RESEARCH

Herbert Endres

Adaptability Through Dynamic Capabilities

How Management Can Recognize Opportunities and Threats

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List of Acronyms

AGFI	Adjusted Goodness-of-fit Index
CFI	Comparative Fit Index
DC	Dynamic Capability
DCV	Dynamic Capabilities View
d.f.	Degrees of Freedom
GFI	Goodness-of-fit Index
n.s.	not significant
PLS	Partial Least Square
RBV	Resource-Based View
RMSEA	Root Mean Square Error of Approximation
SRMR	Standardized Root Mean Square Residual

1 Introduction

1.1 The Challenge of the Fast-Changing Environment

The economic, social, and technological environment in which organizations operate today is becoming more and more dynamic and complex. This means that managers are confronted with new challenges (Barreto, 2010; Oreja-Rodríguez & Yanes-Estévez, 2010). The markets are changing at an increasing speed, and companies are faced with increasing pressure of competition, and also an increasing need for information in almost all areas. The faster development of new technologies, the increasing speed and diffusion of innovation, which manifests in shorter and shorter product life cycles, as well as the constant changes in customer needs, and the changing competitive situation, caused by the development of new economic regions like China, for instance, is leading to a rapid increase in environmental information, which makes it more and more important for companies to gather, and interpret this information in order to be able to survive in the market (Jennings & Jones, 1999; Nastanski, 2004; Barreto, 2010; D'Aveni, Dagnino, & Smith, 2010). In addition, there are numerous change processes in social, political, or legal areas taking place which have a strong influence on the development of companies (Jennings & Jones, 1999). This rapid change also implies risk and instability, which many CEOs have trouble dealing with. Reeves and Daimler (2011: 136) point out that "since 1980 the volatility of business operating margins has more than doubled, as has the size of the gap between winners (companies with high operating margins) and losers (those with low ones)." They also suggest that "market leadership is even more precarious. The percentage of companies falling out of the top three rankings in their industry increased from 2% in 1960 to 14% in 2008" (Reeves & Daimler, 2011: 136). This manifestation of a constantly changing business environment raises the question of which processes, methods, and capabilities companies possess to be able to recognize relevant events and environmental developments in time in order to hold or gain a sustainable competitive advantage over time and ensure their survival.

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1.2 The Relevance of the Dynamic Capabilities Framework

Some authors have studied the appearance of Schumpeterian hypercompetition, which implies that the increasing dynamism of the markets makes it difficult to maintain a competitive position (McNamara, Valler, & Devers, 2003; Wiggins & Ruefli, 2005). Wiggins and Ruefli (2005), for instance, found that the average time span for which companies are able to sustain their competitive advantage has decreased over time. Many once successful firms were found to struggle or fail as their environments changed because they were unable to adapt to these changes successfully (Harreld, O'Reilly III, & Tushman, 2007). More than ever before, companies today need to know how to handle their resources in order to exploit opportunities or neutralize threats that arise from changes in their competitive environment (Hansen, Perry, & Reese, 2004; Kor & Leblebici, 2005; Lavie, 2006). Resources and competences have to be flexible and should be regarded more as "events" than "assets" (Von Krogh & Roos, 1996), which would in turn make renewability and evolution easier to achieve (Dierickx & Cool, 1989). Consequently, the constant development of existing resources, knowledge, and competences under adequate consideration of market developments is becoming crucial for strategic renewal.

For this reason the strategic management theory has developed from the typical Resource-Based View (RBV) to a dynamic perspective, the Dynamic Capability (DC) approach. This approach focuses on capabilities which are necessary to keep up with environmental developments. Companies which are able to systematically adapt their resources and capabilities will have a better chance of generating or holding a sustainable competitive advantage than other organizations (Teece, Pisano, & Shuen, 1997). The importance of dynamic capabilities "is now amplified because the global economy has become more open and the sources of invention, innovation, and manufacturing are more diverse geographically and organizationally" (Teece, 2007: 1321).

The dynamic capabilities are defined by Teece (2007: 1320) as "a framework, which tries to give answers for handling changes in business environment", which

explains "the sources of enterprise-level competitive advantage over time," and which "provides guidance to managers for avoiding the zero profit condition that results when homogeneous firms compete in perfectly competitive markets." In order to make this framework a little more tangible, Teece breaks it down into the capabilities (1) sensing (of opportunities and threats), (2) seizing (of opportunities), and (3) managing threats and reconfiguration (of assets and organizational structures). This framework will be further developed within this dissertation and will be explained in more detail in Chapter 3.

1.3 Introduction to the Research Field "Sensing"

As mentioned above, research on strategic management has focused on the framework of dynamic capabilities as a central concept of sustained competitive advantage (Ambrosini & Bowman, 2009; Helfat & Peteraf, 2009; Helfat et al., 2007; Teece, 2007; Teece, Pisano, & Shuen, 1997). However, research on dynamic capabilities has not delivered very specific answers for explaining the sources of enterprise-level competitive advantage over time. Even though research in the last four years has made progress with the development of a clear and complete picture of dynamic capabilities, this concept still lacks clarity (Di Stefano, Peteraf, & Verona, 2010, 2014a, 2014b; Helfat & Winter, 2011; Li & Liu, 2014). To obtain an overview of the studies that have been done on dynamic capabilities, a table is provided in Chapter 3.2. Many empirical studies in this field tend to be tautological and vague, making it difficult to capture and measure these capabilities (Kraatz & Zajac, 2001; Danneels, 2008). Alongside Barreto (2010), and Ambrosini and Bowman (2009), who claimed that the concept of "dynamic capabilities" lacked "…a clear and adequate definition of the main construct" (Barreto, 2010: 275), and that "...these capabilities have been poorly specified" (Ambrosini & Bowman, 2009: 37), authors such as Di Stefano, Peteraf, and Verona, (2014a, 2014b), and Helfat and Winter (2011) have offered similar criticism. Researchers need to choose how to operationalize not only the aggregate construct (dynamic capability) but also the dimensions-related constructs, such as

sensing (Barreto, 2010). This could be achieved through field research, which would allow researchers to address the micro-process question of how companies practice dynamic capabilities. For this purpose, a strategy-as-practice lens concerned with what companies do could be employed (Ambrosini & Bowman, 2009; Jarzabkowski, Balogun, & Seidl, 2007; Johnson, Melin, & Whittington, 2003; Pablo, Reay, Dewald, & Casebeer, 2007).

To be successful under the challenging circumstances described, the company has to react continuously to the threats and opportunities posed by a changing environment (White, Varadarajan, & Dacin, 2003). The top priority here is to recognize changes in the environment with the help of the right mechanism (Nastanski, 2004). According to Teece (2007), sensing of threats and opportunities serves as an important component for sustainable competitive advantage, since the success of companies mainly depends on the detection and development of opportunities and threats. Protogerou, Caloghirou, and Lioukas (2012: 620) also view the capability to sense environmental challenges as being "of utmost importance", as it provides the firm with a basis for making market-relevant decisions and thereby enables the company "to reconfigure certain capabilities before they become core rigidities". In line with Teece (2007) and Schreyögg and Kliesch-Eberl (2007), sensing is the ability to search for and identify opportunities and threats. The concepts of the present study, which are based on this understanding of sensing, will be introduced in the following chapter, and will be further explained in detail in Chapter 3.5.

1.4 Concepts of the Study and Main Research Questions

1.4.1 Concept of Model 1 – The Sensing Capability

In this concept, the sensing capability[1] is divided into two parts: "sensing activities" and "sensing performance". This makes it possible to investigate which sensing activities are relevant, meaning which sensing activities really have an effect on the sensing performance, which is defined as the actual sensing of opportunities and threats (Protogerou, Caloghirou, & Lioukas, 2012, Teece, 2007; Teece & Pisano, 1994). The sensing activities are further classified as "environmental sourcing", and the "environmental gathering and analysis mode". This concept, which has its roots in the concepts of Aguilar (1967), and Daft and Weick (1984), differs from earlier concepts because it integrates both the environmental sources and the way these sources are interpreted. Earlier research studies primarily focused on either the one (e.g. "Market orientation" studies by Jaworski and Kohli (1993) or Matsuno, Mentzer, and Rentz (2000)) or the other (e.g. "Scanning mode" studies by Aguilar (1967) or Flores et al. (2012)). Furthermore, by modeling the relationships between environmental activities ("environmental sourcing" and "environmental gathering and analysis mode") and the actual sensing of opportunities and threats, a complete sensing capability concept is presented for the first time.

1 In this dissertation, the term "sensing capability" stands for the "sensing" construct of the dynamic capabilities framework.

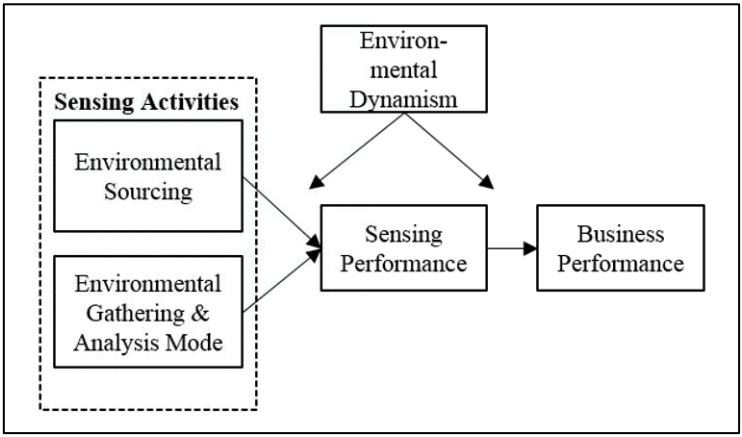

Figure 1 - Concept of Model 1 - The Sensing Capability

The investigation of this concept, which is illustrated in Figure 1, not only sheds light on the dynamic capabilities framework but also provides a comprehensive picture of the sensing capability. This specification of the sensing capability with its concrete effective activities represents a large contribution to science and management practice, as it means that management is now in a better position to handle adaptability, and generate or hold sustainable competitive advantages. To provide this contribution, the following main research question is addressed and will be answered in this dissertation:

What is the sensing capability about, meaning what kind of sensing activities lead to the actual sensing of opportunities and threats?

Impact of Environmental Dynamism on Sensing

Research (Danneels, 2008; Eisenhardt & Martin, 2000; Helfat et al., 2007; Teece, Pisano, & Shuen, 1997) also suggests the inclusion of the moderating variable environmental dynamism in studies on dynamic capabilities, because different

effects have been shown under high and low environmental dynamics, and some research results are also inconsistent (Drnevich & Kriauciunas, 2011; Pavlou & El Sawy, 2006). Management research describes environmental dynamism as "the level of environmental predictability manifested in the variance in the rate of market and industry change and the level of uncertainty about forces that are beyond the control of individual businesses" (Baum & Wally, 2003: 1110). Based on this understanding, environmental dynamism has been integrated in the concept of this study (see Figure 1) in order to address the following research question:

How is the sensing capability influenced by environmental dynamism, meaning how do sensing activities differ between high and low environmental dynamism?

Impact of Sensing Performance on Business Performance

To complete the investigation of the sensing capability, it is necessary to include a link to the business performance in the model. Business performance is the financial performance of the company, meaning the development of sales, market share, and profitability. According to Eriksson's (2014) review of dynamic capabilities, two different links between dynamic capabilities and company performance are pursued in the research studies. While some studies promote an indirect link between dynamic capabilities and company performance, and argue that dynamic capabilities affect the operational capabilities[2], which in turn affect the company performance (Eisenhardt & Martin, 2000; Helfat & Peteraf, 2003; Zott, 2003), most studies still adhere to the early conceptual view (Teece, Pisano, &

2 There is neither a consistent understanding of operational capabilities and dynamic capabilities nor a consistent distinction between dynamic capabilities and operational capabilities in the research (Barreto, 2010; Eriksson, 2014). Though some researchers try to explain that dynamic capabilities are higher-order capabilities that influence operational capabilities (Collis, 1994; Winter, 2003), they fail to provide a clear and precise classification into dynamic and operational capabilities. Therefore, it is questionable whether an indirect link of dynamic capabilities to a company's outcome can really be tested via operational capabilities.