ORGANIZATIONAL DYNAMIC CAPABILITIES IMPACT ON CHANGES IN SUPPLY CHAIN

IIgnas Masteika, 2Jonas Čepinskis
1 MSc. Vytautas Magnus University. K. Donelaičio str. 58, Kaunas 44248, Lithuania.
Tel. +370 68035210. E-mail ignas.masteika@gmail.com
2 Prof. habil. dr. Vytautas Magnus University. E-mail j.cepinskis@evf.vdu.lt

As global competition is growing at an enormous speed, companies, operating in supply chains of various complexities are forced to look for sources of competitive advantages not only outside, but mostly inside themselves. Numerous sources of scientific literature on the subject propose that namely dynamic capabilities have become one of the most important players in this global competition game. The analysis carried out, revealed that concepts of organizational dynamic capabilities and supply chain are closely related and affected by one another. This paper proposes a universal model of impact of dynamic capabilities of organizations on changes in the stages of supply chain. The main purpose of the article is to complete a theoretical analysis of supply chain and dynamic capabilities, to create and to verify theoretical model, seeking to identify which organizational dynamic capabilities impact the changes on the stages of supply chain mostly. While carrying out the research the following general research methods have been employed: systematic, comparative and logical analysis of the scientific literature, modeling, focus group, survey (questionnaire interview), grouping and detailing. The core results of the study could be revealed as following: the impact of dynamic capabilities on changes in the stages of supply chain of the examined companies is mostly influenced by: prevailing teamwork and leadership culture; strict regulation of labour relationships and duties, which implies poor significance of sensing and integrating: miscommunication between organization units, the problem of asymmetric information, surplus administrative procedures and other.

Keywords: dynamic capabilities, supply chain management.
JEL Codes: L25, M11, M16.

1. Introduction

Most organizations have historically been concentrated on their inside, internal processes, thus, the efforts to look for new opportunities were limited. However, as the number of outsourced products and services increased, the consumer habits changed, organizations were forced to align their internal processes with the external environment, the changes in which were determined by constantly growing competitive struggle in the market. At that time, organizations paid attention on the supply chain management issues, and over time, the supply chain has become the key part of an organization, which efficiency and expediency used to determine the success and performance of an organization.
The scientific literature argues that in twenty first century, organizations compete not only with each other, but also by their supply chains, therefore, during this period, it is focused on development of flexibility, dynamics of supply chains, in order it would be easier for an organization to adapt to constantly changing market environment and customer expectations.

Importantly, the scientific literature describes dynamic capabilities as focus of organization behaviour on intention to constantly integrate, reorganize, renew and restore its resources and capabilities, mainly – to renew and reconstruct its operational capabilities in response to the changing environment, thus, achieving and maintaining its competitive advantage and ensuring good performance results. Recently, the number of research on dynamic capabilities has significantly increased, and this proves that the aforementioned phenomenon has been gaining an increasing relevance for not only twenty first century scientists, but also for business representatives.

Dynamic capabilities might be considered as a bridge, joining the components of supply chain together. The field of this research has emerged recently in scientific literature, however, the increasing number of scientific publications on this subject keeps growing, thus, highlighting the relevance of the theme. Scientific research has proved that the influence of dynamic capabilities of an organization on supply chain is obvious, however, there is a lack of research on the influence of dynamic capabilities in the stages of supply chain. Thus, the influence of dynamic capabilities in the stages of supply chain is a new and relevant paradigm, allowing to go deeper into relatively new phenomenon of dynamic capabilities and to understand its impact on changes in the researched stages of supply chain.

The principle aim of the article is completing theoretical analysis of supply chain and dynamic capabilities, to create and to verify a theoretical model, seeking to identify which organizational dynamic capabilities impact the changes on the stages of supply chain mostly. Tasks – to analyse which organizational dynamic capabilities makes largest impact on changes in supply chain. Object of the article: organizational dynamic capabilities impact on changes in supply chain stages.

2. Theoretical analysis of supply chain and dynamic capabilities

Most scientific literature resources describe supply chain of an organization as the network of subjects, and circulation of various materials. The subjects might include suppliers, carriers, manufacturing facilities, distribution centres, retailers, and, finally, consumers (Lummus, 1997). L. Ellram and M. Cooper (2003) use a slightly different definition, where supply chain is described as the concept, which is more and more analysed in scientific papers, and encompasses all operations, related with production and supply of ready item from supplier’s provider to customer’s client. R. Slone, J. Mentzer, and J. Dittmann (2007) outline six stages of supply chain of an organization: planning, strategic purchasing, manufacturing, distribution and logistics, sales and after sales service. They also emphasize the main functions of supply chain: supply and demand management, supply of raw materials and components, production and assembly, warehousing and inventory tracking, acceptance and management of orders, distribution through all channels and delivery to clients. K. Law
and R. Sriram (2009), M. Christopher (2005), R. Monczka and J. Morgan (2007) describe supply chain of an organization as its activities, related with transaction of items from raw material acquisition to end user. These activities include supply and purchasing, manufacturing planning, processing of orders, inventory management, transportation, warehousing, and customer service. It should be emphasized that IT solutions play an important and sometimes even decisive role in supply chain as they are required for implementation and monitoring of the above activities. The concept of supply chain of an organization is presented in Fig. 1.

![Fig 1. The concept of supply chain](image)


Most scholars consider dynamic capabilities as the process, related with the firm’s capability to reorganize its resources, in order the firm could better respond to changes in internal and external environments. Scientific literature highlights that dynamic capabilities is not the phenomenon that resolves the troubles instantly, and they are not just a rapid response (Teece, 2007; Eisenhardt, 2000; Helfat, 2007; Nunnally, 2015; Winter, 2003; Helfat, 2003). Finally as V. Ambrosini and C. Bowman (2009) emphasize, dynamic capabilities focus on intentional reorganization of resources.

The analysis of scientific literature revealed that there are two main concepts of dynamic capabilities. D. Teece (1997) presented the concept of dynamic capabilities which consists of: sensing, seizing and reconfiguring. K. Eisenhard and J. Martin (2000) proposed slightly different concept of dynamic capabilities: sensing, learning, integrating, and coordinating.

After comparing the two concepts of dynamic capabilities, given by D. Teece (1997) and K. Eisenhardt and J. Martin (2000), it might be concluded that they are appending each other rather than contradicting. While researching the display of dynam-
ic capabilities in a company, it is important to examine and assess as much as possible, in order the outcomes would be as precise and meaningful as possible. Therefore, the concepts of dynamic capabilities, proposed by D. Teece (1997) and K. Eisenhardt and J. Martin (2000), could be combined, as it is shown in Figure 2, in order the scope and results of research would be more useful.

![Diagram of dynamic capabilities](image)

**Fig. 2. Concept of dynamic capabilities**

It should be noticed that dynamic capabilities of an organization create and transform the combinations of operational capabilities (Eisenhardt, 2000), efficiency of resources (Winter, 2003), working processes (Zollo, 2002). Furthermore, in most cases dynamic capabilities improve performance results (Schreyögg, 2007). Numerous sources of scientific literature (Eisenhardt, 2000; Helfat, 2003; Winter, 2003) confirm that there exists a direct relationship between dynamic capabilities and company performance results of an organization. According to C. Zott (2003), G. Schreyögg and M. Kliesch Eberl (2007), D. Teece (1997) the mechanisms, whereby dynamic capabilities influence the performance results, are known as capabilities enablers.

In most sources of modern scientific literature dynamic capabilities enablers are described as factors, which influence the successful display and development of dynamic capabilities (Ambrosini, 2009). What is more, the review of scientific literature clearly proves that dynamic capabilities enablers of an organization often play the main role in development of dynamic capabilities. D. Teece (2007) argues that the display, evolution, and dissemination of dynamic capabilities is determined by employees of a company (top, middle, and low level) and, subject to the selected strategy, they are affected by dynamic capabilities enablers, in order to manage and transform the internal processes. A. Zucchella (2007) state that dynamic capabilities enablers promote the display of dynamic capabilities and changes in a company, thus, providing evidence that there is a strong interrelationship between the concept of dynamic capabilities and phenomenon of operation improvement. Thus, dynamic capabilities enablers play a key role, while analyzing the operation results, and display and dissemination of dynamic capabilities. The link between the concepts of supply chain and dynamic capabilities provide companies with more motivation and possibilities to improve, to augment the existing operational capabilities, as well as with a possibility to take leading positions in constantly changing business environments (Hall, 2000). Numerous sources of modern scientific literature propose that supply chain and dynamic capabilities are two relatively new, expanding branches in the field of scientific research, however, the link between aforementioned subjects has not been researched properly (Defee, 2010).
3. The research of organizational dynamic capabilities impact on changes in supply chain

The aim of quantitative research is to verify the hypotheses, posed during qualitative research, and to present the generalizable results. This research is beneficial for answering the questions “what?” Meanwhile, the aim of qualitative research is to go deep, to understand complex psychosocial problems and to answer the questions “why?” and “how?” (Marshall, 1996).

Qualitative and quantitative research methods are used during this research. Qualitative methods: systematic analysis of scientific literature and focus group. The analysis of scientific literature allowed posing the primary hypotheses, while the focus group enabled to identify what dynamic capabilities influence the changes in the stages of supply chains mostly, following the solid experience of experts. Questionnaire survey was selected as quantitative data collection method, and detailed questionnaire was developed, which allowed assessing mean ranks of each dynamic capability and each dynamic capabilities enabler, thus, revealing what dynamic capabilities influence the changes in the stages of supply chains mostly (see Fig. 3).

This research strategy was based on expert assessments on what dynamic capabilities influence the changes in the stages of supply chains of electronics manufacturing services organizations mostly. In order to obtain detailed and exact answers to the questions, questionnaire survey was selected. The method of questionnaire survey requires a number of resources, especially time. Usually, questionnaire survey is conducted after careful selection of sample of respondents, experts.

![Fig. 3. Research strategy](image)

Sociological research in the field of management usually covers a wide range of organizational processes, functions, operations, and many interpersonal relationships in organization units, hierarchical levels, therefore, in order to ensure a fluent research, it was decided to survey only top, middle and low level managers, in other words, the experts. This sample of experts was selected because of the fact that top,
middle and low level managers have perfect understanding of processes that take place in organization, are well familiarized with the current problems and opportunities, know market subtleties, etc., therefore, they can be called experts.

Seeking to verify the model of influence of dynamic capabilities of organizations on changes in the stages of supply chain, developed in theoretical part of this paper, the questionnaire of 8 advanced questions was created. First two general questions were intended for finding the size of respondent’s experience in the position of manager in years. As research is broad and complex, the experts must assess 66 dynamic capabilities enablers in each stage of supply chain of organization (in total, 6), questionnaire expert survey was selected as the most suitable data collection method for achieving these aims.

Before carrying out quantitative research, six hypotheses, based on the assumptions made during analysis of scientific literature and qualitative research, were posed:

H1: The changes$^1$ in the **planning** stage of supply chains of the researched organizations of electronics manufacturing services are mostly influenced by the following dynamic capabilities: *sensing, learning, coordinating*.

H2: The changes$^2$ in the **sourcing** stage of supply chains of the researched organizations of electronics manufacturing services are mostly influenced by the following dynamic capabilities: *sensing, seizing*.

H3: The changes$^3$ in the **manufacturing** stage of supply chains of the researched organizations of electronics manufacturing services are mostly influenced by the following dynamic capabilities: *sensing, seizing, learning, coordinating, reconfiguring*.

H4: The changes$^4$ in the **packing, warehousing, and logistics** stage of supply chains of the researched organizations of electronics manufacturing services are mostly influenced by the following dynamic capabilities: *sensing, seizing, integrating*.

H5: The changes$^5$ in the **sales service** stage of supply chains of the researched organizations of electronics manufacturing services are mostly influenced by the following dynamic capabilities: *seizing, coordinating, learning*.

H6: The changes$^6$ in the **after sales service** stage of supply chains of the researched organizations of electronics manufacturing services are mostly influenced by the following dynamic capabilities: *sensing, seizing, learning*.

---

$^1$Changes in planning stage: manufacturing optimization, timely delivery of products, planning accuracy, good communication between units, accurate tracking and analysis of customer manufacturing needs.

$^2$Changes in strategic purchasing and raw materials purchasing stage: assurance of warehouse turnover, assurance of best prices of raw materials, timely delivery of raw materials, constant monitoring and objective assessment of trends of raw materials market, good communication between units.

$^3$Changes in manufacturing stage: manufacturing optimization, timely manufacturing, assurance of product quality, flexible management of manufacturing processes, introduction of innovations in manufacturing, good communication between units.

$^4$Changes in packing, warehousing, and logistics stage: selection of optimum method of product delivery, new packing solutions, minimization of warehouse place, good communication between units.

$^5$Changes in sales and customer service stage: timeliness, customer satisfaction, fast decision making, innovative solutions, listening to customer needs, constant analysis of customer needs, constant analysis and objective assessment of competitive environment, good communication with other units.

546
On the next stage, while supporting or refuting the hypotheses, posed during theoretical research, the mean ranks, the values of which line the dynamic capabilities, according to their influence on changes in the stages of supply chain, were used.

4. The results and summary of research of organizational dynamic capabilities impact on changes in supply chain

It has long been considered what type of organizations and industry should be selected for empirical research. The most important criterion for selection of industry was complexity and components of supply chain. Even the scientific literature (Narasimhan, 2004) argues that the most complex supply chains are managed my manufacturing organizations. It is caused by the fact that activity and structure of manufacturing organization combines many processes: product development and design, introduction of technological innovations, raw materials purchasing, planning of manufacturing processes, manufacturing, assurance of product quality, sales, customer service, and other processes, more specific to each industry.

Therefore, the Lithuanian sector of electronics manufacturing services (EMS) was selected for empirical research and verification of model of influence of dynamic capabilities on changes in the stages of supply chain, where organizations specialize in manufacturing of electronics components and products. The organizations, operating in this sector, differ by the fact that they do not have their own developed products – they manufacture and help to develop and improve the products, presented by customers by special orders. The sector of electronics manufacturing services is interesting for research that supply chains of the selected organizations are especially complex and include all processes that take place in the stages of supply chain. The complexity of supply chains is determined by complexity, application of products, and high requirements of customer quality management.

In summary of the results, obtained during research, it might be stated that three hypotheses were supported, two – partly supported, one – refuted. More detailed results of verification of hypotheses are given in Figure 4.

The completed empirical research of model of influence of dynamic capabilities of organizations on changes in the stages of supply chain revealed that not all hypotheses, based on the results of scientific literature analysis and qualitative research, can be supported. However, H1, H3 and H5 were completely supported, while H4 and H6 – partly supported, and H2 – refuted. The statistical calculations of mean ranks of all dynamic capabilities in the stages of supply chain showed that the following dynamic capabilities influenced the changes in the stages of supply chains of organizations of electronics manufacturing services mostly: learning, sensing and seizing. Integrating and reconfiguring was characterized by least influence on changes in the stages of supply chain.

---

6 Changes in after sales service stage: elimination of errors, timeliness, customer satisfaction, fast decision making, listening to customer needs, constant analysis of customer needs, accurate, timely acceptance of customer feedback on products and organization.
Fig. 4. Results of hypotheses verification

It complements the frequently encountered opinion that the dynamic capability, which is the most difficult to be implemented (developed) in organizations, is reconfiguring. It should be noted that limited resources (time and financial resources) and staff turnover play a decisive role. In summary, it might be concluded the impact of dynamic capabilities on changes in the stages of supply chain of the selected organizations was mostly influenced by: prevailing teamwork and leadership culture; strict regulation of labour relationships and duties (internal procedures, descriptions, instructions), which implied poor significance of sensing and integrating; miscommunication between organization units, the problem of asymmetric information, and surplus administrative procedures; multi-national staff and customer dissemination all over the world and the resulting linguistic and cultural communication (information processing and automation) problems.

5. Conclusions

1. Dynamic capabilities of an organization create and transform the combinations of operational capabilities, efficient usage of organization resources, working processes; in other words, they improve performance results. Many scientific literature resources confirm that there is a direct relationship between dynamic capabilities and performance results of an organization. It should be highlighted that the mechanisms, whereby dynamic capabilities influence the performance results, are known as capabilities enablers.

2. It might be concluded the impact of dynamic capabilities on changes in the stages of supply chain of the selected organizations was mostly influenced by: pre-
vailing teamwork and leadership culture; strict regulation of labour relationships and duties (internal procedures, descriptions, instructions), which implied poor significance of sensing and integrating; miscommunication between organization units, the problem of asymmetric information, and surplus administrative procedures; multinational staff and customer dissemination all over the world and the resulting linguistic and cultural communication (information processing and automation) problems.

3. It has been noticed that in the organizations researched, almost all activities are being regulated by certain orders and procedures, as it is foreseen in the quality management regulation. However, orders and procedures and other documents regulating the operations activity and responsibility of employees limit their thinking and initiatives to carry out certain procedures in a smarter or quicker way, and perhaps even absolutely different. It should be noted that the non-standard thinking (thinking out of the box) provides exclusivity to organizations, promotes unique changes, that competing organizations cannot copy. Primarily this should be encouraged in organizations as non-standard thinking helps organizations to express the dynamic capabilities and implement changes in the supply chain.

4. After having carried out the analysis of the test results, it has been observed that such a structure is not quite appropriate for organizations of its kind; it is due to the specificity of the sector, product complexity, supply chain management complexity and multitude of different processes occurring in organizations. The organizations in the sector examined, have very flat structures and are based on teamwork principles, in other words, the organizations are known as projected. Such organisations are managed through initiated internal projects while implementing decisions in management, manufacturing, logistics and other fields. It could be proposed to the organizations taking part in the current study to improve the structures, making them more vertical.

References


Lum, R., Alber, K. L. (1997). Supply Chain Management: Balancing the Supply Chain With Customer Demand, the Educational and Resource Foundation of APICS // Falls Church, VA. 85 p.


ORGANIZACIJOS DINAMINIŲ GEBĖJIMŲ POVEIKIS POKYČIAMS TIEKIMO GRANDINĖJE

Ignas Masteika, Jonas Ėpėnskis
Vytauto Didžiojo universitetas

Kai pasaulinė konkurencija auga milžinišku greičiu, bendrovių, veikiančių įvairaus sudėtingumo tiekimo grandinėse, vadovai yra priversti ieškoti konkurencinių pranašumų šaltinių ne išorėje, bet dažniausiai, bendrovės viduje. Daugybė mokslinės literatūros šaltinių šiuo klausimu įvardija būtent dinaminius gebėjimus, kaip vieną iš svarbiausiuų žaidėjų šiame globalios konkurencijos žaidime. Atliktą analizę atskleidė, kad organizacijos dinaminių gebėjimų ir tiekimo grandinės yra glaudžiai susiję ir veikia vienas kitą. Šiame straipsnyje pristatomas universalus organizacijos dinaminių gebėjimų įtakos pokyčiams tiekimo grandinės etapuose modelis. Pagrindinis šio straipsnio tikslas – atlikti tiekimo grandinės ir dinaminių gebėjimų teorinę analizę, sukurti ir patikrinti teorinį modelį, siekiant nustatyti, kurie pokyčiai tiekimo grandinės etapuose daro didžiausią įtaką dinaminiam gebėjimams bei įvertinti jų reikšmingumą. Atliekant mokslinį tyrimą, buvo atliekama sisteminė, lyginimo ir loginė mokslinės literatūros analizė, modeliavimas, tikslinės grupės, apklausą (anketinis intervju), grupavimas ir detalizavimas. Tirių organizacijų dinaminių gebėjimai pokyčiams tiekimo grandinės etapuose labiausiai turėjo įtakos: organizacijose vyraujanti komandinio darbo ir lyderystės kultūra; griežtas darbo santykių ir pareigybių reglamentavimas (vidinės tvarkos, aprašai, instrukcijos), kuris suponuoja menką dinaminių gebėjimų įžvalgumą ir integravimosi reikšmingumą; diskomunikacija tarp organizacijų padalinių, asimetrinės informacijos problema ir perteklinės administracinių procedūros bei kita.

Raktiniai žodžiai: organizacijos dinaminiai gebėjimai, tiekimo grandinės valdymas.
JEL kodai: L25, M11, M16.

551