The Influence of Virtualization of Resources Acquisition Processes on the Enterprises Competitiveness

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Abstract: Throughout the past few years, changes in the processes of enterprise's resources acquisition have been reflected by the news opportunities provided by web-based technology, changes in the behaviours and expectations of business partners and customers as well. The aim of the paper is to demonstrate that virtualization of resources acquisition processes has essential effect on the achievement of competitive advantage by enterprises in the market. Importance of the resources in the enterprise has been justified based on the resource-based theory. Selected typologies of the resources in the enterprise were presented with the directions of changes in the process of resources acquisition. A model of the process of resources acquisition was also proposed. The study also emphasizes the opportunities for virtualization of different types of resources acquisition processes in enterprises. The study aim was achieved using the results obtained in a survey carried out in a big enterprise from the food processing sector.

1 INTRODUCTION

As far as historical approach is concerned, enterprises had to collect resources in order to use them as a source of competitive advantage. Contemporary companies do not collect all the necessary resources. Increasingly more focus is being placed on ensuring access to specialized global suppliers, ability of re-grouping of resources (even on a global scale), capabilities of fast response to changes in the environment and flexibility.

Web-based technologies allow for introduction of deep changes in the processes of resources acquisition in enterprises. Acquisition of resources might be perceived from the strategic point of view, particularly if its goal is to acquire or ensure the access to unique resources. This process is also performed within routine activities in an enterprise with operational importance. The use of web-based technologies might in both cases bring huge benefits and affect competitiveness of the enterprise in the market. The resource-based theory might provide a reference for all the type of resources: human, financial, tangible, informational and relational while utilization of web-based technologies in virtualization of the resources acquisition processes positively affects the enterprise's performance.

2 RESOURCE-BASED THEORY: DISSEMINATION AND MAIN TRENDS

2.1 The Concept of Resource-Based Theory

Resources are considered to be the entirety of material and non-material factors that can be used for the processes that occur in the enterprise. Basic problems in business activity include limited resources, ambiguity of the methods of collecting and allocation of the resources and lack of self-sufficiency in enterprises. Resources are the basis for Resource-Based Theory and for one concept of management: flexible organization and management by opportunities (Krupski, 2011). In the Resource-Based Approach, an enterprise is a unique collection of resources, but not all the resources have potential for creation of competitive advantage (Clulow et al., 2007).

Resource-Based Theory (RBT) posits that competitive advantage and performance are shaped by firms' unique resource endowments (Barney, 2001). Specifically, a resource is capable of generating sustainable performance advantages when it satisfies following criteria:

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- resources must be valuable such that they help firms increase efficiency or enhance buyers' willingness to pay premium prices,
- resources need to be sufficiently rare so that they are not readily available to competitors,
- resources must not be easy for competitors to imitate or substitute.

Resources that satisfy these criteria are called 'strategic resources' (Chi, 1994).

It is important in the resource based view of the firm to define resources which, with the Barney's (2001) approach, include all the assets, abilities, organizational processes, characteristics, information and knowledge controlled by the enterprise and allowing for implementation of the strategies and increasing the efficiency. When selecting the strategy of competition, the enterprise does not have to analyse the competitive position in detail with respect to the sector it operates in. More important thing is to manage their resources in order to develop the distinguishing abilities and key competencies. Other important factors are abilities to integrate, create and reconfigure the resources (Wu, 2010).

The resource-based theory is a mixed internal-external approach. First of all, it concentrates on the internal resources in the enterprise and then analyses the enterprise's environment, including the opportunities for acquisition of the resources from the environment.

Resources and skills reconfigured into key competencies translated into the competitive advantage of the enterprise (Hamel, Prahalad, 1990).

2.2 Typologies of Enterprise Resources

There is no single generally accepted classification of resources which has been adopted in the area of management. Resources have always been an important element in enterprise's operation and this problem has been often considered in the literature. From the historical perspective, the most important resources were those material. Kraljic (1983) distinguished the following types of material resources: strategic items, bottleneck items, leverage items, noncritical items.

From the strategic viewpoint, it is also essential to distinguish (Ghemawat, delSol, 1998):

- resources which are specific for the enterprise and for application (are inflexible and the costs connected with withdrawing them are very high, e.g. changing the brand),
- resources which are non-specific (are inflexible, easy to be replaced without extraordinary costs)

A division of the resources which has often been emphasized in the literature is division into tangible and intangible resources (Hall, 1993); (de Wit and Meyer, 2007). The tangible resources include land, buildings, materials or cash. The intangible resources are further subdivided into relational (relations and reputation) and competences (knowledge, abilities and attitudes).

The classification presented in Table 1 is one of the most transparent and comprehensive approaches to the diversity of resources in enterprises.

Table 1: Classification of resources for the business model concept.

Type of resources	Examples
Physical	geographic location, land, real estates, machinery, equipments, raw material reserves
Financial	external funds, internal funds, other financial instruments
Legal	agreements, patents, licenses, copyrights, registered designs, trade secrets, trademarks
Relational	relationships inside the firm, supplier relationships, customer relationships, competitor relationship, external partiers relationships
Human	personal networks, individual experience, education, personal attributes
Organizational	culture, structure, routines, brand, processes, reputation
Informational	industrial information, customer information, supplier information, internal information, product information

Source: (Seppänen, 2009)

One specific resource in enterprises is the knowledge. In the nineties of the 20th century, the concepts started to permeate business that promoted the role of knowledge in formation of competitive advantage. Knowledge causes that the resources allow an organization to create value.

The utilization of all the types of resources throughout the growth of the enterprise is important and depends on the concrete conditions. The most important factor in the dynamically changing environment of enterprises might be the ability of efficient implementation of the process of acquisition of the resources in the enterprise.

2.3 The Concepts of Resources Acquisition in Enterprises

In terms of trade, acquisition of resources has been known since the dawn of civilization (barter,

precious metal coins, paper exchange, electronic exchange). In their attempt to collect the resources, contemporary enterprises utilize not only a well-known form of purchasing but also the contracts of exchange of resources, agreements on readiness of experts to cooperate, innovative and marketing ideas from customers and potential customers found in the Internet forum websites owned by the enterprise, crowdsourcing, virtual community, outsourcing etc.
The view of the resources available in the enterprise has evolved:

- from what is available within a department
- from what is available within a corporation
- from what is available within a supply chain
- from what is available within a society of consumers
- towards what is available everywhere in the world resources (Prahalad and Krishnan, 2008).

The direction of global acquisition of the resources has been also accentuated by Trent and Monczka (2002). It was shown in the figure 1

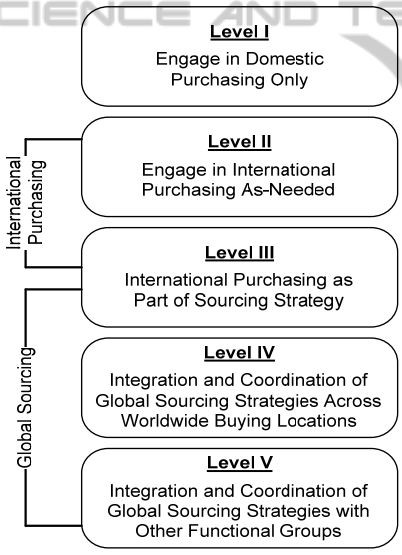

Figure 1: Current and Expected International Purchasing and Global Sourcing Levels.

The process of resources acquisition might be composed of a variety of stages that depend on different factors, on the purpose of the process etc. In a conventional model of the process of resources acquisition, the following stages have been emphasized:

1. Design and planning
2. Development of a strategy for acquisition of resources
3. Identification of suppliers
4. Creation of the market (price/quality/value added)
5. Making transactions

This model can be relatively easy implemented for acquisition of material resources (Prahalad and Krishnan, 2008).

3 VIRTUALIZATION OF RESOURCES ACQUISITION PROCESSES

With the growth of the Internet, e-sourcing has become an important tool as well as for strategic and for operational level of enterprise's functionality.

Acquisition of resources on the strategic level is considered as a process of value generation added or composition of the set of relationships with suppliers in order to get a competitive edge (Lysons, 2004). Acquisition of resources at the operational level includes the resources which do not have key importance to the enterprise, are standardized, generate high profits but with low supply risk. Considering the typology of the resources presented in Tab. 1, strategic acquisition of the resources relates to what is known as “strategic items” and “bottleneck items” while operational acquisition of the resources relates to the “leverage items” and “non-critical items”.

Strategic e-sourcing is the process of using Web-based technologies to support the identification, evaluation, negotiation, and configuration of optimal grouping of trading partners into a supply chain network that can efficiently respond to changing market demands. It is during the sourcing cycle that an organization defines the overall cost and structure of its products and its supply network (Aberdeen Group, 2002).

E-sourcing is a term that refers to the use of Internet-enabled applications and decision support tools that facilitate competitive and collaborative interactions among buyers and suppliers through the use of online negotiations, reverse (decreasing bid) auctions, and other related tools.

At present, virtualization of resources acquisition processes is a quite good solution for the enterprises aiming to adapt to the fierce competition with flexible and agile organizational structures. E-sourcing is one of the processes which, if effectively implemented, makes the enterprise much closer to the concept of virtual business.

Virtual businesses are e-organizations, cyber organizations or e-enterprises that can perform the

business goals and missions over network technologies (Gökmen, 2011).

New models of virtual business need new model of the resource acquisition process. Virtualization of resources acquisition processes might be composed of the following stages:

1. Creation of ideas. Which resources does the enterprise need?
2. Planning and designing of the process of acquisition
3. Implementation of the process of acquisition of resources
4. Improvement of the process of acquisition of resources

Support from Web-Based Technologies for stages in the process of acquisition of resources was shown in table 2.

Table 2: Support from Web-Based Technologies for stages in the process of resources acquisition.

Stages in the process of resources acquisition	Support from Web-Based Technologies
Creation of ideas. Which resources does the enterprise need?	Websites as inspiration Sector-based portals and vertical portals Extranet Virtual organizations Semantic networks and ontological solutions
Planning and designing of the acquisition process	Websites used for resources and partners searching Sector-based portals and vertical portals SOA, SaaS, MRP/ERP in Cloud, GIS in Cloud VPN, BPML, BPMN e-banking for financial planning
Implementation of the resources acquisition process	Websites owned by business partners MRP/ERP in Cloud, GIS in Cloud VPN WebSide of Virtual Organization e-banking for financial settlements
Improvement of the resources acquisition process	Business analytic tools e-benchmarking and e-testing BPML and BPMN Virtual organizations Websites as sources of knowledge Sector-based portals and vertical portals

Source: Authors' own study

Organizations using Web-based sourcing technologies have been able to do the following:

- identify, qualify, and negotiate with an increased number of suppliers, creating more competitive bidding environments,
- negotiate an average of 5% to 20% unit price reduction,
- shorten sourcing cycles by an average of 25% to 30%,
- reduce time to market cycles by 10% to 15%,
- reduce process costs for sourcing engagements,
- improve quality levels for the goods and services being sourced,
- increase access to technology and service innovations through improved collaboration,
- apply strategic sourcing to a broader range of products and services,
- promote knowledge sharing and standardization of sourcing best practices across the enterprise (Aberdeen Group, 2002).

Support from Web-based technologies (WBT) for during virtualization of acquisition processes of: human resources, financial resources, material resources, information resources and relational resources was shown in table 3. The examples of action taken and WBT support was presented.

Table 3: Support from Web-Based Technologies for virtualization of acquisition processes of: human resources, financial resources, material resources, information resources and relational resources.

Actions taken	Support Web-based technologies
Human Resources	
Recruitment of employees	- WWW: recruitment advertisement, specification of requirements - WWW (Web 2.0) - electronic forms for sending letters of application, CVs, tests of specialized knowledge, test of knowledge about the enterprise - specialized websites (headhunters) - professional social networks - common social networking services (such as Facebook)
Cooperation with experts - one-off orders - constant cooperation	- vertical portals - websites owned by scientific and technology associations - bases of cited publications - audio- and video-conferences - blogs and message boards
Resources of reserve human resources (availability)	- information about websites: contact form - enterprise-owned websites and fan pages in social networks - telework - web filtering with ontological methods
Financial Resources	
Searching for business angels	- electronic rankings of the richest people in the world, in the country and region - project waiting room - spin-off enterprises exchanges - social networks - information and publications on charity actions and philanthropic activity - Web 2.0 - Internet search engines

Table 3: Support from Web-Based Technologies for virtualization of acquisition processes of: human resources, financial resources, material resources, information resources and relational resources. (Cont.)

Seeking venture capital	- specialized sector-based portals - sector-based social networks - Internet announcements: finding VC investors and enterprises that start business activity - Internet search engines - electronic systems of finding business partners
Applications for national and international projects	- websites owned by the institutions that allocate funds within projects - tools for support of filling in the applications and verification of the properly filled applications - Internet forums, websites owned by other project participants
Searching for sources of investment financing	- financial vertical portals - virtual financial advisers - credit simulators - sector-based portals - sector-based social networks - Internet search engines
Settlements with suppliers	- e-barter: supporting goods-to-goods and goods-to-services exchange - e-factoring - electronic banking - exchange and acquisition of virtual financial resources (e-cash, payPal etc.)
Material Resources	
Leasing	- websites owned by financial institutions - electronic wizards of leasing applications - e-leasing: software, licenses, virtual servers, ASP etc.
Making a contribution in kind: partners	- Internet search engines - sector-based portals - virtual organizations
Good exchanges	- e-market - Internet shops and wholesalers - Internet auctions
Price comparison	- electronic systems for price comparison - e-benchmarking and e-testing - portals for exchange of opinions about products and services
Logistics	- e-SCM - e-logistics - SaaS (Software as a Service): making applications available (e-SCM, ERP) as web services
Information Resources	
Information about internal information resources in the enterprise	- state-owned portals - corporation-owned portals - enterprise-owned portals - dropboxes - e-survey
Information and data from partners and contractors (B2B)	- corporation-owned portals - SaaS (Software as a Service) - Extranet - VPN

Table 3: Support from Web-Based Technologies for virtualization of acquisition processes of: human resources, financial resources, material resources, information resources and relational resources. (Cont.)

Finding information about the environment: - closer and further environment - macro environment - competitors	- websites owned by competitors - electronic reports and market analyses - sector-based portals - statistics from electronic auctions and internet shops - e-government - GIS portals
Acquisition of economic and financial information	- economic portals - stock exchange quotations - websites owned by state and commercial banks - financial and tax consulting - Internet search engines
Acquisition of information about fashion, trends and behaviours	- Internet search engines - analyses and statistics for web traffic - websites owned by manufacturers, internet shops, portals for exchange of opinions - reports of TopSeller type
Searching demographic information	- analyses and reports for web traffic in the Internet - websites owned by statistical offices - GIS portals
Acquisition of knowledge	- e-learning - Internet forums - electronic publication of conference materials - electronic libraries - electronic consulting services - electronic designer offices
Acquisition of technologies	- websites owned by research and development centres, universities, university centres - e-technology (application, servers, data wholesalers, SaaS) - virtual fairs and exhibitions, - commercial CAD/CAM design
Relational Resources	
Relations with customers	- e-CRM - social media, fan pages - newsletters - mailing - Web 2.0
Relations with partners	- e-CRM - data and documentation exchange platforms (SharePoint) - dropboxes: virtual folders for exchanging and sharing files - social media, fan pages - newsletters - mailing - partner zones in enterprise-owned websites - Web 2.0
Relations with offices and public administration	- websites owned by the offices - e-office - electronic applications, reports and statistics
Relations with employees	- e-work - e-learning - headhunting services

Source: Authors' own study

4 CASE STUDY

The survey was carried out in a big enterprise from the sector of food processing. The authors of the present paper have cooperated with for over ten years in the field of consulting of implementation of IT systems that support the activities in a number of areas of the enterprise's operation and systems for support of decision-making. The enterprise is developing dynamically. It is being increasing the range of products offered in the market, implementing the quality assurance systems, automating and informatization the activity and successfully implements the strategy of entering into the electronic market and developing e-business.

The aim of the presented study was to verify the following hypotheses:

H1: Virtualization of the resources acquisition processes allows for improving competitive advantage of the enterprise in the market.

H2: The use of web-based technology positively affects the results obtained in the market more than the financial results.

The study participants were the managers of all levels of management in mentioned enterprise: the president, two members of the board, three directors and nine managers of individual departments. This made 15 people in total.

A method of guided interview was used in the survey. Scenario of the interviews with each manager was the same. First the interviewer talked about the opportunities of using the web-based technology in realization of the processes of resources acquisition, using the examples from table 3. Further, development of the implemented web-based technology on the scale of the whole enterprise in the past five years was also evaluated.

The respondents were asked to answer to the following questions:

Q1: Evaluate, on a scale of 1 to 5, the effect of the web-based technology used on implementation of the acquisition processes of individual types of resources (human, financial, material, informational and relational).

Q2: Evaluate, on a scale of 1 to 5, the effect of virtualization of resources acquisition processes on market results obtained in the enterprise.

Q3: Evaluate, on a scale of 1 to 5, the effect of virtualization of resources acquisition processes on financial results obtained in the enterprise.

Scale: 1 - unimportant, 2 - insignificant importance, 3 - moderately important, 4 - important, 5 - very important.

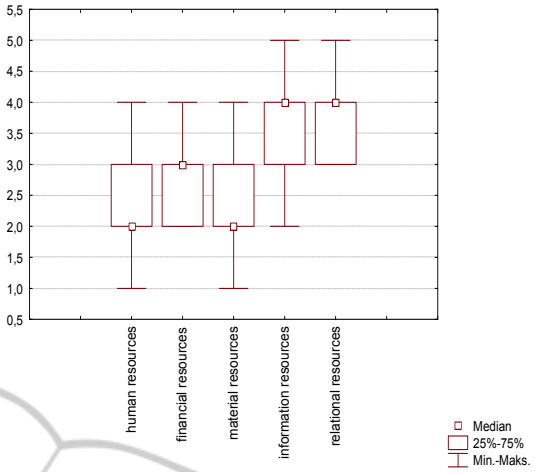

Figure 2: The influence of virtualization of resources acquisition processes on the individual types of resources.

The values of the medians in Fig. 2 for individual types of resources differ between each other. The highest values are observed for the processes of acquisition of information and relational resources. The facilitation in the process of financial resources acquisition that result from WBT solution was found to be moderately important. The highest median was found for the processes of human and tangible resources acquisition. None of the respondents regarded the effect of WBT solutions on the resources acquisition processes as very important (lack of 5.0 scores). An almost identical values of the interquartile range $R_{Q3} - R_{Q1}$ (1.0) were observed.

The smallest differentiation of the answers was found for acquisition of financial and relational resources.

Fig. 3 presents the effect of virtualization of resources acquisition processes on financial and market results in the enterprise.

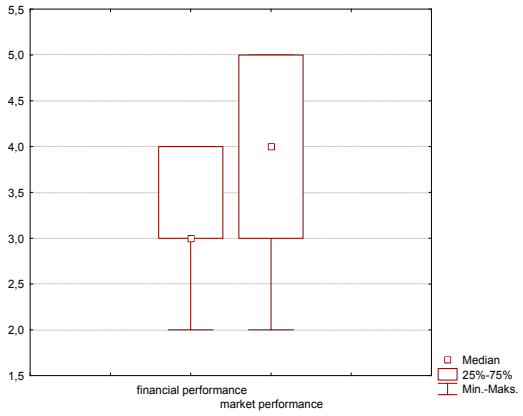

Figure 3: The influence of virtualization of resources acquisition processes on the financial and market performance.

Substantial differentiation in the answers given by the respondents is observed in the evaluation of the effect of virtualization of resources acquisition processes on market results in the enterprise. Median reached a relatively high value (4.0) and 1/3 of the respondents chose the highest note (5.0), with one respondent choosing the note (2.0) and none of them choosing the note (1.0).

The years 2008 and 2010 are distinguished by the implementation of the virtualization of resources acquisition process in the enterprise studied. In 2008, the website that had performed the role of a 'business card' of the enterprise was extended with the first multimedia catalogues, order forms, and a message board.

In 2010, the enterprise implemented the solutions of corporate portal and integrated the information technologies and systems, data, information and knowledge that were present in its environment. The effect of this enterprise was giving users the opportunity of a personalized and convenient access to the data, information and knowledge that match their needs at any time and place, in a safe manner and using a uniform interface.

Considering the two essential events in virtualization of resources acquisition processes, the subject of analyses included financial performance of the firm and indicators of the market share in 2008, 2010 and 2012 years. The enterprise noted decrease of financial results in 2012, however market results in analysed period are on the constant, high level. Of course, many factors decided about mentioned results of the enterprise, but respondents were asked only for the estimation of the influence of resources gaining processes virtualization on the obtained results. With respect to all the questions, the managers of the top level evaluated the virtualization of resources acquisition processes as important or very important more frequently. None of this group used the note 'unimportant'. The managers of the lowest level used much lower notes when responding to the questions.

Conducted studies have a preliminary character. They are starting point to further considerations targeting the definition of the virtuality role meaning in the enterprises functioning. Its effect has to be the definition whether the virtuality is a temporary fashion, a temporarily becoming general tool which at any moment will stop to be the factor of the competitive advantage, and will become an indispensable condition in the survival of the enterprise. Standing on the ground of Resource-Based Theory the virtuality itself can be treated as one of essential resources of enterprises. In conclusions, managers in the enterprise studied evaluated the effect of virtualization of all resources acquisition processes on the market results in the enterprise as high. Each stage of implementation of the web-based technologies was ”important”. A decline in the evaluation level for financial results in 2012 should be considered in the context of intensifying economic crisis and its strong effect on behaviours and expectations of customers and other entities in the environment. Both hypotheses were verified positively.

5 CONCLUSIONS

Some advantages brought by implementation of e-sourcing processes could be denoted as (Gökmen, 2011); (Ebrahim et al. 2009); (Hortensi, 2008); (Kiang and Chi, 2001); the results of own study:

- Quick response to changes in market demand, competition and consumers needs,
- The reallocation of resources and reduction in costs,
- Fast innovation and R&D operations on the global basis
- Decreasing time frame to penetrate a new market and reach more consumers,
- Possibility of global sourcing to meet the demands fast and focus more on core business activities
- Facilitation of cooperation among experts and recruitment of a qualified workforce,
- Greater degree of freedom for workers and for experts,
- Expansion to global markets by means of networking and rational positioning,
- Online fulfillment of tasks and easy adaption to change,
- Online networking and better information flow in the structure,
- Possibility of commercialization of new products and services over the Internet,
- share of data and knowledge in inter-organizational
- Reduction of human mistakes
- Lower market entry and foundation expenses.

Enterprises today are searching for the methods to get a competitive advantage in the market and constantly strengthen their competitiveness. Virtualization of the resources acquisition processes in enterprises in the aspect of the resource-based theory represents a challenge which should be faced and developed with the growing needs of the enterprise or the expectations of business partners

and customers. In the process of resources acquisition, creation of the value added or formation of a set of relationships with suppliers in order to get a competitive edge is observed. The results obtained in the study confirmed the great importance of virtualization for the processes of relational resources acquisition and information resources. Mangers are also convinced that virtualization of resources acquisition processes is essential for the market results obtained by the enterprise and that it positively affects the competitiveness of enterprises.

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