



The impact of dynamic capabilities on SME performance in a volatile environment as moderated by organizational inertia

Šarūnas Nedzinskas

*ISM University of Management and Economics,
Kaunas, Lithuania*

Asta Pundziienė

Kaunas University of Technology, Kaunas, Lithuania

Solveiga Buožiūtė-Rafanavičienė

*Faculty of Social Sciences, Kaunas University of Technology,
Kaunas, Lithuania, and*

Margarita Pilkienė

*ISM University of Management and Economics,
Kaunas, Lithuania*

Abstract

Purpose – This paper aims to examine the influence of the dynamic capabilities of small and medium enterprises (SMEs) on organizational performance, and the interaction between dynamic capabilities and organizational inertia in a volatile environment.

Design/methodology/approach – A quantitative survey was carried out in Lithuania's SME sector. In order to achieve the aim of this empirical research, a sample of 360 SMEs was analyzed.

Findings – This exploratory study offers a conceptual model for dynamic capabilities and organizational inertia in a volatile environment. The findings suggest that dynamic capabilities have positive effects on non-financial relative organizational performance, though no impact on financial relative organizational performance has been revealed. The authors argue that organizational inertia moderates dynamic capabilities and relative organizational performance.

Research limitations/implications – One suggestion for further research is to investigate the interaction between dynamic capabilities and organizational inertia in a stable environment and to perform longitudinal research embracing a broader sample of organizations.

Originality/value – The study addresses a gap in strategic management literature and practice, examining the interaction between SME dynamic capabilities and organizational inertia in a volatile environment during an economic crisis.

Keywords Organizational inertia, Dynamic capabilities, Ordinary capabilities, Relative organization performance

Paper type Research paper



1. Introduction

The strategic dimensions of an organization have been identified as managerial and organizational processes, the organization's resources and present position, and the path(s) available to the organization (Teece and Pisano, 1994). This paper builds upon the theory of organizational inertia, understanding an organization's resources, processes, and path dependencies to constitute the source of organizational inertia (Gilbert, 2005; Sydow *et al.*, 2009). Traditionally, inertia is defined as the inability to enact change in the face of significant external change (Miller and Friesen, 1980). Thus, inertia has meaning only in relation to some external factor: it refers to the relative speed of organizational change in response to external change and to the relative speed in which an organization is able to obtain, process, and evaluate information from its environment (Steen, 2008).

Organizational inertia is often responsible for the demand for dynamic capabilities (Schreyogg and Kliesch-Eberl, 2007). Dynamic capabilities reflect an organization's ability to achieve new and innovative forms of competitive advantage despite path dependences and core rigidities in the firm's organizational and technological processes (Teece *et al.*, 1997).

The definition of a capability as a set of routines implies that, in order for the performance of an activity to constitute a capability, it must have reached some threshold level of practiced or routine activity. In order for something to qualify as a capability, it must, at minimum, work in a reliable manner (Helfat and Peteraf, 2003). As a consequence, organizations are faced with a dilemma: on one hand, there is pressure to develop reliable patterns of selecting and linking resources in order to attain superior performance and competitive advantage, and, on the other hand, this very endeavor risks – at least in volatile markets – restricting the organization to these capabilities (Schreyogg and Kliesch-Eberl, 2007).

This paper aims to examine how organizational inertia in small and medium enterprises (SMEs) inhibits the effectiveness of dynamic capabilities in a volatile environment. The research questions are based on the assumption that organizational inertia moderates the interaction between dynamic capabilities and organizational performance.

This study proposes a conceptual SME dynamic capabilities and organizational inertia interaction model, contributing to our understanding of organizations' utilization of dynamic capabilities in a volatile environment. Lithuania's recent economic crisis (2008-2011) is a relevant context for this research, since emerging theories of dynamic capabilities typically refer to high velocity change and a rapidly transforming environment as a crucial external factor fostering dynamic capabilities (Teece *et al.*, 1997; Eisenhardt and Martin, 2000).

This research was conducted in the SME sector, which can be considered the most significant sector in the Lithuanian economy. The SME sector was assumed to be relevant due to the lack of excessive resources and was assumed to provide reliable research results.

2. Theory and hypotheses

2.1 Dynamic capabilities concept

The emerging dynamic capabilities concept has come to the fore in strategic management research since existing resource-based perspective has been unable to

adequately explain how and why certain organizations have competitive advantage in situations of rapid and unpredictable change (Eisenhardt and Martin, 2000). From resource-based perspective, firms are heterogeneous with respect to their resources, capabilities, and endowments (Teece *et al.*, 1997). Researchers have theorized that critical to achieving competitive advantage is the VRIN-ness of an organization's resources, namely their being valuable, rare, inimitable, and non-substitutable (VRIN). Teece *et al.* (1997) were the first to refer to an organization's ability to develop new forms of competitive advantage as "dynamic capability". This term emphasizes two key aspects neglected by resource-based perspective: "dynamic" emphasizes the capacity to renew competencies so as to achieve congruence with a changing environment; "capabilities" emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competencies to match the requirements of a changing environment (Teece *et al.*, 1997).

Researchers have attempted to draw clear distinctions between dynamic and ordinary capabilities. Helfat and Winter (2011) argue that dynamic and ordinary capabilities have distinct purposes and outcomes. An ordinary capability enables a firm to perform an activity on an ongoing basis using more or less the same techniques on the same scale, supporting existing products and services for the same customer population; such a capability is "ordinary" in the sense of maintaining the status quo (Helfat and Winter, 2011). Helfat (1997) defines dynamic capability as the capacity of an organization to actively create its resource base and perform subsequent extensions and modifications. Organizational processes that can change existing positions, resulting in changes in performance and competitive advantage, comprise dynamic capabilities. According to Zahra and George (2002), dynamic capabilities are essentially change-oriented capabilities that help firms redeploy and reconfigure their resource base to meet evolving customer demands and competitors' strategies. Zollo and Winter (2002) define dynamic capabilities as learned and stable patterns of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness. Winter (2003) identifies dynamic capabilities as those that operate to extend, modify, or create ordinary capabilities. In a seminal work on dynamic capabilities, Teece (2007, p. 1319) disaggregates dynamic capabilities:

[...] into the capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and when necessary, reconfiguring the business enterprise's intangible and tangible assets.

While describing the differences between dynamic and ordinary capabilities, it is worth noting that there is a tendency in the literature to focus on the impact of dynamic capabilities on ordinary capabilities. Newey and Zahra (2009) argue that the dialogue between ordinary and dynamic capabilities strengthens organizational entrepreneurship and adaptation to market needs. Dynamic capabilities keep ordinary capabilities flexible; though there are increased costs for the repeated and patterned application of dynamic capabilities, this alters ordinary capabilities (Zahra *et al.*, 2006).

This research argues that the function of dynamic capabilities is to alter ordinary capabilities; otherwise, due to the path dependent nature of learning and the tendency of ordinary capabilities towards atrophy, a lack of constant challenge would result in organizational rigidity.

Though the dynamic capabilities concept has advanced considerably since Teece *et al.*'s (1997) seminal work, the literature often reads as a disconnected body of research progressing in disparate directions (Barreto, 2010). Here, some major inconsistencies within the field of dynamic capabilities are reviewed.

2.2 Dynamic capabilities in a volatile environment

In relation to the aim of this research – to investigate the interaction between dynamic capabilities and organizational inertia in a volatile environment – a logical assumption has been drawn: dynamic capabilities are more likely to be explicit in high velocity markets. A review of the literature reveals two distinct conceptions of dynamic capabilities. Some researchers argue that dynamic capabilities provide a source of competitive advantage. Zahra *et al.* (2006) emphasize the dynamism of the capability itself, not the environment, and put managerial choice at the center of the discussion. Newey and Zahra (2009), in their contribution to the development of the dynamic capabilities concept, provide support for the argument that dynamic capabilities can affect organizational evolution through internal entrepreneurship rather than through external shock. Dynamic capabilities do not always act as risk mitigating tools in order to respond to external radical change. However, some scholars argue that, depending on the particular industry to which it belongs, an organization can employ dynamic capabilities to reassemble or renew its ordinary capabilities in order to execute its strategic and tactical goals due to its entrepreneurial opportunities (new or renewed products, markets, technologies, etc.). Other scholars refer to dynamic capabilities as capabilities that respond to changes in the environment only (Teece *et al.*, 1997; Eisenhardt and Martin, 2000). Drnevich and Kriauciunas (2007) find dynamic capabilities to positively affect organizational outputs in a rapidly changing environment; conversely, the affect on organizational output of ordinary capabilities was found to be negative during environmental dynamism. Wang and Ahmed (2007) argue that market dynamism is an antecedent to organizational dynamic capabilities – the more dynamic the external market, the higher the motivation for the organization to exhibit dynamic capabilities in order to meet market changes. Pavlou and El Sawy's (2011) findings empirically support this model, where dynamic capabilities affect new product development through ordinary capabilities, acting as a mediator, positively moderated (or reinforced) by environmental turbulence. Consequently, the more turbulent the environment, the more likely are ordinary capabilities to be rigid, and their disrupted efficiency might be reduced via the application of dynamic capabilities.

It can be summarized that the usage of dynamic capabilities is most critical and most useful in a volatile external environment. This paper argues that one should not match external conditions with organizational dynamic capability.

2.3 Dynamic capabilities and organizational performance

Another area of confusion lies in two different conceptions of the relationship between dynamic capabilities and organizational performance.

Research increasingly evidences an indirect link between dynamic capabilities and organizational performance. Teece (2007) argues that dynamic capabilities enable an organization to achieve competitive advantage through the creation, deployment, and protection of intangible and non-tradable assets which support superior

organizational performance. Zott (2003), Wang and Ahmed (2007), Pavlou and El Sawy (2011) and Zahra *et al.* (2006) argue that dynamic capabilities are conducive to organizational performance but that the relationship is indirect and mediated by the development of ordinary capabilities or through the modification of resources and routines. The findings of Drnevich and Kriauciunas (2010) suggest that dynamic capabilities have a positive influence on the establishment of new organizational processes, products, and suppliers, and that the heterogeneity of dynamic capabilities contributes positively and indirectly to relative organizational performance. Eisenhardt and Martin (2000) define dynamic capabilities as the means to integrate, reconfigure, and release resources to match market change. Taken together, this line of reasoning indicates that greater dynamic capabilities might result in greater positive indirect organizational performance. Therefore, the following relationship is proposed:

H1. SME dynamic capabilities have a positive impact on relative non-financial performance.

Another school of research, however, shows more confidence in a direct link between dynamic capabilities and organization performance. Teece *et al.*'s (1997) seminal study is responsible for the prominent place of dynamic capabilities in contemporary research where it is considered a key driver for sustaining competitive advantage. The existence of a direct causal relationship between dynamic capabilities and organization performance in a rapidly changing environment was supported by Zollo and Winter's (2002) research. Drnevich and Kriauciunas (2010) found a negative relationship between dynamic capabilities and relative organizational financial performance, which they accounted for by referring to the costs of dynamic capabilities management and a possible time lag in the cause-and-effect relationship between dynamic capabilities and organizational financial performance. Zott (2003) also relates dynamic capabilities' positive influence on an organization's profitability to the costs of managing dynamic capabilities. Makadok (2001, p. 397) relates organizational capabilities with economic rent and profitability but states that "a capability affects profitability by enhancing the productivity of the other resources that the firm possesses, so it affects profitability only after resources are acquired".

Since the dynamic capabilities concept has been evolving as a major sustainable competitive advantage generator, this study argues that dynamic capabilities have either a direct or indirect positive relationship with organizational performance. Due to the ambiguous nature of the causal relationship between dynamic capabilities and organizational performance, and the proliferation of (apparently contradictory) research, the following hypothesis is formulated:

H2. SME dynamic capabilities have a positive impact on relative financial performance.

2.4 Organizational inertia concept

This research analyzes resources, processes, and path dependencies as constituent elements of the inertia construct.

Gilbert (2005) distinguishes between two types of organizational inertia: resource rigidity and routine rigidity. Differentiating between resource and routine rigidity, Gilbert (2005) argues, can be particularly important under conditions of discontinuous

change, helping to resolve apparent contradictions in the literature regarding threat perception on organizational inertia (while a number of scholars have found that an external threat acts as a catalyst to overcome inertia, others find threat perception to increase inertia). Working independently, resource and routine rigidities, as structural elements of organizational inertia, can explain this phenomenon. While an external threat can motivate resource commitment, routines can remain locked in the traditional business model. Specifically, Gilbert (2005) suggests threat decreases resource rigidity but increases routine rigidity in a predictable, repeated pattern. The reason these subtypes of inertia move in different directions is that their underlying casual mechanisms differ. Distinguishing between resource and routine rigidity not only helps account for responses to discontinuous change, then, but opens up potentially fruitful areas of future research, allowing for exploration of the differences and interactions between these two categories of inertia.

Teece *et al.* (1997) define path dependencies as a function of an organization's current position and the paths available to it. An organization's current position is often shaped by the path it has travelled. The notion of path dependencies recognizes that "history matters": an organization's previous investments and its repertoire of routines constrain future behavior. Sydow *et al.* (2009) find path dependence to be one of the most cited organizational inertia concepts. Path dependence theory seems to be complementary to Gilbert's (2005) resource and routine rigidity approach. It is argued that self-reinforcing dynamics of path dependence are expected to bring about a preferred action pattern, which then gets deeply embedded in organizational practice and replicated. According to Sydow *et al.*'s findings, path dependent behavior, strictly speaking, excludes path-breaking behavior, and the idea of unlocking an organizational path, therefore, can only work if the mechanisms of deterministic pattern reproduction are put into perspective. Thus, at the heart of path dependence lies the self-reinforcing mechanism – the major differentiator between path dependence and processes or other similar phenomenon analyzed in the literature. Path dependencies are systematic forces evolving beyond the control of individual actors within an organization; the question is whether path dependencies can be escaped. Sydow *et al.* (2009) argue that path dissolution may occur through unforeseen exogenous factors (shocks or crises), an insidious change in organizational demography, or coincidental de-locking in terms of a by-product of other organizational decisions. Although path dependence seems very similar to organizational inertia, the former is not applicable to all organizations, whereas the latter is a universal feature (Sydow *et al.*, 2009). Because of this difference, this paper proposes to analyze both phenomena. Thus, the three constituent parts of organizational inertia – resources, processes, and path dependencies – are named as causes of organizational rigidity.

In evolutionary research, inertia explains why organizations delay or completely fail to respond to changes when experiencing the pressures of a competitive environment. Organizational inertia is seen as a primary antecedent of strategic consequences such as impaired performance or organizational mortality (Gresov *et al.*, 1995).

Organizational inertia has been the subject of two competing perspectives: that of organizational adaptationists and that of organizational ecologists. The empirical findings and theorizings of these perspectives' appear to be in direct opposition.

As described above, inertia is traditionally conceptualised in terms of the external environment and describes the inability to change internally in the context of significant

external change. Thus, most organizational theories – contingency theory, resource dependence theory, institutional theory, and transaction cost economics – understand organizations as agents adapting to a changing environment (Barnett and Carroll, 1995). Hakonsson *et al.* (2009) find that continuous change within inert organizations can dramatically improve long-term performance, arguing that organizations adapting on an ongoing-basis are more reliable, inertia being a precondition to change rather than a consequence of consistency.

Organizational ecology, in contrast, employing the language of developmental biology, regards organizations as a function of environmental selection (Peli *et al.*, 1994). It holds that, due to changing environments, new organizations or new organizational forms emerge and succeed old organizations and organizational forms. Hannan and Freeman (1977, 1984), the originators of organizational ecology, proposed a theory in which high levels of organizational inertia are understood to be a consequence of selection processes rather than a precondition for selection. The authors argue that reliability and accountability, being two of the most important advantages for organizations, require institutionalization and standardized routines and structures to maintain stability. Consequently, these characteristics, which generate reproducibility and stability, foster resistance to change. From the point of view of organizational ecology, it is the environment that is of primary significance, rather than the organization's efforts to adapt. Pressures leading to organizational inertia arise from constraints that are internal (such as an organization's investment plan, equipment, specialized personnel; the limited information managers receive; internal political constraints; and limitations related to organizational history) and external (legal and fiscal barriers to enter or exit the market; limited information about the market; and collective rationality problems), limiting the adaptive flexibility of an organization. The logic of environmental selection is more appropriate. In light of these contradictions in the literature, this research argues that the organizational ecologist's perspective underestimates the significance of organizational change, proposing instead to consider it on an equal footing with the organizational adaptationist's perspective, in order to better understand the content and processes of organizational change.

2.5 Relationship between dynamic capabilities and organizational inertia in a volatile environment

An organization's core capabilities can turn into core rigidities when the environment changes (Leonard-Barton, 1992). Miller (1992, p. 24), employing the metaphor of Icarus' paradox, argues that organizational success might lead "to specialization and exaggeration, to confidence and complacency, to dogma and ritual". Miller (1992) points out the thin line between the passionate commitment necessary for superior performance and the extremes leading to failure, suggesting several methods to overcome the trap – for example, encouraging organizations to reflect broadly, decoupling new activities from established operations. Empirical findings support the contention that experience leads to organizational inertia, and, consequently, that organizational inertia can delay organizational change (Hlavacek and Thompson, 1973; Miller and Chen, 1994; Christensen and Bower, 1996; Greve, 1996; Teece *et al.*, 1997). Scholars have proposed numerous ways to overcome this. This research argues that organizational inertia is the precondition for selection rather than a consequence of selection, following the adaptationist account of organizational inertia. The literature shows that incumbent

organizations attempting to overcome organizational inertia find dynamic capabilities beneficial (King and Tucci, 2002; Repenning and Sterman, 2002).

Empirical findings and related theorizing support the view that organizational inertia is one of the factors that inhibits the positive impact of dynamic capabilities on organizational performance. Review of the literature identifies a theoretical and empirical gap: there are very few (if any) empirical studies investigating the relationship between dynamic capabilities and organizational inertia. However, research investigating the factors that may enable or inhibit organizations to realize the potential of dynamic capabilities should not overlook the moderating effects of both internal and external factors between dynamic capabilities and organization performance (Barreto, 2010). Wilson (2008, p. 89) notices that:

[...] there is a generally positive level of academic and theoretical support for dynamic capabilities but genuine skepticism remains over the legitimacy of their empirical foundation and whether firms can actually overcome the significant obstacles posed by path dependence, organizational inertia, competency traps, bounded rationality, core rigidities, and the Icarus paradox.

Moreover, there is much work to be done regarding the interaction between dynamic capabilities and organizational inertia in the SME sector in particular.

Therefore, the following relationship between organizational inertia with dynamic capabilities is proposed:

- H3.* Organizational inertia has a negative moderating effect on the relationship between SME dynamic capabilities and relative non-financial performance.
- H4.* Organizational inertia has a negative moderating effect on the relationship between SMEs dynamic capabilities and relative financial performance.

3. Conceptual model of the interaction between SME dynamic capabilities and organizational inertia in a volatile environment

Analysis of SME dynamic capabilities and organizational inertia in a volatile market has resulted in the proposal of the conceptual research model shown in Figure 1.

This research model follows Teece's (2007) proposed dynamic capabilities disaggregation logics for analytical purposes – the capacity to sense opportunities, to seize opportunities, and to reconfigure intangible and tangible assets. The empirical findings and related theorizing in this study support the view that the measures of organizational inertia are resources, processes, and path dependencies. The conceptual model assumes organizational inertia to have negative moderating effects on the relationship between SME dynamic capabilities and relative non-financial and financial performance.

It is also argued that organization features – age and size – have an impact on relative non-financial and financial performance.

The conceptual research model has been tested in the context of a volatile environment – namely, the economic crisis in Lithuania (2008-2011) – with the understanding that the more turbulent the environment, the greater the likelihood that organizational inertia and rigidity and its indicators (resources, processes and path dependencies) will disrupt organizational efficiency – a disruption potentially reduced via the application of dynamic capabilities and their indicators

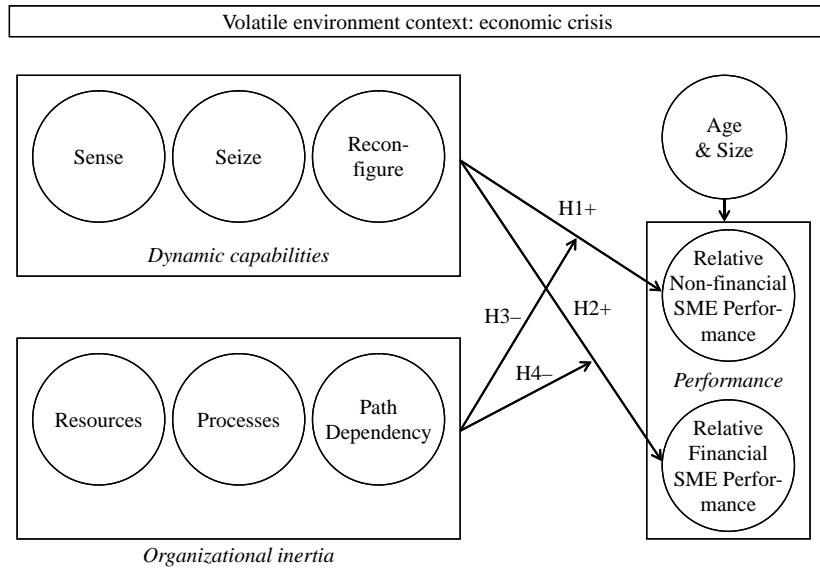


Figure 1. Conceptual research model of the interaction between SME dynamic capabilities and organizational inertia in a volatile environment

(sensing, seizing and reconfiguring). Therefore, this research assumes that employing dynamic capabilities is particularly critical and effective in the context of a volatile environment (Barreto, 2010).

4. Method

4.1 Sample and data collection

Lithuania’s SME sector was explicitly selected as the research population for two reasons. First, the Lithuanian SME sector constitutes the largest part of the country’s economy. Second, SMEs typically have limited resources for survival in a volatile environment, a factor is assumed to be valuable for the generation of undiluted research results. The economic crisis in Lithuania, spanning the period of 2008-2011, is a relevant volatile environment within which to test theories of dynamic capabilities, investigating the impact of dynamic capabilities on relative SME performance through the moderating role of organizational inertia.

To validate the theoretical model empirically, a survey was conducted in a population of 4,531 Lithuanian SME companies. The study applied non-probability, purposive sampling (Babbie, 2004). The research population was limited by the number of employees (up to 150), by annual turnover (0.5-30 million Lt), and by the age of the SME (up to 20 years).

The sample was drawn from a database provided by Creditinfo Lietuva (a credit information and risk management solutions provider in 11 European countries). Phone interviews were conducted and 360 responses were received. Following Remenyi *et al.* (1998), the sample size of 360 responses was sufficient to reflect the respondents’ opinions with a 95 percent level of confidence and around a 3.63 percent margin of error. The survey was conducted in the Lithuanian language. The questionnaire was developed in Lithuanian using the conventional back-translation process to ensure

translation equivalence. The face validity and clarity of the questionnaire measures were tested by three reviewers, with some consequential minor wording changes.

On average, participating organizations existed for 9.8 years ($SD = 3.2$). Mean annual sales was 4.7 million Lt ($SD = 5.8$). The majority of the respondents were general managers (217 or 60.8 percent), 78 (21.7 percent) were middle managers, and 63 (17.5 percent) were company owners.

To ensure the validity of the data collected, participants were assured of confidentiality regarding their survey data. The relevance of the study was explained and a report of the research findings was offered as a potential benefit for participation.

To test for non-response bias, some SME values already known from all potential participants (number of employees, annual turnover, age, and relative financial performance or risk class) were compared to the values that prevail in the research sample. Since no significant difference was found, no non-response bias was observed, making the research results generalizable to the whole SME population.

4.2 Measures

The measures used in this research were adapted from several previous studies. Table I describes the constructs of this study's measures and identifies the authors (originators) used to build the measures. Dynamic capabilities and organizational inertia focal constructs (as third order dimensions) are formed by the second order dimensions, while the second order dimensions are comprised of the first order dimensions.

In total, the survey questionnaire included 77 questions (75 closed-ended and two multiple-choice questions). For closed-ended questions, respondents were asked to present their answers on a ten-point Likert scale.

Dependent variables. Relative non-financial performance and relative financial performance are the dependent variables in this paper. The term "relative performance" highlights the comparison of both non-financial and financial performance among different SMEs. A seven-item scale was used to measure relative non-financial performance ($\alpha = 0.922$). Relative non-financial performance measurement scales were adapted from Drnevich and Kriauciunas (2010) and Bititci *et al.* (2011).

Relative financial performance measure was incorporated using Creditinfo Lietuva data and a ten-class credit risk scale. SME credit risk rating for the first quarter of 2011 was measured to evaluate relative financial performance.

Independent variables. This research employs two independent variables – dynamic capabilities and organizational inertia. All measurement scales for dynamic capabilities were adapted from Teece (2007). The construct of dynamic capabilities ($\alpha = 0.666$) was measured as sensing, seizing, and reconfiguring. In total, 11 first order items for dynamic capabilities were chosen and adapted from previous studies. To measure organizational inertia ($\alpha = 0.832$) two items (resources and processes) were adapted from Gilbert (2005) and one item (path dependency) from Sydow *et al.* (2009). In total, ten first order items of organizational inertia were measured. Resources and processes measures embraced three items; path dependency included four items.

Cronbach's α tests were carried out to confirm the reliability of the scales. The most common and acceptable Cronbach's α value level of reliability is considered as 0.7 (Maxim, 1999; Vogt, 1999; Gravetter and Forzano, 2009), though some contend that Cronbach's α values can be equal to 0.5 (Davidson, 1996). The scale reliability of the constructs in this study meets Cronbach's α requirements as almost all the measures

Third order dimension	Second order dimension	First order dimension	The authors	
Dynamic capabilities	Sensing	Macroeconomic factors sensing	Teece (2007)	
		Network actors' emergence	Teece (2007), Wang and Ahmed (2007), Pavlou and El Sawy (2011), Zollo and Winter (2002)	
		Client needs identification	Teece (2007)	
		Taping suppliers' and complementors' actions	Teece (2007), Wang and Ahmed (2007)	
		Competitors' action scanning	Teece (2007)	
	Seizing	Individual learning capabilities		
		Recognition of non-economic factors		Teece (2007), O'Reilly and Tushman (2008)
		Selecting in technology, products and markets		Eisenhardt and Martin (2000), Zott (2003), Teece (2007)
		Financial commitment		Danneels (2008), Lazonick and Prencipe (2005), Teece (2007), Harreld <i>et al.</i> (2007)
				Teece (2007)
Organizational inertia	Resources	Demonstrating leadership		
		Alignment of tangible and intangible assets		
	Processes	Resource dependency		Gilbert (2005)
		Position reinvestment incentives		
		Threat perception		
	Path dependency	Contraction of authority		
		Reduced experimentation		
		Focus on existing resources		
		Coordination effects		Sydow <i>et al.</i> (2009)
		Complementary effects		
Non-financial performance	Innovations executed	Learning effects		
		Adaptive expectation effects		
		New customers		
	New processes	New marketing initiatives		Drnevich and Kriauciunas (2010)
		New suppliers		
	New products			
	New operational processes		Bititci <i>et al.</i> (2011)	
	New customer management processes			
	New managerial processes			

Table I.
Dynamic capabilities and organizational inertia interaction in volatile environment conceptual model operationalization

have values higher than 0.7. Only the dynamic capabilities construct ($\alpha = 0.666$) and organizational inertia item resources ($\alpha = 0.620$) have Cronbach's α values slightly less than 0.7. Descriptive statistical results are presented in Table II.

5. Findings

To test the relationship between the indicators of the proposed conceptual model, pairwise deletion and Spearman correlation coefficients were calculated. The effect size for this test was interpreted following Cohen (1992) effect size indexes, and their values for small, medium, and large effects were 0.10, 0.30 and 0.50, respectively.

Variable	M	SD	Cronbach's α	1	2	3	4	5	6	7	8	9	10	11	12
1. Age Sig. (two-tailed) <i>n</i>	9.807	3.244	1.000												
2. Size Sig. (two-tailed) <i>n</i>	4.715	5.846	0.058 0.271	360	1.000										
3. Dynamic cap Sig. (two-tailed) <i>n</i>	6.339	1.298	0.666 0.156	360 360	0.079 0.134	1.000									
4. Reconfiguring Sig. (two-tailed) <i>n</i>	7.150	1.881	0.748 0.461	360 312	0.077 0.174	0.709 0.000	1.000								
5. Sensing Sig. (two-tailed) <i>n</i>	5.401	1.420	0.834 0.143	312 360	0.035 0.506	0.816 0.000	0.328 0.000	1.000							
6. Seizing Sig. (two-tailed) <i>n</i>	6.659	1.518	0.816 0.596	360 359	0.042 0.432	0.836 0.000	0.374 0.000	0.590 0.000	1.000						
7. Org. inertia Sig. (two-tailed) <i>n</i>	6.065	1.792	0.832 0.730	359 359	0.005 0.931	-0.569 0.000	-0.363 0.000	-0.520 0.000	-0.467 0.000	1.000					
8. Resources Sig. (two-tailed) <i>n</i>	6.633	2.030	0.620 0.681	359 357	0.018 0.719	-0.005 0.000	-0.321 0.000	-0.440 0.000	-0.391 0.000	0.855 0.000	1.000				
9. Processes Sig. (two-tailed) <i>n</i>	6.123	1.933	0.790 0.581	357 358	0.015 0.777	-0.458 0.000	-0.288 0.000	-0.430 0.000	-0.366 0.000	0.870 0.000	0.609 0.000	1.000			
10. Path depend Sig. (two-tailed) <i>n</i>	5.577	2.197	0.836 0.927	357 357	-0.005 0.706	-0.530 0.000	-0.326 0.000	-0.486 0.000	-0.453 0.000	0.857 0.000	0.616 0.000	0.637 0.000	1.000		
11. Non-fin. perf Sig. (two-tailed) <i>n</i>	4.928	1.721	0.922 0.468	357 359	0.035 0.505	0.630 0.000	0.388 0.000	0.579 0.000	0.507 0.000	-0.805 0.000	-0.704 0.000	-0.691 0.000	1.000		
12. Fin. perf Sig. (two-tailed) <i>n</i>	5.90	2.281	0.137 0.190	359 360	0.085 0.108	0.024 0.653	0.094 0.097	0.033 0.536	-0.067 0.205	-0.145 0.006	-0.085 0.108	-0.182 0.001	0.095 0.074	1.000	
				360	360	360	312	360	359	359	357	358	357	359	360

Table II. Summary statistics, reliability and Spearman correlation matrix

Table II shows positive significant correlation between dynamic capabilities and relative non-financial performance ($r = 0.630, p = 0.000$). There was no correlation between dynamic capabilities and relative financial performance ($r = 0.024, p = 0.653$). It is worth noting that SME age did not correlate with relative non-financial ($r = -0.038, p = 0.468$) or financial performance ($r = -0.069, p = 0.190$). SME size did not correlate with relative non-financial ($r = 0.035, p = 0.505$) and financial ($r = 0.085, p = 0.108$) performance. Thus, SME age and size did not affect the dependent variables of relative non-financial and financial performance.

To test the hypotheses, a hierarchical moderated regression analysis was used. All independent variables were mean-centered before being entered into the analysis (Cohen *et al.*, 2003). First, the variables of age and size were entered. Second, organizational inertia and dynamic capabilities were entered. Third, the two-way interaction term between organizational inertia and dynamic capabilities was entered.

Table III presents the results of the hierarchical moderated regression analysis, with relative non-financial and relative financial performance as the dependent variables and organizational inertia and dynamic capabilities as the independent variables. Non-financial and financial performance scores were regressed on dynamic capabilities and organizational inertia.

Consistent with *H1*, dynamic capabilities had a positive and rather significant impact on relative non-financial performance after controlling for SME age and size ($\beta = 0.266, p = 0.000$). Thus, *H1* was supported.

Table III also illustrates that, after controlling for age and size, dynamic capabilities were not found to correlate with relative financial performance ($\beta = -0.108, p = 0.093$), meaning *H2* was not supported.

Organizational inertia was investigated as a potential moderator of the relationship between dynamic capabilities and organization non-financial performance. The results support the hypothesis (*H3*) that organizational inertia does moderate the relationship between dynamic capabilities and non-financial performance ($\beta = -0.072, p = 0.013$) – the effect is negative and marginally significant.

After step 2 (Table III), dynamic capabilities and organizational inertia together explain about 70.8 percent ($R^2 = 0.708$) of the variance in non-financial performance. After the interaction term was included in the third step, dynamic capabilities, organizational inertia and the interaction term together explain 71.3 percent ($R^2 = 0.713$) of the variance in relative non-financial performance. Thus, the moderating effect of organizational inertia additionally explained 0.5 percent ($\Delta R^2 = 0.005$) of total relative non-financial performance variance.

The interaction of SME dynamic capabilities and organizational inertia on relative non-financial performance is shown in Figure 2. Relative non-financial performance at high (1 standard deviation above the mean) and low (1 standard deviation below the mean) levels of organizational inertia were plotted. Simple slope calculations showed that dynamic capabilities were positively related to relative non-financial performance for companies with low organizational inertia. Dynamic capabilities were less related to relative non-financial performance for companies with high organizational inertia. In addition to regression equations, the sample was divided into halves according to the median value of organizational inertia and calculated correlation between dynamic capabilities and relative non-financial performance. For SMEs with low organizational

Step	Predictor variable	Dependent variable: relative non-financial performance				Dependent variable: relative financial performance			
		Unstandardized coefficients <i>B</i>	Standardized coefficients β	<i>t</i>	Sig.	Unstandardized coefficients <i>B</i>	Standardized coefficients β	<i>t</i>	Sig.
1	(Constant)	4.928		54.163	0.000	5.903		49.027	0.000
	Age	-0.079	-0.046	-0.872	0.384	-0.115	-0.051	-0.957	0.339
	Size	0.007	0.004	0.073	0.942	0.120	0.053	0.996	0.320
<i>R</i> ² after step 1		0.002		0.050					
2	(Constant)	4.928		99.808	0.000	5.903		49.500	0.000
	Age	-0.062	-0.036	-1.257	0.210	-0.139	-0.061	-1.158	0.248
	Size	-0.015	-0.009	-0.306	0.760	0.143	0.063	1.190	0.235
	DC	0.453	0.263	7.425	0.000	-0.235	-0.103	-1.594	0.112
	OI	-1.137	-0.661	-18.726	0.000	-0.437	-0.191	-2.979	0.003
<i>R</i> ² after step 2		0.708		0.030					
3	(Constant)	4.869		89.622	0.000	6.042		46.035	0.000
	Age	-0.063	-0.037	-1.280	0.201	-0.137	-0.060	-1.152	0.250
	Size	0.000	0.000	-0.009	0.993	0.108	0.047	0.897	0.370
	DC	0.458	0.266	7.555	0.000	-0.246	-0.108	-1.682	0.093
	OI	-1.140	-0.662	-18.905	0.000	-0.430	-0.189	-2.956	0.003
<i>R</i> ² after step 3		-0.104	-0.072	-2.496	0.013	0.248	0.129	2.462	0.014
		0.713		0.046					

Notes: DC – dynamic capabilities, OI – organizational inertia; the interaction variable OI × DC was calculated after mean-centering the scores for main variables

Table III. Results of hierarchical moderated regression analysis

inertia, it was higher ($r = 0.537, p = 0.000$), and for companies with high organizational inertia, the correlation was lower ($r = 0.487, p = 0.000$).

Thus, it can be concluded that organizational inertia moderates the relationship between dynamic capabilities and relative non-financial performance in such a way that the positive relationship is weaker for organizations with high organizational inertia than for organizations with low organizational inertia.

Analysis also suggests (Table III) that organizational inertia moderates the relationship between dynamic capabilities and relative financial performance ($\beta = 0.129, p = 0.014$). Thus, *H4* was supported. The moderating effect is positive and significant (it is worth noting that positive β direction should be treated as a negative affect due to the reverse scale of SME risk class – the lower the risk class the better the financial performance).

Taken together, dynamic capabilities and organizational inertia (after being controlled for age and size) explained 3 percent ($R^2 = 0.030$) of total relative financial performance variance. Furthermore, together, dynamic capabilities, organizational inertia, and the interaction term explained 4.6 percent ($R^2 = 0.046$) of relative financial performance variance, whereas the moderating effect of organizational inertia explained 1.6 percent ($\Delta R^2 = 0.016$) of total financial performance. However, SMEs dynamic capabilities, organizational inertia, and their interaction term explain surprisingly low variance of relative financial performance. This fact can be accounted for by the time required to exploit and utilize the benefits of dynamic capabilities and their impact on relative non-financial performance, thus having an observable effect on relative financial results.

The interaction of SME dynamic capabilities and organizational inertia on relative financial performance is shown in Figure 3.

Relative financial performance at high (1 standard deviation above the mean) and low (1 standard deviation below the mean) levels of organizational inertia was plotted. Simple slope calculations evidenced dynamic capabilities as positively related to relative financial performance. A lower value on the financial performance scale in Figure 3 means better relative financial performance because financial performance was graphed from 1 to 10 regarding risk class, where the first risk class indicates very strong and the tenth risk class indicates very poor financial performance. Figure 3 shows that the positive relationship between dynamic capabilities and relative

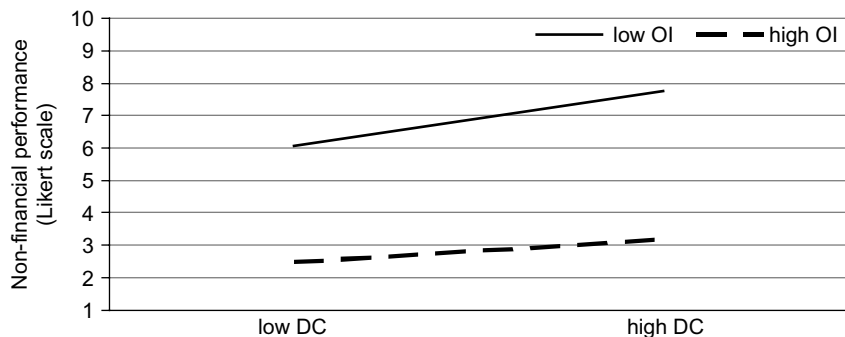


Figure 2. Moderation of the relationship between SMEs dynamic capabilities and non-financial performance by organizational inertia

Notes: DC – dynamic capabilities, OI – organizational inertia

financial performance (risk class) is stronger for organizations with low organizational inertia. For organizations with high organizational inertia, dynamic capabilities and relative financial performance (risk class) are unrelated.

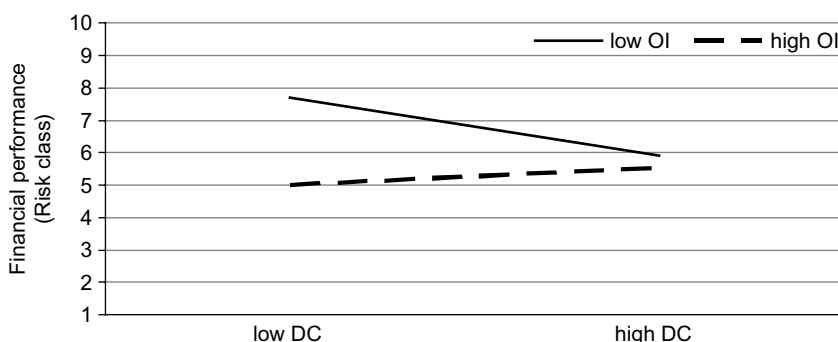
Therefore, the positive relationship between SME dynamic capabilities and relative financial performance is stronger for SMEs with low organizational inertia. For SMEs with high organizational inertia, dynamic capabilities and relative financial performance remains unrelated.

The regression analysis illustrated (Table III) that SME age did not predict relative non-financial performance ($\beta = -0.037, p = 0.201$) or financial performance ($\beta = -0.060, p = 0.250$). SME size likewise did not predict relative non-financial performance ($\beta = 0.000, p = 0.993$) or financial performance ($\beta = 0.047, p = 0.370$). Thus, SME age and size did not determine relative non-financial or financial performance. These findings can be accounted for by the relative youth and small size of Lithuania as an emerging country for SMEs in general.

Therefore, the approved dynamic capabilities and organizational inertia interaction model can be used to predict the impact of dynamic capabilities on relative organizational non-financial and financial performance through the moderating effects of organizational inertia in a volatile environment.

6. Conclusions and discussion

This exploratory study has rather ambitiously attempted to develop and test a model of SME dynamic capabilities and organizational inertia interaction in a volatile environment. The primary contribution of this paper is to broaden the currently insufficient research investigating the interaction between SME dynamic capabilities and organizational inertia in a volatile environment. Review of dynamic capabilities literature has revealed a different impact of market dynamism on dynamic capabilities and has shown that competitive advantage does not lie in dynamic capabilities but in their application and usage. Based on those findings, it was argued that sustainable competitive advantage and relative organization performance is a function of the reconfiguration of organizational inertia elements or causes of rigidity – resources, processes, and path dependency. Dynamic capabilities theory assumes dynamic capabilities are a condition for organizational adaptation and, thus, an instrument for sustaining and improving organizational performance.



Notes: DC – dynamic capabilities, OI – organizational inertia

Figure 3. Moderation of the relationship between SMEs dynamic capabilities and financial performance by organizational inertia

This paper has theoretical implications for the development of the dynamic capabilities concept and strategic management literature.

First, the study has differentiated between the SME dynamic capabilities construct and its effects and has strengthened dynamic capabilities as an emerging paradigm. Empirical testing of the research model has revealed that SME dynamic capabilities have a positive impact on relative non-financial performance and no impact on financial performance. This finding corresponds in particular with Drnevich and Kriauciunas's (2011) research results (the effects of dynamic capabilities on financial performance were found to be negligible) and suggests that dynamic capabilities have determined new customers, new marketing initiatives, new suppliers and new products in a volatile environment. Most likely, SME dynamic capabilities did not have an observable impact on relative financial performance due to the time gap required to capitalize on consequent new products, new customers, and new suppliers. This is in line with the claim that dynamic capabilities are related to financial performance indirectly.

Second, this research tested the relationship between SME dynamic capabilities and organizational inertia and, in so doing, addressed an existing empirical research gap. It was found that SME organizational inertia negatively moderates the relationship between SME dynamic capabilities and relative non-financial and financial performance. This finding implies that SME dynamic capabilities have a greater impact on non-financial and financial performance in less inert organizations than in the highly inert.

Third, this research furthered the understanding of the interaction between SME dynamic capabilities and organizational inertia in volatile environment. Organizational inertia's negative moderating impact on dynamic capabilities and relative SME performance, as evidenced in this study, supports theoretical models of organizational inertia. This empirical finding contributes to the theory of organizational inertia, which suggests that organizational inertia inhibits strategic change and fosters core rigidity.

Practical implications can be derived from the theoretical and above-mentioned empirical contributions.

First, the intentional exploitation of dynamic capabilities can be one of the factors sustaining an SME's competitive advantage in a volatile environment. Practitioners should consider the fact that dynamic capabilities were observed to have a significant impact on relative SME non-financial performance in a volatile environment, though there was no observed impact on relative SME financial performance within the parameters of the study. Most likely, a greater period of time will see the emergence of an observable impact of dynamic capabilities on relative SMEs financial performance.

Second, understanding the interaction between dynamic capabilities and organizational inertia in an economic crisis can help practitioners take appropriate, conscious decisions to adapt in most effective way and sustain a competitive advantage. SME managers are recommended to consider the negative moderating effect of organizational inertia on dynamic capabilities and relative SME non-financial and financial performance. Practitioners should take into account the fact that negative organizational inertia moderates the relationship between dynamic capabilities and relative SMEs non-financial and financial performance in such a way that the positive relationship is weaker for SMEs with high organizational inertia than for those with low organizational inertia.

Third, it should be noted that relatively young SME age and small SME size should not be considered predictors for differentiated SME non-financial and financial performance.

Notwithstanding the interesting findings, this study has some limitations, which highlight the following steps for further scientific research.

First, it would be valuable to test the interaction between dynamic capabilities and organizational inertia in a stable environment and to perform longitudinal research in order to understand how the interrelation between dynamic capabilities and organizational inertia develops and differs over time. In addition, a longitudinal study should reveal how non-financial performance gains, caused by dynamic capabilities, are transformed into financial gains.

Second, this research calls for a broader sample of organizations, since it was controlled for organizational age and size, and concerned SMEs only. Larger organizations, multinational companies, and public sector institutions might produce different results relating to dynamic capabilities and organizational inertia.

Third, crucial questions surrounding where, when, and how organizational resources, processes, and path dependencies can be reconfigured should be the focus of future scientific enquiry.

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About the authors

Šarūnas Nedzinskas is a PhD candidate in management and administration at ISM University of Management and Economics (Lithuania). His research interests include dynamic capabilities, change management and innovation. Šarūnas Nedzinskas is the corresponding author and can be contacted at: sarunas.nedzinskas@dnb.lt

Asta Pundzienė is a Professor at Kaunas University of Technology, Faculty of Social Sciences (Lithuania). Her primary areas of research interest include change management, strategic management and organizational behaviour.

Solveiga Buožiūtė-Rafanavičienė is an Associated Professor at Kaunas University of Technology, Faculty of Social Sciences (Lithuania). Her primary areas of research interest are in corporate governance, dynamic capabilities and organizational performance.

Margarita Pilkienė is a PhD candidate in management and administration at ISM University of Management and Economics (Lithuania). Her research interests include dynamic capabilities, business models and organizational behaviour.

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