Journal of Business and Economics, ISSN 2155-7950, USA
November 2014, Volume 5, No. 11, pp. 2119-2130
DOI: 10.15341/jbe(2155-7950)/11.05.2014/016

http://www.academicstar.us

Analysis of IT Projects in Enterprise Value Building Models: Summary of Research between 2010-2012

Bartosz Wachnik
(Warsaw University of Technology, 00-661 Warszawa, Poland)

Abstract: The research results presented here refer to the issues linked to the role of information technologies in enterprise value building models that can be found in the current economic structure. The scope of this article is to present an analysis of the data collected in an annual research cycle and the resulting conclusions, describing management support IT projects in three groups of enterprises, representing three models of enterprise value analysis, i.e., the value chain, the value shop and the value network. The research was questionnaire-based and covered a total of 160 enterprises and 210 IT projects carried out in those enterprises. The presented comparative research results indicate a map of characteristics within the typology of IT projects carried out in Poland in three different groups of enterprises. The essence of the research is to present a distribution of management support IT systems, the size of the projects, chosen application implementation strategies and the method of IT project investment economic evaluation in specific enterprise groups. The research results may be interesting for researchers specialising in IT project realisation and for practitioners realising projects for companies belonging to these groups.

Key words: models of enterprise value building; IT project; effectiveness; IS investments
JEL codes: D8

1. Introduction

Currently, the subject literature is dominated by three models of enterprise value analysis, i.e., the value chain (Porter, 1985), the value shop and the value network (Stabell, Fjeldstad, 1998). In enterprises functioning according to M. E. Porter's model, the end-product value is obtained through processing raw materials into final products. The enterprise value analysis by M. E. Porter (1985) is mostly used in manufacturing companies. C. B. Stabell and O. D. Fjeldstad (1998, p. 2) have proven that M. E. Porter's (1985) value analysis is not sufficient and it does not cover all types of enterprises that presently function within the structure of our economy.

In the value shop model, value is most often built through resolving individual customer tasks. According to C. B. Stabell and O. D. Fjeldstad (1998, p. 2), the difference between the value shop and the value chain lies in the fact that in the value chain, an enterprise conducts a fixed number of operations in order to deliver a standard product in big quantities, while in case of the shop the activities performed and the resources used are adjusted to a specific, often unique problem that needs to be solved. Enterprises functioning according to the value shop

Bartosz Wachnik, Ph.D. Eng., Institute of Production Systems Organization, Faculty of Production Engineering, Warsaw University of Technology; research areas/interests: computer science for economics. E-mail: bartek@wachnik.eu.

model are, for example, consulting firms, architects, design studios and accounting firms.

In the value network model, value is built through linking customers or mediating between them. It can be either a direct link (e.g., in telecommunications companies) or an indirect one (e.g., in banks). According to C. B. Stabell and O. D. Fjeldstad (1998, p. 2), management of an enterprise that builds its value based on the value network logics is focused on perfecting the quality and the number of links between customers. Examples of management tasks include the maximum usage of infrastructure capacity, finding innovative forms of service delivery and collection of payments, assessing the long-term customer value and identifying clusters and links between the networks.

Examples of enterprises functioning according to the value network are recruitment companies, real estate agencies, insurance companies, banks and telecommunications companies. The aim of this publication is an analysis of IT projects in three groups of enterprises that represent three models of enterprise value analysis, including the IT project typology proposed by the author (Wachnik, 2012, p. 115). The article presents chosen data analyses collected in an annual research cycle and the resulting conclusions, describing management support IT projects among enterprises representing three models of enterprise value analysis, i.e., the value chain, the value workshop and the value network. In this case, the research objective is to analyse effective design, solution delivery and the usage and influence of information technology in the three groups of enterprises. The research results may be interesting both for researchers specialising in the analysis of management IT systems implementation and for practitioners completing IT projects. The opening chapters of the paper discuss the role of information technologies in the models of enterprise value building, research assumptions and the method used. Subsequently, the results of research on IT projects in the enterprise value building models are presented and the crucial conclusions formed.

2. The Role of Information Technologies in Enterprise Value Building Models

The general concept of enterprise value management originates from research (Rappaport, 1986, p. 83) presenting the concept that through maximising the profits of shareholders, the benefits of all the parties linked to the enterprise are maximised. Managing enterprise value means directing the enterprise so that the management activities and processes are aimed at maximising its value while considering the best interest of the owners and the capital they engage. The subject literature describes that the economic value of an enterprise is equal to the sum of its discounted operating net cash flow stream, which means that each factor influencing the flow can potentially shape the enterprise value. The impact of these factors derives from long-term strategic decisions and current operational decisions. The essence of value management (Copeland, Koller, Murrin, 1997, p. 95) is the process of decision-making through focusing on the most important factors shaping enterprise value, known as generators or value drivers. In the subject literature, there is a predominant classification of value generators (Rappaport, 1986, p. 83) based on three main components, i.e., cash flows from operating activities, discount rate and liabilities. The division of value generators into two groups (Dudycz, 2001, p. 43) is particularly noteworthy: Main drivers: Free cash flows, Value increase period, Capital cost: Lower level drivers: Return on capital employed, Intellectual capital.

In the literature, there is no single binding definition of intellectual capital (Ujwary-Gil, 2010, p. 32) and additionally the expression “intellectual capital” takes on many different forms. According to T. A. Stewart (2001, p. 34), intellectual capital is intellectual material: knowledge, information, intellectual property and experience

that can be used for creating wealth. Another definition L. Edvinsson, M. S. Malone (2001, p. 49) says that intellectual capital is knowledge, experience, organisational technology, customer relations and professional skills that allow a company to achieve a competitive edge. Intellectual capital in a modern enterprise are patents, trademarks, practical experiences, management's vision, the accumulated knowledge of the whole company and its specific employees, customer relations and business models supported by tools using modern technology. On the basis of literature research, indicates that the predominant approach is defining three major components within intellectual capital: Human capital, structural capital, customer capital (relational). An important input of management support information systems into the development of intellectual capital is collecting and processing data, information and knowledge existing in different forms in an organisation and making them available to the users depending on their needs. The role of management support information systems in the development of intellectual capital is:

- Collecting and ordering data, information and knowledge existing in the organisation.
- Coordination of planning and realising tasks in the operational and strategic horizon.
- The possibility to identify potential chances or threats to the organisation through access to the data, information and knowledge
- Perfecting inference and decision-making

None of the information systems can substitute for visionary managers who are able to design the idea of competitive edge for their organisations within the frames of intellectual capital. Nevertheless, many examples point to the fact that the best way of creating unique services and products is interdisciplinary integration of creativity and technology, an important characteristic of intellectual capital development. It is important for management support information systems to obtain an interdisciplinary synergy within three main components of the intellectual capital, i.e., human capital, structural capital and customer capital, which results in increasing the probability of achieving a competitive edge by the organisation.

3. Research Assumptions and the Method Used

The choice of research subject matter stemmed from the belief that the character of management support information system project implementation could depend on the group of enterprises that represent three different models of enterprise value analysis, i.e., the value chain, the value shop and the value network. The method and characteristic of realisation in these types of projects necessitates specific functional requirements for systems and a level of business—IT alignment. Understanding the views and the cognitive maps of companies' top management is of crucial significance to the description of the prevailing logics of action within the scope of management support IT projects implementation among a wide spectrum of enterprises in Poland. It is important from the perspective of research on effective enterprise value building with the use of IT in Polish economic conditions, with a growth of GDP on the level of 4.3% in 2011 and a seasonally unadjusted GDB growth by 2% in 2012. The research was conducted on an inter-regional scale, with companies located in Mazovia and Lower and Upper Silesia. Questionnaires were collected from 160 enterprises who answered questions about 210 completed IT projects in the period between 2011 and 2012. In the year 2012 in Poland there were 75,789 active enterprises with 10-49 employees, 15,694 enterprises with 50-249 employees and 3,107 enterprises with more than 250 employees. Table 1 presents the percentage of ERP, CRM and e-commerce class management support IT systems usage in respective enterprise groups. The data comes from GUS (Central Statistical Office of Poland) and it refers to the year 2012.

Table 1 The Structure of IT System Usage in Respective Enterprise Groups in Poland in the Year 2012

	Enterprises 10-49 employees	Enterprises 50-249 employees	Enterprises more than 250 employees
ERP systems	8.4%	27.7%	68.4%
CRM systems	12.9%	29.5%	57.1%
Enterprises that have their own www page	63%	85.8%	93.3%
Enterprises that have their own www page enabling users to order products according to their own specification	10.6%	12.5%	12.3%
Enterprises that have their own www page enabling personalisation of page contents for frequent/ regular users	6.8%	10.6%	15%

Source: Główny Urząd Statystyczny (Central Statistical Office)-http://www.stat.gov.pl, accessed on 10.03.2013.

In the conducted research on the analysis of IT projects, the questionnaire questions corresponded with chosen attributes of the proposed typology of IT projects (Wachnik B., 2012). The enterprises qualified for the research complied with the following criteria: 80 to 1000 employees, the company has its own IT department, the minimum turnover of 40m Polish zloty, it's around 10 m EUR. The enterprises included companies that have a wide autonomy in their IT strategy realisation, with both Polish and foreign capital. Table 2 presents the structure of the examined IT projects.

Table 2 Summary of Enterprise and Project Study Group Structure

	The valuechain	The value shop	The value network	Total
The number of enterprises	45	50	65	160
The number of projects	68	55	87	210

Source: Own study

The selected companies achieved good or average results in their industry—so they are neither leading nor marginal companies. The enterprises selected for the research belonged to the small and medium-sized enterprise group. The research was aimed at reaching people directly or indirectly engaged in the implementation of management support IT projects. The respondents were company owners, directors, members of the board, financial directors or IT directors. After completing questionnaire research, the author carried out an in-depth analysis based on completing workshops, i.e., a series of meetings with chosen company representatives in order to verify the answers and conduct additional interviews. The author carried out 7 meetings in the "value chain" enterprise group, 12 meetings in the "value shop" enterprise group and 13 meetings in the "value network" enterprise group. The workshops were aimed at conducting a deeper analysis of the logics of action in the analysed enterprises.

4. Analysis of IT Project In Models of Enterprise Value Building

Table 3 presents the structure of two types of IT projects, i.e., the project of building an IT system developed from scratch and an IT system pack adaptation project divided by three enterprise groups representing the value chain, the value shop and the value network.

Table 3 The Structure of IT Project Types Divided by Three Enterprise Groups.

	The value chain	The value shop	The value network
Building an IT system from scratch	34%	58%	61%
A standard IT system pack adaptation project	66%	42%	39%

Source: Own study

Table 4 shows the structure of IT system types within the completed projects divided by three enterprise groups representing the value chain, the value shop and the value network.

Table 4 The Structure of IT System Types within the Completed Projects Divided by Three Enterprise Groups and the Types of Management Support It Systems

	The valuechain		The value shop		The value network	
	Building an IT system from scratch	System packadaptation project	Building an IT system from scratch	System packadaptationproject	Building an IT system from scratch	System packadaptationproject
ERP	0%	27%	0%	22%	0%	38%
CRM	9%	13%	16%	13%	17%	12%
WMS	0%	13%	0%	0%	0%	0%
SCM	9%	4%	0%	0%	0%	0%
RFID	0%	4%	0%	0%	4%	0%
Barcodes	0%	11%	0%	9%	6%	0%
e-learning	0%	0%	0%	13%	4%	9%
DMS	9%	0%	38%	9%	15%	3%
BI	0%	16%	0%	30%	0%	35%
CIM	0%	4%	0%	0%	0%	0%
XML/EDIFACT	17%	2%	19%	0%	17%	0%
Internet and mobile applications	57%	4%	28%	4%	38%	3%

Source: Own study

Table 5 shows the size structure of management support IT projects divided by three enterprise groups representing the value chain, the value shop and the value network. The size of an IT project has been defined on the basis of three criteria, i.e., the number of end users, the number of key users and project duration. None of the enterprise groups has conducted a big or a large IT project. All three enterprise groups have a higher percentage of small IT projects.

Table 5 The Size Structure of Management Support It Projects Divided by Three Enterprise Groups Representing the Value Chain, the Value Shop and the Value Network

Project size	The value chain	The value shop	The value network
Microprojects—number of end users 1-5; number of key users 1-2; duration up to 3 months	37%	36%	25%
Small projects—number of end users 5-20; number of key users up to 5; duration 3-6 months	44%	49%	52%
Medium-sized projects—number of end users 20-100; number of key users up to 10; duration 6-12 months	19%	15%	23%
Big projects—number of end users up to 1000; number of key users 50-100; duration 2-3 years	0%	0%	0%
Large projects—number of end users over 1000; number of key users 100; duration 4-6 years	0%	0%	0%

Source: Own Study

Table 6 and Figure 1 present the structure of strategy types that lead IT system implementations divided by three enterprise groups representing the value chain, the value shop and the value network. The group of companies belonging to the value chain model is dominated by the market survival strategy, while in the group of companies belonging to the value shop model the platform for changes strategy prevails. In the group of

companies from the value network model, the strategy of achieving saltatory innovation is predominant. In the enterprise group belonging to the value chain model, the same number of respondents chose the saltatory innovation strategy and the platform for changes strategy. In case of companies belonging to the value shop model, the lowest number chose the strategy of achieving saltatory innovation, while in case of the value network model, the market survival strategy was the least popular choice.

Table 6 IT System Implementation Strategy Structure Divided by Three Enterprise Groups Representing the Value Chain, the Value Shop and the Value Network

Strategy type
Market survival strategy. Strategy linked to the enterprise's survival on the market treats an IT system implementation as a tool allowing the company to survive on the market.
Achieving saltatory innovation. Strategy linked to the need to achieve innovations saltatorily treats an IT system implementation as a tool allowing to quickly achieve a single process innovation.
Platform for changes strategy. Platform for changes strategy treats an IT system implementation as a platform for introducing permanent, step changes in enterprise organisation and management during the period of the system lifecycle in the enterprise.

Source: Own study

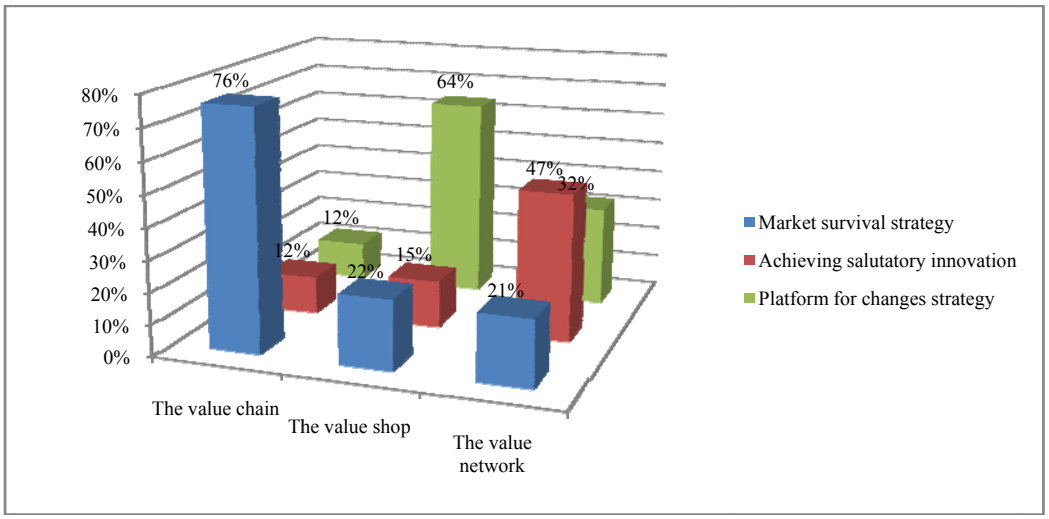

Figure 1 The Structure of Respondents' Answers to the Questions Concerning An IT System Implementation Strategy Structure Divided by Three Enterprise Groups Representing the Value Chain, the Value Shop and the Value Network (Source: Own study, see Table 7)

Table 7 and Figure 2 show the structure of an IT project investment model divided by three enterprise groups representing the value chain, the value shop and the value network. Both the chain value model enterprise group and the value network group are dominated by the original investment model. In the case of companies from the value shop group, the interim model is predominant. Cloud computing proved to be still the least popular investment model in the three groups.

Table 7 The Structure of an It Project Investment Model Divided by Three Enterprise Groups Representing the Value Chain, the Value Shop and the Value Network

Investment model
Cloud processing (virtualisation). A processing model based on using services delivered by external organisations. It means that the original investment, i.e., server and license purchase or the necessity to install and administer software, is eliminated.
Original investment model. A model based on investment realisation, i.e., purchasing all the necessary equipment and software, as well as software installation and administration services, in the initial phase.
Interim model. An interim model between the cloud-processing model and the original investment model, e.g., collocation service.

Source: Own study

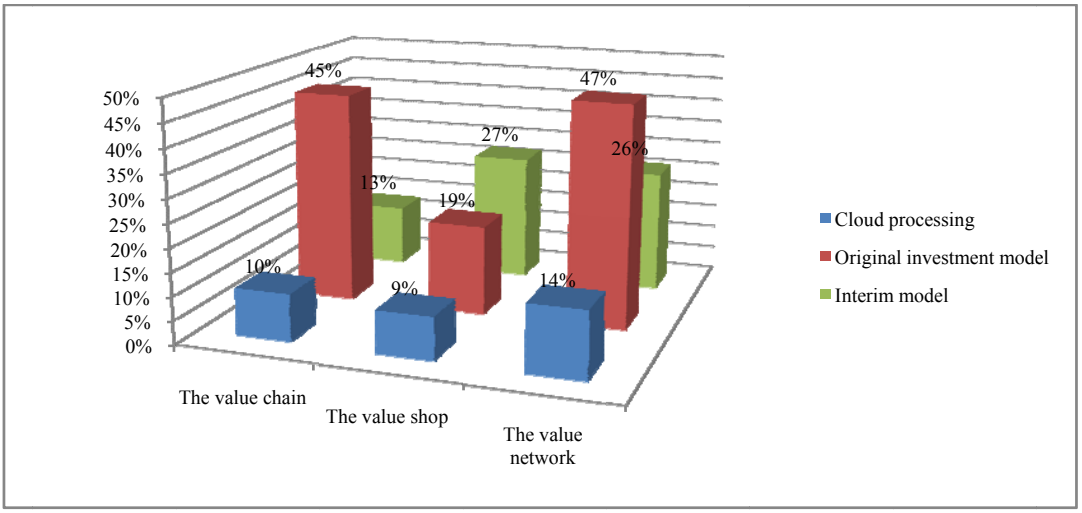

Figure 2 The Structure of Respondents' Answers to the Questions Concerning An IT Project Investment Model Divided by Three Enterprise Groups Representing the Value Chain, the Value Shop and the Value Network (Source: Own Study, see Table 8)

Table 8 and Figure 3 present the structure of project groups that completed selected IT projects divided by three enterprise groups representing the value chain, the value shop and the value network. All three groups are dominated by the model of a mixed project group, consisting both of enterprise employees and external consultants.

Table 8 The Structure of Project Groups that Completed Selected It Projects Divided by Three Enterprise Groups Representing the Value Chain, the Value Shop and the Value Network

Project groups
Internal team. Only the employees of the enterprise where the project is being completed participate.
External team. Only the employees of the project supplier participate.
Mixed team. The project group consists of both of the enterprise's employees (the so-called key and end users) and external consultants.

Source: Own study

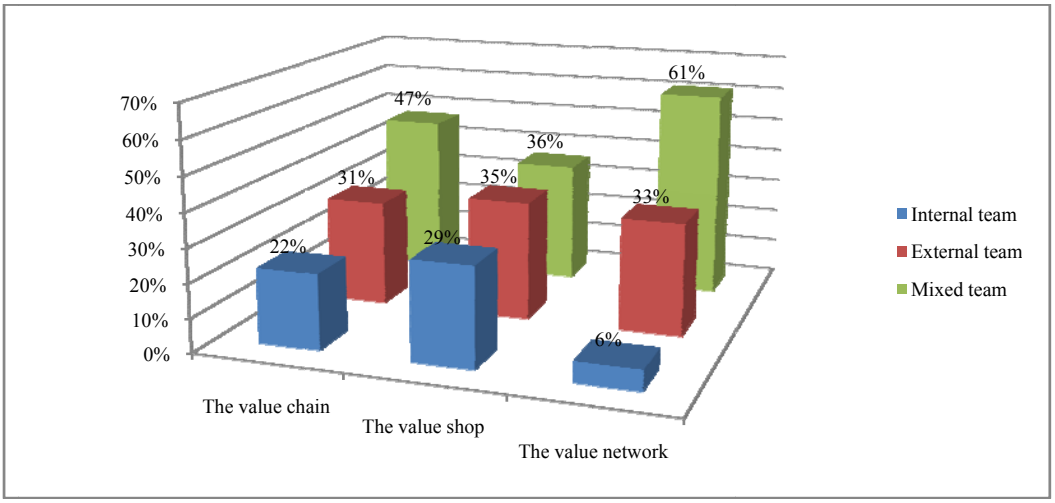

Figure 3 The Structure of Respondents' Answers to the Questions Concerning Investment Model Divided by Project Groups that Completed Selected IT Projects Divided by Three Enterprise Groups Representing the Value Chain, the Value Shop and the Value Network (Source: Own study, see Table 9)

Tables 9, 10 and Figures 4, 5 present the information concerning performing economic analyses of IT project investments from the ex-ante and ex-post perspective. In all three enterprise groups, a lack of ex-ante and ex-post economic analysis of IT projects prevailed. The main reason for failing to perform this type of analyses was a lack of interest on the side of the top management, as shown in Table 11 and Figure 6.

Table 9 Information Concerning Performing Economic Analyses of IT Project Investments from the Ex-ante Perspective

Information on economic analysis performance in an IT project investment (ex-ante)
Performed (ex-ante) economic analysis of an IT project investment
Lack of ex-ante economic analysis of an IT project investment

Source: Own study

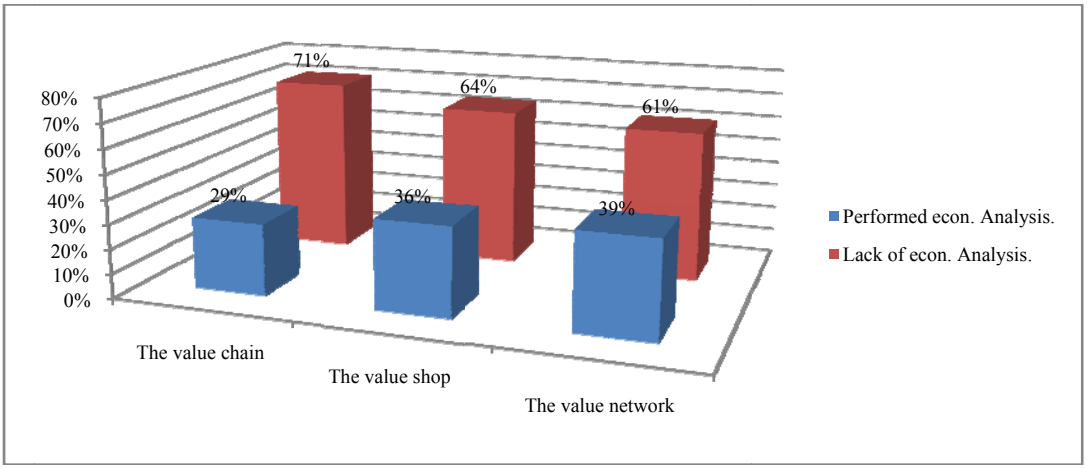

Figure 4 The Structure of Respondents' Answers to the Questions Concerning Information on Performing Economic Analyses of IT Project Investments from the Ex-ante Perspective (Source: Own study, see Table 10)

Table 10 Information Concerning Performing Economic Analyses of IT Project Investments from the Ex-post Perspective

Information on economic analysis performance in an IT project investment (ex-post)
Performed (ex-post) economic analysis of an IT project investment
Lack of ex-post economic analysis of an IT project investment

Source: Own study

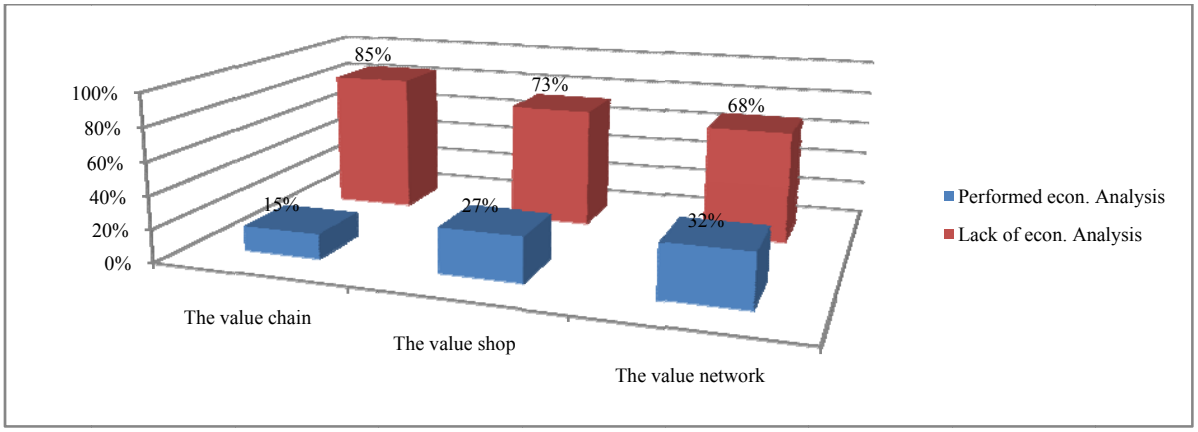

Figure 5 The Structure of Respondents' Answers to the Questions Concerning Information on Performing Economic Analyses of IT Project Investments from the Ex-post Perspective (Source: Own study, see Table 11)

Table 11 Main Reasons Hindering the Performance of an Economic Analysis in It Projects

Main reasons hindering the performance of an economic analysis in IT projects
Top management's lack of interest in performing an analysis
Lack of knowledge and tested models allowing to perform an economic analysis
Difficulties with specifying the benefits (indirect and direct) and costs entailed by the completed projects

Source: Own study

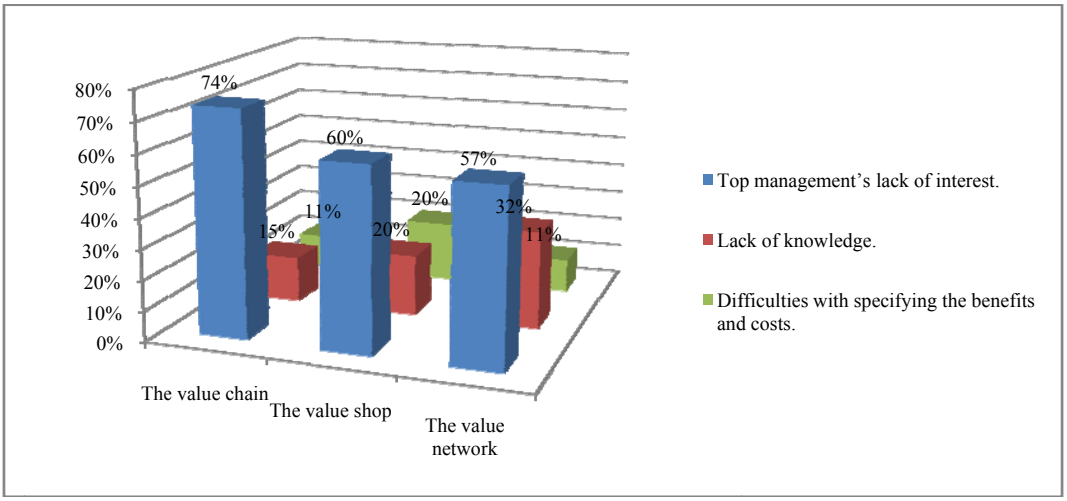

Figure 6 The Structure of Respondents' Answers to the Questions Concerning Information on Performing Economic Analyses of It Project Investments from the Ex-post Perspective (Source: Own study, see Table 11)

5. Conclusions

The selected results of analysed material presented in this paper from research on IT projects in three enterprise groups, representing three value building models, conducted by the author in 2011 and 2012, allow us to formulate the following crucial conclusions.

First of all, companies representing the chain value model chose IT projects consisting of adapting a standard IT system pack most often, as opposed to two other company groups, i.e., from the value shop and the value network. In all three enterprise groups, IT projects consisting of adapting a standard pack were dominated by ERP and BI system implementations. It stems from two facts: firstly, the life cycle of an ERP system product enforcing upgrades, re-implementations, new implementations and secondly, in the period of stagnation and recession that we experienced in Europe between 2009 and 2011, many enterprises decided to implement BI class analytical systems for more effective monitoring and control of their operational activity, especially the costs. The majority of them treated a BI system implementation as one of the important components of an informatisation strategy during the difficult times (Dyczkowski, 2011). It is worth noting the fact that among projects consisting in building an IT system from scratch, in all three enterprise groups, two types of application building prevail, i.e.:

- Interfaces linking IT systems through XML/EDIFACT standards, directly resulting from the requirements for entrepreneurs using the European Union funds from measure 8.1, i.e., support for economic activity as regards electronic economy.
- Internet and mobile applications that are in the phase of product life cycle development.

Secondly, analysing the size of completed projects, considering the number of end users, the number of key users and the project duration, none of the enterprise groups has conducted a big or large IT project. In all three

enterprise groups, small IT projects prevail. Additional interviews with enterprise representatives indicated that most enterprises have already completed the majority of big IT projects and that they are not planning to carry out this type of project in the near future. Currently, enterprises from the three groups are focused on implementing highly specialised management support applications in narrow fields, e.g., for statistical analysis and recommendations for product and service price setting on the market, and calculating service charges, the so-called billing, within small-scale projects.

Thirdly, enterprises from each of the groups followed different strategies in completing IT projects. The value chain model enterprises completed their projects according to the market survival strategy. It results chiefly from two reasons, i.e., implementing financial-accounting modules within ERP systems, that are naturally obligatory in enterprise management, and implementing appropriate IT systems complying with, e.g., value management standards in the "Life&Science" industry production, i.e., FDA, GMP. The value shop model enterprises completed their projects according to the strategy of treating an IT project as a platform for changes. Additional interviews with selected enterprise representatives have shown that managers often decided to perform a DMS application on, e.g., the SharePoint platform, that was intended as a customer service management system, arguing that they have not found a standard pack that could be adapted to their needs and that would meet their requirements. The majority of analysed DMS applications had the characteristics of new functionality development facilitation required for widening the range of provided services. The value network model enterprises completed their projects according to the strategy of achieving saltatory innovation. It results mostly from the fact that this enterprise group includes enterprises from the financial sector, as well as telecommunications and data transmission services operators. Enterprises from the value network model group dedicate less resources to infrastructure investment, transaction applications that allow them to standardise and automate a big group of activities, focusing on analytical applications, chiefly innovative transformation systems influencing enterprise business model change and allowing to gain competitive advantage. Implementing a banking platform in the Polish bank AliorSync may serve as an example.

Furthermore, enterprises from all three groups chose two dominating IT project investment models, i.e., the original investment model consisting in an original purchase of the necessary equipment, software and service licence and the interim model, between the original investment model and the cloud computing model. It is worth noticing the new cloud processing model among management support IT systems. Apart from owners seeking savings, the development of the cloud processing model is also influenced by an increase in popularity of mobile Internet and mobile applications. Additional interviews with chosen enterprise representatives have shown that managers see the following conditioning as limiting to the cloud processing model development in Poland, i.e.:

- Technological-linked to the access to appropriate infrastructure, i.e., broadband Internet, telecommunication and data transmission devices, guaranteeing the safety of stored and saved data.
- Financial-commercial-linked to an insufficient service offer in the cloud processing model. Some companies offer their services in the cloud processing model for the same prices as to entities in developed countries, hence making the offer unattractive to Polish companies.
- Lack of legal regulations precisely defining responsibility for the stored data and for the potential results of data leak.
- Lack of knowledge concerning service functionality, technology and trade offer in the cloud processing model.

Moreover, enterprises from all three groups completed IT projects in a mixed team, i.e., the project group

consisted of both enterprise employees and external consultants. Additional interviews with chosen enterprise representatives have proven that in case of developing an IT system from scratch, external consultants were engaged mainly as project managers or programmers competent in a given specialisation. It is noteworthy that many managers referred to their negative experiences from the 90s and the early 2000s, when companies would decide to single-handedly implement an ERP, CRM, DMS and BI systems or create their own software, intentionally avoiding external companies and consultants in order to save money. In those cases, the projects would not end successfully and in the final clearing, the budget would increase drastically.

Finally, in all three enterprise groups, both from the ex-ante and the ex-post perspective, a lack of economic analysis of IT project investments is predominant. Importantly, both in the ex-ante and ex-post perspective, the highest number of companies not completing an economic analysis has been found in the group of enterprises from the chain value model and the lowest in the value network group. The indirect, significant reasons were a lack of interest in carrying out such analyses among top management and a lack of knowledge how such analyses are performed.

Additional interviews with chosen enterprise representatives have shown that the companies representing the value chain and the value shop functioned according to corporate governance rules on IT that recommend controlling and monitoring the effectiveness of implemented IT management support systems, as opposed to the enterprises from the value chain model that had not yet implemented corporate governance on IT and thus performed such analyses less often. Additionally, during the interviews, the respondents pointed out that enterprises less frequently performed these analyses from the ex-post perspective, i.e., after the implementation, as this type of analyses may indicate mistakes and errors in the choice of system, implementation partner or, finally, project completion.

To sum up, it is interesting that top managers of most enterprises in all three groups are not interested in answering the questions of how to measure economic effectiveness in IT system implementation projects and how to maximise the business value of IT technology investments, unless they are forced to do so by corporate governance on IT.

The author hopes that the research results presented in this paper may help achieve two goals, i.e., indicating the character and the role of IT projects completed in Poland in the groups of enterprises representing three enterprise value building models and thus allowing for a wider verification of knowledge in this area and contributing to a more effective realisation of mid and long-term aims included in strategies for creating an economy based on innovations, information, knowledge and trust in Poland.

References:

Copeland T., Koller T. and Murrin J. (1997). *Valuation: Measuring and Managing the Value of Companies*, Warsaw, WIG-Press.

Dudycz T. (2001). *Financial Tools of Enterprise Value Based Management*, Wrocław, Akademia Ekonomicznaim O. Langego we Wrocławiu.

Dyczkowski M. (2011). "Changes in informatisation strategies of Polish companies in reaction to the economic crisis: Summary of the surveys from the years 2009-2011", *Business Informatics*, Wrocław, AkademiaEkonomiczna we Wrocławiu.

Edvinsson L. and Malone M. S. (2001). *Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Brainpower*, Warsaw, PWN.

Luftman J. N. (2003). *Competing in the Information Age*: *Align in the Sand*, New York, Oxford University Press.

Papp R. (2001). *Strategic Information Technology: Opportunity for Competitive Advantage*, Hershey, Idea Group Publishing.

Porter M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*, New York, The Free Press York.

Rappaport A. (1986). *Creating Shareholders Value: The New Standard for Business Performance*, New York, The Free Press.

Selig Gad J. (2009). *Implementing IT Governance: A Practical Guide to Global Best Practices in IT Management*, Zaltbommel, Van Haren Publishing.

Stabell C. B. and Fjeldstad O. D. (1998). "Configuring value for competitive advantage: On chains, shops and networks", *Strategic Management Journal*, Vol. 19, No. 5.

Stewart T. A. (2001). *The Wealth of Knowledge, Intellectual Capital and the Twenty-First Century Organization*, London, Currency.

Ujwary-Gil A. (2010). "Intellectual capital—The problem of interpreting key terms", *Organizacjai Kierowanie*, Vol. 2, pp. 87-103, Warsaw, Warsaw School of Economics.

Wachnik B. (2012). "Typology of management support IT projects", *Information Systems in Management*, Warsaw, SGGW.