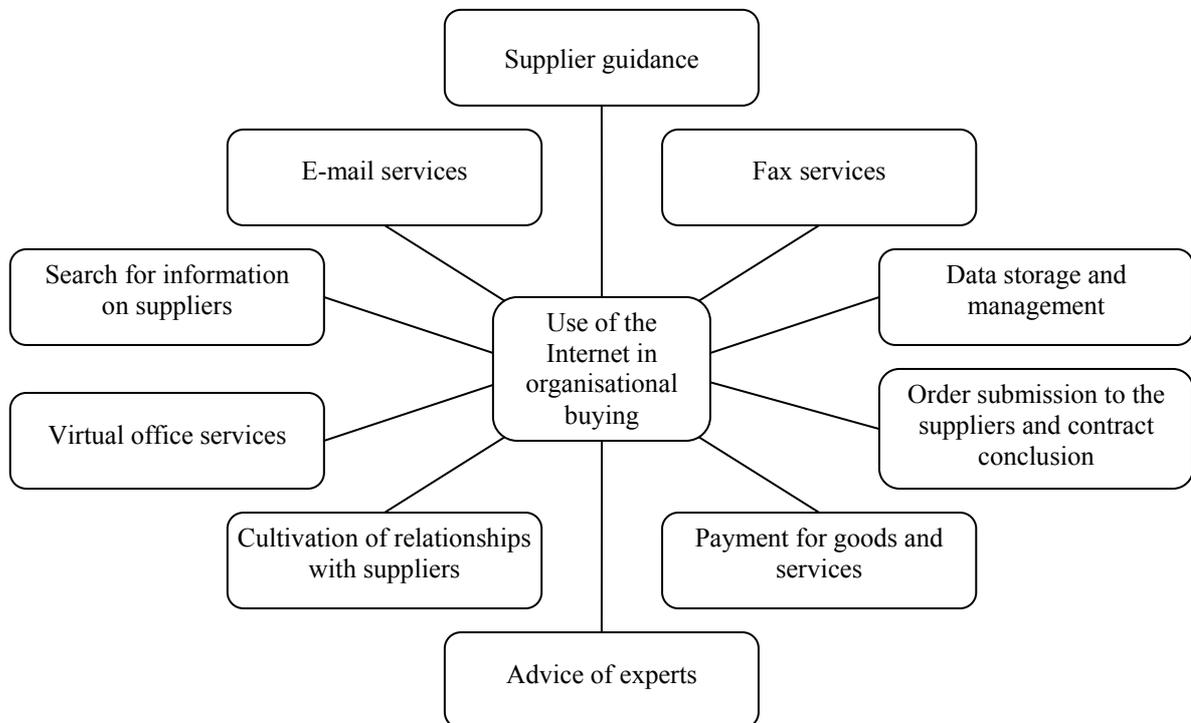


Figure 1. The use of the Internet in the organisational buying.

L. T. Eriksson and F. Wiedersheim-Paul (1999) have analysed the potential of the Internet use and accentuate the following major functions: data transfer, e-mail, newsgroups, telnet and chat rooms.

According to the studies of S. Chopra, D. Dougan and G. Taylor (2001), the benefits offered to the companies by the Internet may be divided into the following groups: reduced transaction costs, improved market efficiencies and supply chain integration. B. L. Lim and J. H. Wen (2002) have divided the different benefits of the Internet into three groups: strategic benefits, operational benefits and opportunity benefits. According to B. L. Lim and J. H. Wen (2002) different companies stress different benefits depending on the way electronic business-to-business systems are implemented.

L. M. Hunter, C. J. Kasouf, K. G. Celush and K. A. Curry (2004) have analysed how companies can satisfy the needs of market buyers through the Internet. The authors have divided the organisational benefits into six different categories that are presented in summary in Table 1.

Table 1. Organisational benefits from the Internet use according to L. M. Hunter *et al* (2004)

Benefit	Explanation
Streamlining the procurement process	Due to time cost reduction in paper handling and automation of other buying process stages, the buying process can be streamlined
Connecting buyers and sellers	Internet makes communication with business partners and suppliers easier and more convenient
Supply chain management	Internet use in the organisational buying process allows faster information exchange
After-sales service	Internet enables organisation to update orders and submit complaints
Sales and marketing efficiencies	Internet provides cheaper and faster distribution channels, e.g. e-mail
Interorganisational relationship improvement	Internet allows easier consumer database construction and improvement of relationship marketing efficiency

According to L. M. Hunter *et al* (2004), the benefits of organisations given in Table 1 depend on different types of buying situations where diverse uses of the Internet are employed. The Internet use differs in the purchase of simple and cheap goods as compared to risky and technologically advanced goods. Suppliers aim to establish long-term relationships with consumers who buy strategic technologically advanced products and create various communication systems for the cultivation of such relationships.

*Organisational buying process models based on the impact of information communication technologies.* The organisational buying involves professional buyers as well as professional suppliers who understand their products. Transactions only take place after long negotiations and discussion of all contract details. Therefore, the contact with the consumers plays a very important role in the organisational buying. Here, such informational technologies as the Internet, e-mail, etc., ensuring close communication between the organisation and the supplier and enhancing the organisational buying process, are used.

P. Berton *et al* (1998) upgraded the organisational buying process model proposed P. J. Robinson *et al* (1967) adopting it for modern organisations and updating it with the role of the Internet and other information communication technologies in individual stages of the buying process. The buying process in Figure 2 shows the efficiency of the ICT implements in each stage attributing it to the low, medium or high level.

Stage of buying process	Efficiency of IT implements		
	Low	Medium	High
1. Problem identification		☆	
2. General characteristics of needed item		☆	
3. Identification and description of requirements of the item or service		☆	
4. Search for the supplier			☆
5. Formulation and submission of proposal			☆
6. Choice of supplier		☆	
7. Preparation of particular order routines			☆
8. Supplier evaluation			☆

☆ - Internet and other implements of information technologies

Figure 2. Efficiency of ICT implements in the organisational buying process according to P. Berton *et al* (1998)

According to P. Berton *et al* (1998), the significance of the Internet is constantly increasing in organisational buying. According to the authors, the Internet plays the most important role and is the most effective means of marketing communication in stages 4, 5 and 8 of the buying process. Buyer organisations mostly use the Internet in the stage of search for potential suppliers and less in other stages of the buying process. Figure 2 shows that the Internet as a means of communication is the least effective in stage 1 of the buying process. It has been mentioned earlier that the Internet is not the only means of communication used in modern organisations; the benefit provided by the Internet is also supported by the benefits of intranet and extranet. Communication with different groups - suppliers, competitors, business partners, employees, etc. - takes places through these three means of communication. With the help of these communication measures, the companies can speed up the processes of communication and information exchange. It should be noted that the comparison of the Internet efficiency in individual stages of the buying process with conventional means of marketing communication reveals the peak significance of advertisement in the first stage of the buying process, while the personal sales measures are the most effective in the supplier evaluation stage.

Studies performed by B. Tripse (2004) show that the use of the Internet and e-commerce in the organisational activities has caused significant changes in the information searching speed, buying decision making and other processes. According to the author, the processes that used to take months in the organisation now are accomplished in weeks.

A theoretical analysis of buying process models based on the Internet impact has revealed the way how the Internet influences organisational buying behaviour in individual stages of the buying process and which of them have to be prioritised in this respect. Therefore, an empirical study is performed according to the examined models, the results of which are expected to provide deeper perception of the potential of the ICT employment in the organisational buying process.

### **Review of the Construction Companies in Lithuania: the Aspect of the ICT Use**

The construction market in Lithuania has been developing actively since 1991 and the volume of construction works has been constantly growing during the past 5 years. The increase of the construction volume is related to the growth of the country's economy, investments and purchasing power of the residents. According to the Lithuanian Department of Statistics, the local construction companies accomplished LTL 5.9 billion worth construction works in 2005, which is 10.9 percent more than in 2004. According to the forecast of the Ministry of Finance, the volume of construction works in 2006 were about 10 percent higher as compared to 2005 and should reach LTL 6.5 billion.

It should be stressed that construction is becoming a global industry dominated by big construction companies. On the other hand, the global market offers opportunities of entering foreign markets and establishing international enterprises. Fast development of the construction market causes increasing competition within the construction company sector. This influences company decisions and necessitates the employment of efficient means of business organisation and marketing. In order to attain strong positions in the market, it is imperative to effectively use company assets and, with the help of marketing communication measures, to cultivate close relationships with the customers. To achieve these goals, the companies widely employ information communication technologies. According to the Lithuanian Department of Statistics, in 2005, 92 percent of the construction companies used ICT in their activities (see Table 2).

Table 2. The use of information communication technologies in construction companies (Department of Statistics under the Government of the Republic of Lithuania, 2005).

Company size (number of employees)	Use of ICT (percent)	Use of the Internet of that number (percent)
0-49	88.8	76.8
50-249	98.8	97.8
250 and above	100.0	100.00
Total use of IT in the construction market	92.4	85.5

Table 2 shows that as much as 85.5 percent of the 92.4 percent of the construction companies using information and communication technologies employ the Internet in their activities.

According to the Lithuanian Department of Statistics, 1.7 percent of the construction companies sell their products on the Internet, and 9.8 percent of construction companies make purchases via the Internet. The analysis of orders received by the construction companies performed by the Department of Statistics in 2005 revealed that 8.3 percent business-to-business orders are received via the Internet.

A survey of the Lithuanian construction market and the use of the ICT in this market proposes that the ICT factor is of high importance to the construction companies, therefore an empirical study shall be performed in order to find relevant peculiarities and benefits of the ICT use in the construction companies.

### **Methodology of the Study of the ICT Factor Role in the Buying Behaviour of Construction Companies**

The methodology of the study of the ICT factor role in the buying behaviour of construction companies is mainly based on the organisational buying process model proposed by P. Berton *et al* (1998). Secondly, a quantitative study has been chosen in order to prove the empirical reliability of this model.

*Goal of the study:* Identification of peculiarities of the information communication technologies factor role in the buying behaviour of construction companies and, on this basis, proposition of further opportunities of the ICT use in the activities of these companies.

The accomplishment of the goal of the study is related to the following *hypotheses* of the study:

1. Construction companies use ICT for the communication with suppliers, search for information, ordering of goods and other important purposes.
2. The Internet is one of the most widespread information communication technologies in the activities of the companies as it helps them to optimise the work of purchase subdivisions, reduce transaction costs and improve relationships with suppliers.
3. The influence of the Internet peaks in stage 4, 5 and 8 of the buying process.

*Methodology of the study:* A survey was chosen for the study of the ICT factor role in the buying behaviour of construction companies. According to the statements of the consumer behaviour researchers L. G. Schiffman and L. L. Kanuk (2000), this method applies well to the studies of the ICT factor role in the organisational buying behaviour. It allows quantitative measurement of particular consumer behaviour parameters as well as provides consumer opinion and attitude (Schiffman, Kanuk, 2000).

The questionnaire consists of closed questions with an option for the respondent to provide comments. The questionnaire also includes several open questions. The questions are divided into the following groups:

- Attitude towards the use of information technologies in organisational buying;
- Use of information technologies in organisational activities;
- Information on organisational buying via Internet and the amount of information about suppliers in the Internet;
- Influence of the Internet on the organisational buying behaviour and buying process;
- Information on the reasons of non-use of information technologies;
- Information on the company.

*Sampling and sample size:* Construction companies of south Lithuania were chosen as a sample for the quantitative study of the ICT factor role in the organisational buying behaviour. Respondents were sampled using the convenience sampling method (Божук, 2005).

*Survey location and time:* The prepared questionnaire was sent out by e-mail to 20 companies of south Lithuanian on 20 April 2006. 17 filled in questionnaires (85 percent) were returned in a week.

### **Results of the Study of the ICT Factor Role in the Buying Behaviour of Construction Companies**

The result analysis of the study of the ICT factor role in the organisational buying behaviour revealed that the most important benefits of the Internet noted by the respondents were shorter buying process time (43 percent) and lower transaction costs (27 percent), whereas streamlining of the order submission (20 percent) and lower price of goods (10 percent) were less important benefits to the respondents. Such results show that the use of information communication technologies is widespread among the construction companies as they allow more efficient use of organisational assets and time of the employees.

Meanwhile, the analysis of the respondent attitude towards the ICT use in the organisational activities proves the first hypothesis which states that the construction companies use information communication technologies for the communication with suppliers, searching for information, ordering of goods and other important purposes. The respondents mentioned all purposes of the use of information technologies specified in the hypothesis with the search of information on suppliers being the most important purpose (29 percent). Other significant purposes were choice of a supplier (22 percent), communication with suppliers (19 percent), order submission (16 percent) and description of product requirements (14 percent).

In order to survey the attitude of the respondents towards the significance of the measures of information technologies, the respondents were asked to name the most and the least often used implements of information technologies. The analysis of this group of questions revealed that the Internet is the most important and the most often used implement of information technologies (named as the most often used implement by 82 percent of respondents), which supports the second hypothesis. Meanwhile, the opinions of the respondents on the Internet influence on the purchase subdivision work optimisation, transaction costs and relationships with suppliers diverged. The respondents agree that the Internet assists the work optimisation of supply subdivisions, but the opinions on the Internet influence on the relationships with suppliers are contradictory. In summary, the second hypothesis may be corrected - Internet and

intranet are one of the most widespread information communication technologies in the activities of the companies as they help the organisations to optimise the work of purchase subdivisions and reduce time expenditures.

The analysis results of the Internet use in individual stages of the buying process negates the third hypothesis, which states that the influence of the Internet peaks in stage 4, 5 and 8 of the buying process. The analysis of the quantitative study showed that the Internet is noted as the most influential ICT implement in stages 4, 6 and 5 of the buying process, whereas in stage 8, intranet is more important (see Figure 3).

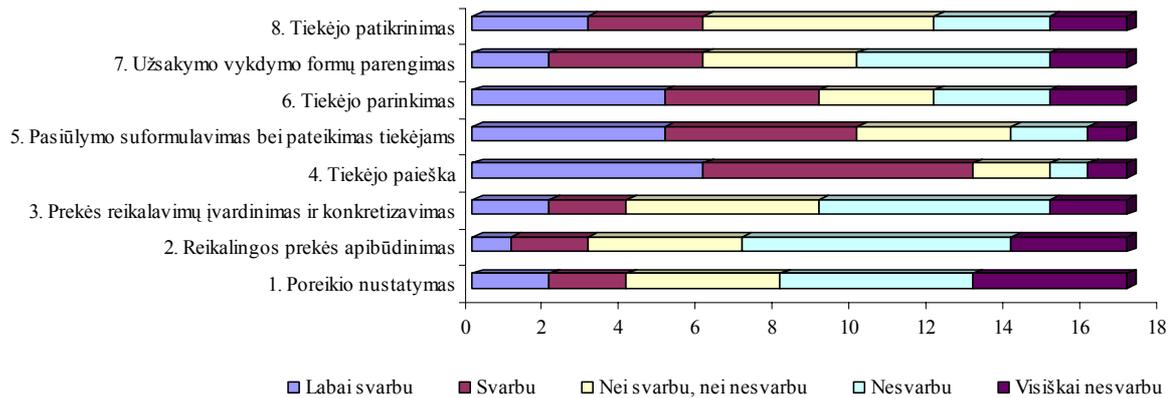


Figure 3. Significance of the Internet in individual stages of the organisational buying process

*Peculiarities of the ICT factor role in the buying behaviour of construction companies.* In summary of the construction company survey results and on the grounds of a buying process model proposed by P. Berton *et al* (1998), an ICT influenced organisational buying process model intrinsic to the surveyed construction companies may be concluded (see Figure 4).

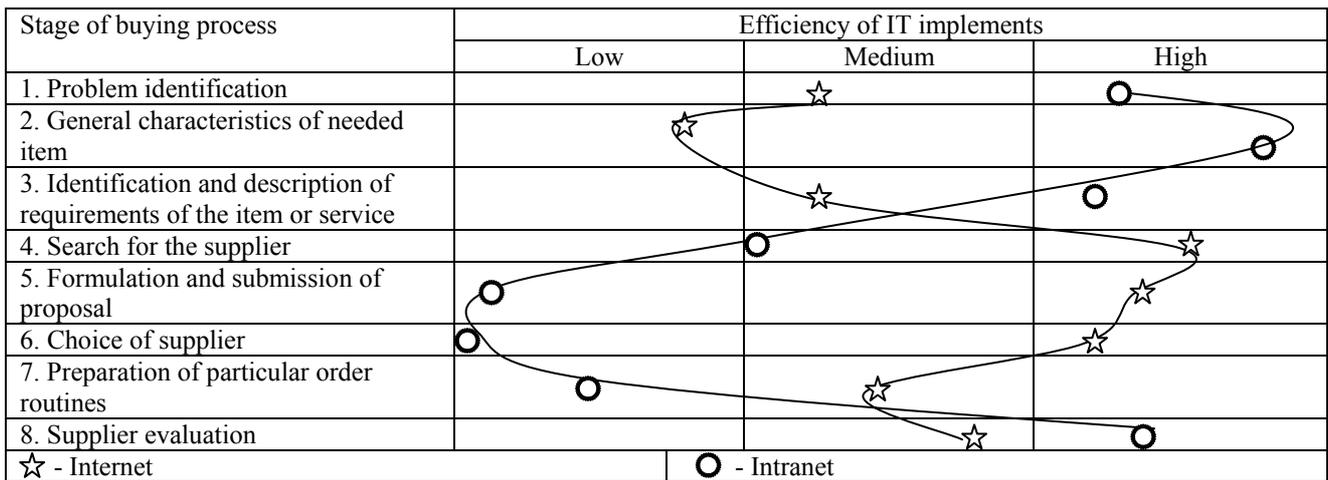


Figure 4. Use of information communication technologies in the buying process of construction companies

Figure 4 shows that the buying model proposed by P. Berton *et al* (1998) supplemented with the research results significantly differs from the theoretical model. In the theoretical model, stages 4, 5 and 8 of the buying process are the most influenced by the use of the Internet. Meanwhile, the study revealed that in the surveyed companies the Internet influence peaks in stages 4 and 5 of the buying process. The significance of the Internet was noted as medium in stage

8. Moreover, the study results show that the Internet is used by the construction companies for a great variety of purposes - communication with suppliers, search for information, product ordering and other important functions - as indicated in the model in Figure 4.

It should be noted that most of the survey respondents named intranet as the most effective ICT implement in stages 1, 2, 3 and 8, which allows us to make a conclusion that both the Internet and intranet are widespread in the organisational activities.

### **Conclusions**

The analysis of theoretical and practical aspects of the information communication technology factor role in the organisational buying behaviour allows us to make the following conclusions:

The study of scientific literature revealed that most of the scholars conclude that effective employment of the Internet reduces time expenditures and transaction costs thus giving the company competitive advantage.

Theoretical analysis shows that the development of ICT significantly changes the organisational buying behaviour. Information communication technologies give the companies such benefits as the improvement of relationships with business partners, reduction of costs, etc. The Internet can be noted as one of the most widespread and most beneficial implements.

The theoretical analysis of buying process models based on the influence of information communication technologies supposes that the Internet has influence on individual stages of the buying process thus changing the entire theoretical model of the organisational buying process.

The review of the Lithuanian construction market shows that the ICT use has been increasing during the recent years with the Internet being the most widespread ICT implement together with intranet and extranet.

The study of the ICT factor role in the buying behaviour of construction companies revealed that:

- The companies use the ICT for the communication with suppliers, search for information, product ordering and other important purposes;
- The Internet and intranet are the most widespread information communication technologies in the organisational activities as they assist the organisations in the optimisation of purchase subdivisions and reduction of time expenditures;
- The Internet is noted as the most influential ICT implement in stages 4, 5 and 6 of the buying process, whereas in stage 8, intranet is cited as the most important.

The analysis of theoretical models and empirical studies propose that the use of ICT helps construction companies to gain competitive advantages through various benefits such as optimisation of purchase subdivision work, lower transaction costs, closer relationships with suppliers, etc.

In summary of theoretical and practical peculiarities of the ICT factor role in organisational buying behaviour the following recommendations can be proposed:

1. With regard to the results of theoretical studies and empirical survey which show that the stages of organisational buying process the most influenced by the Internet specified in the theoretical model do not match with the stages noted by the construction companies during the empirical study, the use of the Internet is recommended in stages 4, 5 and 6 of the organisational buying process. The use of the Internet in these stages would allow the increase of efficiency and decrease of time expenditures in the buying process.

2. According to the results of the empirical study which propose that the Internet is the most widespread in the activities of the construction companies, further development of ICT use is recommended by installing intranets. With regard to the fact that the Internet is specified as an effective implement in stages 1, 2, 3 and 8 of the buying process, its

is believed that the use of the said implement would streamline and optimise the buying process thus enhancing the efficiency of organisational activities.

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