
Dynamic Capabilities Revisited: Lessons from Logistics

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Abstract:

Purpose: The identification of the premises concerning shaping and developing logistics capabilities towards firm dynamic capabilities.

Design/Methodology/Approach: The article uses an analytical approach based on the results of previous studies.

Findings: Logistics capabilities can be perceived and implemented as the strategic capabilities of a firm. As a result, logistics capabilities may aspire to become the dynamic capabilities of a firm.

Practical Implications: Logistics capabilities aspiring to become the dynamic capabilities of a firm play an important role in achieving the firm success as well as the firm competitive advantage.

Originality/Value: The article presents the significant importance of logistics capabilities perceived as the firm dynamic capabilities. The value of the article is manifested in the attribution of significant importance to logistics capabilities which play a crucial role in achieving the firm success, as well as in building and sustaining the firm competitive advantage.

Keywords: Capabilities, strategic capabilities, dynamic capabilities, strategic management, logistics, competitive advantage.

JEL classification: L10, L19, M10, M19.

Paper Type: Research study.

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1. Introduction

In the recent years one may notice an increasing significance of business logistics, perceived as an integrated concept of materials, goods, and information flow management (Matwiejczuk, 2019). At the same time, in the era of globalization, supply chain performance strategies focusing merely on efficiency and effectiveness are proving insufficient and simply not competitive (Vishnu *et al.*, 2019). Firms are constantly looking for new ways to achieve success and create competitive advantage. Both, logistics and supply chain management concepts play an important role in building such an advantage. The basis for building the firm competitive advantage are – widely understood – firm assets, often referred to as firm strategic potentials or firm success potentials (Matwiejczuk, 2019). Among these potentials a significant role is assigned to the so-called dynamic capabilities.

Firms are believed to need dynamic capabilities to integrate, build and reconfigure internal and external competencies to address rapidly changing environments (Teece, Pisano, and Shuen, 1997). Other, more static, strategic capabilities can be of benefit if they enable the firm to provide value to consumers in a unique way that cannot readily be imitated by competitors (Prahalad and Hamel, 1990; Barney, 2001). Capabilities researchers tend to emphasise either strategic capabilities or dynamic capabilities. An important role is also assigned to the capabilities concerning functional areas of a firm, including logistics area.

We take the view that different types of capabilities make valuable contributions to the firm success as well as building and sustaining the firm competitive advantage. We also assume that strategic capabilities, including logistics strategic capabilities may aspire to be the dynamic capabilities of a firm. However, our interest in this paper is not to compare dynamic, strategic and logistics capabilities between themselves, but to examine under what premises logistics strategic capabilities may aspire to become the dynamic capabilities of a firm.

The purpose of the article is to identify the premises for shaping and developing logistics capabilities towards firm dynamic capabilities. The article is organised as follows. The first part presents the nature and the most significant criteria of the firm capabilities. The second part concerns the relation between (1) dynamic capabilities, (2) strategic capabilities, and (3) logistics capabilities. Finally, the third part presents the theoretical as well as empirical implications concerning the “road” from strategic logistics capabilities to dynamic capabilities of a firm.

2. Firm Capabilities, their Nature, and the Most Significant Criteria

During the recent years one may notice the growing significance of the concepts and tools related to leading stream of the contemporary strategic management, referred to as the “resource-based strategic management”. Within this stream the most important role in building and sustaining firm success as well as firm competitive advantage is

assigned – among others – to the firm capabilities. The term “capabilities” was probably introduced into the field of business management by Ansoff (Ansoff, 1965). In general, capabilities are a composition of various skills as well as abilities conditioning the effective and efficient implementation of activities and tasks. The definitions of the term “capability” are presented in Table 1.

Table 1. *The definitions of capabilities*

Authors	Definition of capabilities
C.G. Brush, P.G. Greene, M.M. Hart, H.S. Haller	Capabilities are abilities of a company, which allow utilizing its resources in order to achieve desired effects
P.J. Daugherty, H. Chen, D.D. Mattioda, S.J. Grawe	Capabilities are the “sets” of abilities of a company to collect, integrate and use the resources. The resources can be defined as repetitive “patterns” of operations, associated in the use of the resources to create, produce and/or offer products on the market
G.S. Day	Capabilities are a complex “set” of abilities and accumulated knowledge, which are the condition of the appropriate coordination of activities of a company and the use of its resources
R.M. Grant	Capabilities are the abilities associated with a set of resources, which enable to execute specific tasks or activities
U. Ljungquist	Capabilities are the processes (sets of activities) of mutual interaction of resources (tangible and intangible), which are characteristic (unique) for a company
S. Sharma, H. Vredenburg	Capabilities are the coordinating mechanisms, which enable the most efficient and competitive use of tangible and intangible resources of a company

Source: Based on: (Grant, 1991; Day, 1994; Sharma and Vredenburg, 1998; Brush et al., 2001; Ljungquist, 2007; Daugherty et al., 2009).

The firm capabilities should be oriented towards the expected outcomes achievement by a firm. Following Day and Wensley, the most significant market outcomes are customer satisfaction, customer loyalty and market share, while the most significant economic outcomes are profit, profitability and ROI (Day and Wensley, 1988). Such outcomes may be reached thanks to the proper methods of the firm resources active involvement in the achieving the set goals. Although organisations possess many basic skills or capabilities that enable them to function efficiently, a capability must embody three distinctive characteristics to possess strategic import (Simon et al., 2015). Firm capability must be of value to the customer (Simon et al., 2011). Second, the firm capability must be better than that of its competitors (Teece, Pisano and Shuen, 1997; Eisenhardt and Martin, 2000; Barney, 2001; Helfat and Peteraf, 2003; Ambrosini, Bowman and Collier, 2009). Third, a firm capability must be difficult to imitate or replicate (Hubbard, Vetter and Little, 1998; Desarbo et al., 2005). Within the processes concerning the achieving of the firm success, as well as building and maintaining the competitive advantage of a firm, the crucial role is assigned to the most significant capabilities of the firm referred to as dynamic capabilities.

3. Dynamic Capabilities – Strategic Capabilities – Logistics Capabilities

3.1 Dynamic Capabilities

Within the process of the dynamic capabilities development by a firm, the particular attention is paid to the strategic importance of the firm capabilities as “integrating mechanisms” concerning the various resources compositions at a firm disposal (Teece, Pisano and Shuen, 1997; Eisenhardt and Martin, 2000). The integration of resources compositions and capabilities compositions allows the simultaneous use of firm resources and capabilities in achieving the mentioned above expected market and economic outcomes by the firm. Such outcomes are the basis for a firm success, as well as building and sustaining the firm competitive advantage. Dynamic capabilities primarily concern the integration, shaping and reconfiguration of resources, as well as the processes of their acquisition and disposal by the firm (Teece, Pisano and Shuen, 1997; Eisenhardt and Martin, 2000). As a result, it is possible for the firm to adopt to volatile market requirements, as well as to changes occurring in the firm environment. This leads to the firm long-term competitive advantage creation.

Wang and Ahmed (2007) identified three main component factors of dynamic capabilities, which can be perceived as three key dimensions of dynamic capabilities:

- The adaptative dimension,
- The absorptive dimension,
- The innovative dimension.

Adaptative dimension concerns the specific characteristics related to the adaptation of the firm to changes taking occurring in its environment. First of all, it applies to the adaptation of the firm resources to the market requirements and customers’ needs and expectations, as well as to the processes and tasks performed by the competitors. Key elements of adaptive dimension refers to the circumstances and processes of products and services adaptation to the changing customer’s needs, responding to the new directions and symptoms of market development, including changes taking place in the competitive environment (Chakravarthy, 1982; Biedenbach and Müller, 2012), as well as recognizing and exploiting the emerging market opportunities (Chakravarthy, 1982; Wang and Ahmed, 2007). The adaptative dimension of the capabilities can be directly referred to as adaptative capabilities. An adaptive capability reveals in putting new ideas into action, modifying existing product attributes to meet changes in customer demand, amending existing products to explore new markets, and/or upgrading products rapidly (Lu *et al.*, 2010; Piórkowska, 2017)

Absorptive dimension entail the set of organizational routines and processes by which firms acquire, transform, and exploit knowledge (Zahra and George, 2002). They represent the firm ability to identify the value of new information, assimilate it, and apply it to commercial ends (Cohen and Levinthal, 1990) as they respond strategically to markets (Kogut and Zander, 1992). In conditions of high changes in market

preferences and environmental uncertainty, the company's capability to sense and respond to changes quickly and flexible as an essential ability to produce excellence for the company (Ma, Yao and Xi, 2009; Munawar, 2019). Absorptive dimension describes an organization's ability to utilize external knowledge through three processes of exploratory learning, exploitative learning, and transformative learning that build on each other (Lane, Salk and Lyles, 2001; Biedenbach and Müller, 2012). Learning occurs in a sequence of acquiring external knowledge, applying this knowledge and maintaining the knowledge over time (Garud and Nayyar, 1994; Zahra and George, 2002; Biedenbach and Müller, 2012). Absorptive dimension of capabilities requires learning to assimilate knowledge and problem-solving skills to implement the firm's innovation efforts.

Research has found that absorptive capabilities are important for interorganizational learning and performance (Lane, Salk and Lyles, 2001; Biedenbach and Müller, 2012). In specific circumstances, the absorptive dimension of the capabilities can be directly referred to as absorptive capabilities. Some authors distinguish between potential and realized absorptive capabilities (Zahra and George, 2002). Potential absorptive capability entails the firm's ability to acquire external knowledge while realized absorptive capacity leverages existing knowledge (Zahra and George, 2002). In such a situation, the absorptive capabilities comprise the capabilities in the field of identifying the key areas of market knowledge (customers, products, services, competitors, suppliers, distributors, etc.) as well as the capabilities of the market knowledge use in the process of the new products and services development, taking into account the needs of customers.

Finally, the innovative dimension concerns the firms' and supply chains' capabilities in the area of the development of new: (1) products and services, (2) production methods and techniques, (3) ways of services providing, (4) customer service standards, or (5) organizational forms and markets. As a result, the innovative dimension of the capabilities can be directly referred to as innovative capabilities. Innovative capability can be described as an important factor that facilitates an innovative firm culture, the characteristics of internal promoting activities and the capabilities of understanding and responding appropriately to the external environment (Akman and Yilmaz, 2008).

Some researchers posit that innovative capability is an internal driving energy to generate and explore radical new ideas and concepts, to experiment with solutions for potential opportunity patterns detected in the market's white space and to develop them into marketable and effective innovations, leveraging internal and external resources and competencies (Assink, 2006). Commonly, innovation is differentiated concerning the degree of innovation into incremental and radical innovation (Biedenbach and Müller, 2012). Incremental innovative capability can be defined as the ability "to generate innovations that refine and reinforce existing products and services", whereas radical innovative capability is the ability "to generate innovations that significantly transform existing products and services" (Subramaniam and

Youndt, 2005; Biedenbach and Müller, 2012). Some researchers use this differentiator to distinguish between incremental innovative capabilities, which require a reinforcement of prevailing knowledge, and radical innovative capabilities, which require a transformation of prevailing knowledge (Subramaniam and Youndt, 2005).

Such innovative capabilities are the key factors influencing the firm competitive advantage creation related to the so-called “long-term competitive benefits”, both for firms as well as the entire supply chains (Wagner *et al.*, 2011). Within the literature one may also notice the second type of the firm capabilities, which play a crucial role in achieving the firm success as well as the firm competitive advantage. These capabilities are referred to as strategic capabilities.

3.2 Strategic Capabilities

A firm strategic capabilities may reside in its resource dimensions, operating functions or its networks of interdependence within the firm, between the firm and in its environment (Lenz, 1980). Strategic capabilities have been defined as “complex bundles of skills and accumulated knowledge that enable firms to coordinate activities and make use of their assets” (Chakravarti and Day, 1991) to create economic value and sustain competitive advantage (Desarbo *et al.*, 2005). Researchers emphasize that strategic capabilities may improve firm capabilities to reduce friction when facing changes (Hult, Hurley and Knight, 2004; Hurley and Green, 2005; Hareebin, Aujirapongpan and Siengthai, 2018).

A growing stream of literature provides empirical support for the connection between strategic capabilities and performance (Agyapong, Ellis and Domeher, 2016; Cacciolatti and Lee, 2016; Parnell, 2018). While it is clear from the literature that strategic capabilities are important for the successful performance of firms, they do not inform us as to how firms can reconfigure their resources in times of rapid change. This is the realm of dynamic capabilities. Clearly therefore both (strategic and dynamic capabilities) are important for competitive advantage. In the process of such competitive advantage building the significant importance is also assigned to different functional capabilities including especially logistics capabilities.

3.3 Logistics Capabilities

Logistic capabilities arise as a result of the integration of logistic resources as well as logistics skills and/or abilities. Logistics skills / abilities are “educated” ways of dealing with the development of logistics “qualifications”. These skills and/or abilities enable the collection, integration and use of logistic resources to achieve the expected market and economic outcomes. In this sense, logistics capabilities condition the use of logistics resources (“bundles” of resources) to achieve the set goals and tasks (Matwiejczuk, 2011). The logistics resources of a firm may be involved in achieving such goals as offering logistics services in line with the customers’ needs and wants, or providing the required level of logistics service. In order to achieve these goals, it

is necessary to develop appropriate logistics capabilities enabling to offer the right goods to the right place, at the right time, in the right quantity and quality, at the right costs and with the right information (this is commonly known as a “7R” rule). It can be said that logistics capabilities enable the identification of customer preferences and the submission of a market offer to solve the customers’ problems.

Additionally, it should be noticed that logistic capabilities can be developed both in the “real-area” as well as in the “regulatory-area”. “Real-area” logistics capabilities concern the processes such as transport, warehousing, storage, handling, packing, order picking, packaging and labelling. In turn, the logistics capabilities concerning the “regulatory-area” relate to processes of flow management of goods and information within a firm as well as within the entire supply chain (Matwiejczuk, 2011).

Interesting research related to the assessment of the possibility of using logistics capabilities in achieving the firm success and competitive advantage was carried out by Morash, Dröge and Vickery (Morash *et al.*, 1996). The results of these studies indicated, among others, that the analysis of the firm logistics capabilities may lead to the distinction among them those that have a strategic importance in achieving the expected market as well as economic outcomes, which are the significant premises of the firm success, as well as the firm competitive advantage.

Strategic logistics capabilities in the research of Morash, Dröge and Vickery were divided into two major groups: (1) demand-oriented capabilities, i.e. capabilities perceived from the customers perspective (their preferences and expectations), and (2) supply-oriented capabilities, i.e. capabilities perceived from the perspective of firms offering and delivering products and services on the market (Morash *et al.*, 1996).

Logistics capabilities perceived from the perspective of customers allow offering the required level of logistics service, primarily by recognizing the preferences and expectations of customers, ensuring the required speed and reliability of deliveries, and – as a consequence – creating the solutions conditioning effective response to customer needs (solving customer problems). The firms concentration on the development of this group of logistics capabilities can contribute not only to a more transparent presentation of the logistics offer to customers (who can then get acquainted with it and thus make a more informed choice), but also to building the long-term relationships with customers, based on mutual trust and loyalty.

The condition for ensuring the required level of logistics service is the development of adequate logistics capabilities of the firm perceived from the supply perspective. These capabilities are primarily associated with the design and assurance of proper functioning of distribution systems tailored to the market (customers) expectations, also considering the solutions used by competitors. This requires the selection of the

proper distribution strategy that could not only lead to the customers' needs and expectations fulfilment, but also to gaining the measurable benefits by the firm.

4. Materials and Methods

The Morash, Dröge and Vickery research was conducted using the telephone interview method, based on questionnaires previously provided by electronic channel. 65 managers from the highest levels of management in the furniture industry took part in the research (firms' annual gross revenues from sales amounted to more than USD 10 million). In assessing the importance of individual logistics capabilities in achieving success by a firm, a scale ranged from 1 (least important) to 7 (most important) was used. The authors of the research adopted the ROA, ROI, ROE indicators as the basic symptoms of the firm success, taking into account both their absolute values as well as the trends of changes in the values of these indicators (Morash *et al.*, 1996). Morash, Dröge and Vickery used the method of stepwise regression.

This method is extremely helpful because it eliminates the problem of correlation between independent variables (predictors). The procedure of this method is based on entering the subsequent variables inside the model. At the beginning, no predictor is assumed, and in each subsequent step (phase), further statistically significant variables (predictors) are introduced into the model. Based on the critical values of the F-Snedecor test as well as the values of the coefficients of determination, proving the quality of the model's fit to the data, the most optimal model is selected. In this paper we used the results of the Morash, Dröge and Vickery research and then we detailed them to identify the premises concerning shaping and developing the logistics capabilities towards the dynamic capabilities of a firm.

5. From Strategic Logistics Capabilities to Dynamic Capabilities of a Firm – Theoretical and Empirical Implications

Morash, Dröge and Vickery adopted strategic logistics capabilities in the field of demand and supply as independent variables. As a dependent variable they adopted indicators for measuring the profitability of a given firm (ROA – Return on Assets, ROI – Return of Investment, ROS – Return on Sales, ROI Growth, ROS Growth and Sales Growth). These indicators have been considered in similar studies and their results are presented in the literature on corporate finance and strategic management. In the first step of the research, using a 7-point Likert scale (from 1 – least important to 7 – most important), the ranking of the importance of the strategic logistics capabilities of a firm within the demand-oriented capabilities (Table 2) and supply-oriented capabilities (Table 3) was created.

Analysing the importance of individual strategic logistics capabilities within the demand perspective, on the first place in the ranking came Delivery Reliability with an average rating of 6.34, followed by Post-Sale Customer Service with an average

rating of 6.13 (Table 2). The worst rated (considered the least important) was Pre-Sale Customer Service with an average rating of 5.62. Additionally, the diversity of the analyzed variables (assessments of logistics capabilities) was examined. The obtained results indicate their low differentiation because the coefficients of variation did not exceed the value of 30%.

Table 2. Ranking of demand-oriented strategic logistics capabilities

Strategic Logistics Capabilities	Importance of Strategic Logistics Capabilities (1 to 7 scale)	Mean / standard deviation	Implementation of Strategic Logistics Capabilities (-3 to 3 scale)	Mean / standard deviation
Delivery Reliability	1	6.34 / 0.81	1	1.48 / 1.11
Post-Sale Customer Service	2	6.13 / 1.38	2	1.44 / 1.19
Responsiveness to Target Market	3	6.02 / 1.06	4	1.11 / 1.12
Delivery Speed	4	5.88 / 1.33	3	1.13 / 1.34
Pre-Sale Customer Service	5	5.62 / 1.65	5	1.04 / 1.47

Source: Morash et al., 1996, p. 9.

Among the strategic logistics capabilities perceived from the supply perspective, Widespread Distribution Coverage with an average of 5.47 was considered the most important, followed by Selective Distribution Coverage with an average of 4.87 and Low Total Cost Distribution with an average of 4.81 (Table 3).

Table 3. Ranking of supply-oriented strategic logistics capabilities

Strategic Logistics Capabilities	Importance of Strategic Logistics Capabilities (1 to 7 scale)	Mean / standard deviation	Implementation of Strategic Logistics Capabilities (-3 to 3 scale)	Mean / standard deviation
Widespread Distribution Coverage	1	5.47 / 1.57	1	1.01 / 1.35
Selective Distribution Coverage	2	4.87 / 2.01	3	0.23 / 1.83
Low Total Cost Distribution	3	4.61 / 2.05	2	0.28 / 1.88

Source: Morash et al., 1996, p. 9.

In general, strategic logistics capabilities within supply perspective were assessed as less important than strategic logistics capabilities within demand perspective. The average importance of strategic logistics capabilities within supply perspective was assessed at 4.98, while within demand perspective at 6.00. Two supply-oriented strategic logistics capabilities: Selective Distribution Coverage and Low Total Cost

Distribution are capabilities whose grades were characterized by differentiation over 40%. This is due to the fact that there are large differences in the assessment of the importance of these capabilities between the managers participating in the study.

The implementation of strategic logistics capabilities was also assessed. The level of implementation may differ from the perceived level of relevance of the capability. Similarly, demand-oriented opportunities are once again higher than supply-oriented opportunities. In general, the rank of strategic logistics capabilities and the level of implementation coincide. This is manifested in the capabilities similar sequence ranking, concerning both, the capabilities perceived from the supply perspective as well as the capabilities perceived from the demand perspective.

It is noteworthy that the importance of all strategic logistics capabilities of the firm was assessed at a level exceeding the value of 4.5, which was considered as the middle of the scale. Therefore, it can be concluded that the abovementioned capabilities must be implemented to some extent by the researched firms. Additionally, at a significance level of 5%, it was considered that the differences between the means are not statistically significant.

Noteworthy is the fact that the importance of all strategic logistics capabilities of the firm were evaluated at a level exceeding the value of 4.5 – it was the middle of the scale. Therefore, it can be concluded that the abovementioned capabilities must be implemented to some extent by the researched firms. Additionally, at a significance level of 5%, it was considered that the differences between the means are not statistically significant.

The expectation of relationships between implementation capabilities has been confirmed in studies conducted by Morash, Dröge, and Vickery. They found that some of the demand-oriented dimensions of implemented strategic logistics capabilities are significantly correlated ($p < 0.05$). At the same time, the results of their research confirmed the lack of dependence between the supply-oriented capabilities. Of all the relationships between implementation capabilities, the relationships between Delivery Speed and Delivery Reliability deserve the attention, but also their relationships with other implemented strategic logistics capabilities (Table 4).

Table 4. *Product moment correlation between selected implemented strategic logistics capabilities*

	Delivery Speed	Delivery Reliability	Post-Sale Customer Service
Delivery Speed	-	0.59 ($p \leq 0.01$)	0.32 ($p \leq 0.01$)
Delivery Reliability	0.59 ($p \leq 0.01$)	-	0.28 ($p \leq 0.05$)
Post-Sale Customer Service	0.32 ($p \leq 0.01$)	0.28 ($p \leq 0.05$)	-

Source: Morash et al., 1996, p. 10.

They also noticed a significant ($p \leq 0.01$) relationship between Post-Sale Customer Service and Pre-Sale Customer Service ($r = 0.45$). It proves that in addition to the speed and reliability of service, customers also value pre- and after-sales service very much.

Taking into account the correlation coefficients as well as the assessment of their significance among all implemented logistics capabilities, Morash, Dröge and Vickery found four strategic logistics capabilities as aspiring to become the dynamic capabilities of a firm: (1) Delivery Speed, (2) Delivery Reliability, (3) Responsiveness to Target Market and (4) Low Cost Distribution. In the next step, they examined the relationships between them and firm profitability ratios. The analysis was made in two approaches comprising: (1) firm performance (Table 5) and firm performance in relation to competitors (Table 6).

Table 5. Product-moment correlations of implemented strategic logistics capabilities with firm performance

	Delivery Speed	Delivery Reliability	Responsiveness to Target Market	Low Cost Distribution
Return on Assets (ROA)	0.14 (0.28)	0.20 (0.11)	0.48 (<0.01)*	0.21 (0.09)
Return on Investment (ROI)	0.18 (0.15)	0.21 (0.09)	0.45 (<0.01)*	0.09 (0.49)
ROI Growth	0.37 (<0.01)*	0.19 (0.14)	0.48 (<0.01)*	0.12 (0.07)
Return on Sales (ROS)	0.28 (0.02)*	0.26 (0.04)*	0.50 (<0.01)*	0.24 (0.07)
ROS Growth	0.31 (0.02)*	0.28 (0.03)*	0.49 (<0.01)*	0.20 (0.14)
Sales Growth	0.21 (0.09)	0.07 (0.58)	0.50 (<0.01)*	0.01 (0.96)

Note: * Statistically significant at $p < 0.05$.

Source: Morash et al., 1996, p. 13.

Among all strategic logistics capabilities aspiring to become the dynamic capabilities, Responsiveness to Target Market is significantly correlated with all firm performance measures. Proper response to market signals can be an important source of firm competitive advantage, which can be translated into an increase in the profitability of business. At a significance level of 5%, a statistically significant relationship was also obtained between: (1) ROI Growth and Delivery Speed, (2) Return on Sales (ROS) and Delivery Speed, (3) Return on Sales (ROS) and Delivery Reliability, (4) ROS Growth and Delivery Speed, as well as (5) ROS Growth and Delivery Reliability.

Comparing with Table 5, Table 6 presents the relationships between firm performance in relation to competitors and implemented the above strategic logistics capabilities. In this situation, Responsiveness to Target Market is significantly correlated with most performance measures in relation to competitors. Only with Return on Sales (ROS) the relationship was insignificant. ROS Growth and Sales Growth indicators have

gained significance because they are significantly correlated with: Delivery Speed, Delivery Reliability, and Responsiveness to Target Market, respectively.

Table 6. Product-moment correlations of implemented strategic logistics capabilities with firm performance in relation to competitors

	Delivery Speed	Delivery Reliability	Responsiveness to Target Market	Low Cost Distribution
Return on Assets (ROA)	0.07 (0.57)	0.34 (0.34)	0.29 (0.02)*	0.27 (0.04)*
Return on Investment (ROI)	0.18 (0.17)	0.27 (0.04)	0.34 (<0.01)*	0.19 (0.14)
ROI Growth	0.41 (<0.01)*	0.33 (0.01)	0.47 (<0.01)*	0.18 (0.19)
Return on Sales (ROS)	0.06 (0.66)	0.11 (0.42)	0.21 (0.11)	0.26 (0.05)*
ROS Growth	0.33 (0.01)*	0.312 (0.01)*	0.35 (<0.01)*	0.20 (0.14)
Sales Growth	0.35 (<0.01)*	0.29 (0.02)*	0.32 (0.01)*	0.08 (0.50)

Note: * Statistically significant at $p < 0.05$.

Source: Morash et al., 1996, p. 13.

Responsiveness to Target Market is particularly important when looking for a source of competitive advantage. Time and reliability of supply in customer service is especially important, maintaining these features at an appropriate level can provide special development opportunities for firms in the field of profit and sales growth.

Finally, Low Cost Distribution is significantly correlated to ROS and ROA, which is probably due to logistical efficiency and its likely beneficial effect on margin-oriented performance measures. The correlation coefficients between the four strategic logistics capabilities aspiring to become the dynamic capabilities were presented in the form of a matrix in the Table 7.

Table 7. Relationship between four strategic logistics capabilities aspiring to become the dynamic capabilities

		Correlation (p-values)			
		Delivery Speed	Delivery Reliability	Responsiveness to Target Market	Low Cost Distribution
Strategic logistics capabilities	Delivery Speed	1.00			
	Delivery Reliability	0.59 (<0.01)*	1.00		
	Responsiveness to Target Market	0.21 (0.09)	0.15 (0.22)	1.00	
	Low Cost Distribution	0.19 (0.14)	0.13 (0.31)	0.19 (0.14)	1.00

Note: * Statistically significant at $p < 0.05$.

Source: Morash et al., 1996, p. 13.

Due to the lack of significant relationships (Table 7) between strategic logistics capabilities recognized as aspiring to become the dynamic capabilities, they were used in stepwise regression as independent variables. Only the speed and reliability of deliveries are significantly correlated with each other, but these variables were not considered simultaneously in the same model. A total of 12 stepwise regression models were estimated – tables 8 and 9 present the obtained results. Subsequent measures indicating the profitability of the firm's operations were selected as dependent variables. The models were divided considering the dependent variable into two groups concerning: (1) firm performance (Table 8), and (2) firm performance in relation to competitors (Table 9).

The application of the stepwise regression method, which consists in selecting from all independent variables only those for which the variance of the dependent variable is explained as much as possible, caused (this method) that there are at most two independent variables in the models.

In the first group of models, almost all estimated parameters were significant at the level of significance 5%. Only Delivery Speed was a statistically insignificant variable in models where the dependent variable were ROS and ROS Growth. This could mean that the profitability of sales is not significantly affected by the speed of delivery. When assessing the strength of the impact of independent variables on a dependent variable, it can be argued that ROI Growth, ROS and ROS Growth are more influenced by Responsiveness to Target Market than Delivery Speed.

Table 8. Stepwise regressions of firm performance with recognized strategic logistics capabilities as potential independent variables

No.	Model Dependent Variable	R ²	Independent Variable Included in Final Model	Standardized Parameter estimate (p-value)	Final Model p-value
1	ROA	0.23	Responsiveness to Target Market	0.70 (<0.01)*	<0.01
2	ROI	0.20	Responsiveness to Target Market	0.67 (<0.01)*	<0.01
3	ROI Growth	0.30	Responsiveness to Target Market	0.65 (<0.01)*	<0.01
			Delivery Speed	0.33 (0.02)*	
4	ROS	0.27	Responsiveness to Target Market	0.59 (<0.01)*	<0.01
			Delivery Speed	0.18 (0.14)	
5	ROS Growth	0.27	Responsiveness to Target Market	0.63 (<0.01)*	<0.01
			Delivery Speed	0.21 (0.14)	
6	Sales Growth	0.25	Responsiveness to Target Market	0.68 (<0.01)*	<0.01

Note: * Statistically significant at $p < 0.05$.

Source: Morash et al., 1996, p. 13.

All models from the first group (Table 8) are characterized by statistical significance ($p < 0.01$), however, the low value of the R^2 coefficient indicates a low degree of explanation of variance of the dependent variable 20-30%.

Table 9 presents the stepwise regression results when the dependent variable is a firm performance in relation to competitors. All models are statistically significant, however the degree of explanation of variance of the dependent variable (R^2) is lower than in the case of previous models. Apart from the analysed independent variables, there are many more factors affecting the results in relation to competitors. The lack of significance of parameters in the presented models suggests that performance in relation to competitors may be affected by factors other than the above strategic logistics capabilities analysed so far. Again, Responsiveness to Target Market is a variable that has a stronger impact on the dependent variable (ROA, ROI, ROI Growth, ROS Growth). Only once Delivery Speed significantly affects the dependent variable – this is the case with the model where the dependent variable is Sales Growth.

Table 9. Stepwise regressions of firm performance in relation to competitors with recognized strategic logistics capabilities as potential independent variables

No.	Model Dependent Variable	R ²	Independent Variable Included in Final Model	Standardized Parameter estimate (p-value)	Final Model p-value
1	ROA	0.12	Responsiveness to Target Market	0.33 (0.08)	0.03
			Low Cost Distribution	0.16 (0.12)	
2	ROI	0.16	Responsiveness to Target Market	0.41 (<0.01)*	<0.01
			Delivery Reliability	0.27 (0.12)	
3	ROI Growth	0.28	Responsiveness to Target Market	0.62 (<0.01)*	<0.01
			Delivery Reliability	0.35 (0.04)*	
4	ROS	0.07	Low Cost Distribution	0.21 (0.05)	0.05
5	ROS Growth	0.19	Responsiveness to Target Market	0.41 (0.03)*	<0.01
			Delivery Reliability	0.29 (0.06)	
6	Sales Growth	0.16	Delivery Speed	0.29 (0.04)*	<0.01
			Responsiveness to Target Market	0.26 (0.09)	

Note: * Statistically significant at $p < 0.05$.

Source: Morash et al., 1996, p. 13.

Summarizing the results of stepwise regression in the overall relationship between dependent and independent variables in individual models, Responsiveness to Target

Market is the variable that mainly determines / affects the indicators showing the firm financial performance.

Analysing the other strategic logistics capabilities, their significance depends on what specific performance measures are taken into account, whether they are firm performance or firm performance in relation to competitors. For example, competing in terms of time (e.g. speed and reliability of delivery) seems to be particularly important for growth efficiency. While Low Costs Distribution takes on significance for margin-oriented performance measures, such as Return on Sales relative to competitors. Indeed, depending on the firm specific performance goals, various strategic logistics capabilities need to be developed and implemented to achieve overall business success.

6. Conclusions and Further Research

Logistics is an important concept within widely perceived business management, thanks to which the firm can achieve the expected market and economic outcomes. These outcomes are the basis of the firm success, as well as the most significant factors affecting firm competitive advantage. One of the most important components of the logistics concept are logistics capabilities. The results of the research on strategic logistics capabilities presented in the article show that strategic logistics capabilities can be developed by the firms towards dynamic capabilities.

The results of the research carried out by Morash, Dröge and Vickery indicate that strategic logistics capabilities can significantly affect the firm success as well as firm competitive advantage. Closer analysis of the assumptions and results of Morash, Dröge and Vickery research may lead to the conclusion that strategic logistics capabilities can be seen as the dynamic capabilities of a firm, comprising three most important dimensions of dynamic capabilities: (1) the adaptative dimension, (2) the absorptive dimension, and (3) the innovative dimension.

However, the above dimensions have not yet been sufficiently explored enough. Therefore, it seems that this is a significant research gap. As a result, it is worth devoting detailed research to these issues in the near future.

References:

- Agyapong, A., Ellis, F., Domeher, D. 2016. Competitive strategy and performance of family businesses: moderating effect of managerial and innovative capabilities. *Journal of Small Business and Entrepreneurship*, 28, 449-477.
- Akman, G., Yilmaz, C. 2008. Innovative capability, innovation strategy and market orientation: An empirical analysis in Turkish software industry. *International Journal of Innovation Management*, 12, 69-111.
- Ambrosini, V., Bowman, C., Collier, N. 2009. Dynamic capabilities: An exploration of how firms renew their resource base. *British Journal of Management*, 20, 9-24.
- Ansoff, I. 1965. *Concept of Strategy: An Analytic Approach to Business Policy for Growth*

- and Expansion. McGraw-Hill, New York.
- Assink, M. 2006. Inhibitors of disruptive innovation capability: A conceptual model. *European Journal of Innovation Management*, 9, 215-233.
- Barney, J.B. 2001. Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, 27, 643-650.
- Biedenbach, T., Müller, R. 2012. Absorptive, innovative and adaptive capabilities and their impact on project and project portfolio performance. *International Journal of Project Management*, 30, 621-635.
- Brush, C.G., Green, P.G., Hart, M.M. 2001. From initial idea to unique advantage. *Academy of Management Perspectives*, 15, 64-78.
- Cacciolatti, L., Lee, S.H. 2016. Revisiting the relationship between marketing capabilities and firm performance: The moderating role of market orientation, marketing strategy and organisational power. *Journal of Business Research*, 69, 5597-5610.
- Chakravarthy, B.S. 1982. Adaptation: A Promising Metaphor for Strategic Management. *Academy of Management Review*, 7, 35-44.
- Chakravarti, D., Day, G.S. 1991. Market Driven Strategy: Processes for Creating Value. *Journal of Marketing*, 55, 116-118.
- Cohen, W.M., Levinthal, D.A. 1990. Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35, 128-152.
- Daugherty, P.J., Chen, H., Mattioda, D.D., Grawe, S.J. 2009. Marketing/logistics relationships: influence on capabilities and performance. *Journal of Business Logistics*, 30, 1-18.
- Day, G.S. 1994. The Capabilities of Market-Driven Organizations. *Journal of Marketing*, 58, 37-52.
- Day, G.S., Wensley, R. 1988. Assessing Advantage: A Framework for Diagnosing Competitive Superiority. *Journal of Marketing*, 52, 1-20.
- Desarbo, W.S., Benedetto, C.A., Song, M., Sinha I. 2005. Revisiting the miles and snow strategic framework: Uncovering interrelationships between strategic types, capabilities, environmental uncertainty, and firm performance. *Strategic Management Journal*, 26, 47-74.
- Eisenhardt, K.M., Martin, J.A. 2000. Dynamic capabilities: What are they? *Strategic Management Journal*, 21, 1105-1121.
- Garud, R., Nayyar, P.R. 1994. Transformative capacity: Continual structuring by intertemporal technology transfer. *Strategic Management Journal*, 15, 365-385
- Grant, R.M. 1991. The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review*, 33, 114-135.
- Hareebin, Y., Aujirapongpan, S., Siengthai, S. 2018. Creating sustained strategic capabilities through organisational dynamic capabilities and strategies: A case study of rubber wood export industry in Thailand. *Asian Academy of Management Journal*, 23(1), 117-150.
- Helfat, C.E., Peteraf, M.A. 2003. The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, 24, 997-1010.
- Hubbard, R., Vetter, D.E., Little, E.L. 1998. Replication in strategic management: scientific testing for validity, generalizability, and usefulness. *Strategic Management Journal* 19, 243-254.
- Hult, G.T.M., Hurley, R.F., Knight, G.A. 2004. Innovativeness: Its antecedents and impact on business performance. *Industrial Marketing Management*, 33, 429-438.
- Hurley, T.A., Green, C.W. 2005. Knowledge management and the nonprofit industry: A within and between approach. *Journal of Knowledge Management Practice*, 6, 1-10.

- Kogut, B., Zander, U. 1992. Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology. *Organization Science*, 3, 383-397.
- Lane, P.J., Salk, J.E., Lyles, M. A. 2001. Absorptive capacity, learning, and performance in international joint ventures. *Strategic Management Journal*, 22, 1139-1161.
- Lenz, R.T. 1980. Strategic Capability: A Concept and Framework for Analysis. *Academy of Management Review*, 5, 225-234.
- Ljungquist, U. 2007. How do core competencies discriminate? Identification of influencing similarities and differences. *Knowledge and Process Management*, 14, 237-247.
- Lu, Y., Zhou, L., Bruton, G., Weiwen, L. 2010. Capabilities as a mediator linking resources and the international performance of entrepreneurial firms in an emerging economy. *Journal of International Business Studies*, 41, 419-436.
- Ma, X., Yao, X., Xi, Y. 2009. How do interorganizational and interpersonal networks affect a firm's strategic adaptive capability in a transition economy?. *Journal of Business Research*, 62, 1087-1095.
- Matwiejczuk, R. 2011. The Meaning of Logistics Capabilities in Achieving the Market Success by A Company. *LogForum. Scientific Journal of Logistics*, 7, 41-48.
- Matwiejczuk, R. 2019. On the Research Concerning the Relations Between Logistics and Strategic Management – Towards the Strategic Logistics Concept in Management. *Research Papers of Wrocław University of Economics*, 63, 171-183.
- Morash, E., Dröge, C., Vickery, S. 1996. Strategic logistics capabilities for competitive advantage and firm success. *Journal of Business Logistics*, 17, 1-22.
- Munawar, F. 2019. The Role of Entrepreneurial Orientation and Adaptive Capability to Performance of SME Food & Beverages. *Global Business and Management Research*, 11, 139-151.
- Parnell, J.A. 2018. Nonmarket and market strategies, strategic uncertainty and strategic capabilities: Evidence from the USA. *Management Research Review*, 41, 252-274.
- Piórkowska, K. 2017. A dynamic context of behavioural strategy: managerial cognitive capabilities and organizational adaptive performance. *Nauki o Zarządzaniu*, 30, 24-30.
- Prahalad, C.K., Hamel, G. 1990. The core competence and the corporation. *Harvard Business Review* May-June, 1-15.
- Sharma, S., Vredenburg, H. 1998. Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategic Management Journal*, 19, 729-753.
- Simon, A., Kumar, V., Schoeman, P., Moffat, P., Power, D. 2011. Strategic capabilities and their relationship to organisational success and its measures: Some pointers from five Australian studies. *Management Decision*, 49, 1305-1326.
- Simon, A., Bartle, A., Stockport, G., Smith, B., Kolbas, J.E., Sohal, A. 2015. Business leaders' views on the importance of strategic and dynamic capabilities for successful financial and non-financial business performance. *International Journal of Productivity and Performance Management*, 64, 908-931.
- Subramaniam, M., Youndt, M.A. 2005. The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*, 48, 450-463.
- Teece, D. J., Pisano, G., Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18, 509-533.
- Vishnu, C.R., Sridharan, R., Gunasekaran, A., Kumar P.N.R. 2019. Strategic capabilities for managing risks in supply chains: current state and research futurities. *Journal of Advances in Management Research*, 17, 173-211.
- Wagner, H.T., Morton, S., Dainty, A., Burns, N.D. 2011. Path dependent constraints on

- innovation programmes in production and operations management. *International Journal of Production Research*, 49, 3069-3085.
- Wang, C.L., Ahmed, P. K. 2007. Dynamic capabilities: A review and research agenda, *International Journal of Management Reviews*, 9, 31-51.
- Zahra, S.A., George, G. 2002. Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27, 185-203.