

## **How did it get so late so soon? Dynamic Capability Deployment Rate and Firm Growth**

### **ABSTRACT**

We examine how the rate by which firms deploy dynamic capabilities affects their growth. This study identifies frequency, speed and attunement as important performance-relevant deployment attributes of dynamic capabilities. Speedy use of dynamic capabilities, that is, quickly undergoing the process of sensing and seizing opportunities and reconfiguring the resource base, is positively associated with firm growth. Further, we find that attunement of dynamic capability utilization, that is, the timely alignment of utilizing dynamic capabilities with internal conditions and the environment, is positively related to firm growth. Finally, frequent use of dynamic capabilities results in a more attune and a quicker utilization of dynamic capabilities and improved firm growth. This paper contributes to dynamic capability research as it explicitly investigates the deployment rate of dynamic capabilities and provides new insights into how the rate of dynamic capabilities deployment affects firm growth.

**Keywords:** Dynamic Capabilities; Firm Performance; Growth; Timing

## **INTRODUCTION**

Firm growth is a crucial component of firm performance and survival. Penrose (1959) suggested that the rate of growth of a firm is, predominantly, fostered—but also constraint—by the capacities of its management, the so-called Penrose effect. As management undertakes to leverage resources through the development of capabilities, a dynamic interacting process occurs that foster a continuous rate of growth of the firm. This growth is subject to the creative and dynamic interaction between a firm's productive resources and its market opportunities (Penrose, 1960). Mahoney (1995) underlines Penrose's argument that firms grow due to the effective and innovative management of resources.

In refining the understanding of how resources affect firm growth, and in building on Schumpeter (1950; 1934) and Nelson and Winter (1982), Teece, Pisano and Shuen (1997) suggest that it is dynamic capabilities that provide firms with the potential for growth. These comprise a firm's organizational processes concerning 1) sensing and shaping opportunities, 2) seizing opportunities and 3) redeploying and reconfiguring (creating, extending and modifying) the firm's resource base (Teece, 2007). Thus, although resource abundance is assumed to enhance prospects for growth (Penrose, 1959; Stinchcombe, 1965), it is the way by which their leverage through operational capabilities can be modified over time—based on the deployment of dynamic capabilities—that determines how firms compete in dynamic environments and how they can sustain growth over time. Notably, growth is not entirely reliant on management but also affected by the deployment of organizational routines that are embedded in firms.

This growth impact ensuing from the deployment of dynamic capabilities through changing a firm's ability to leverage its resources (Helfat et al., 2007) is consistent with Penrose who emphasizes that to sustain a competitive position over time requires continued innovation

efforts so that a resource base can be (re-)configured and states that a firm “*must expect that in time it will be overtaken if it fails to continue to develop its advantage*” (1959: 136-137). Firm growth results from deploying processes that facilitate matching a firm’s evolving resource base with dynamic market opportunities (Montgomery and Hariharan, 1991). And specifically focusing on dynamic capabilities, authors such as Arthurs and Busenitz (2006), Jantunen et al. (2005), Protogerou et al. (2012) provide empirical insights into their performance effect; as do Wilden et al. (2013) but they show that it is conditional on the firm’s organizational structure and the competitive turbulence that it faces.

Other studies identified that time-related contingencies mattered when explaining how organizational processes that relate to a firm’s dynamic capabilities influence firm growth. For instance, some show that the speed with which firms develop experience-based knowledge—which can be embedded within dynamic capabilities—positively influences growth (Chang, 1995; Delios and Henisz, 2003; Vermeulen and Barkema, 2001). Then, Baum and Wally (2003) identified that fast strategic decision-making predicts subsequent firm growth and profit, and mediates the relation of dynamism with firm performance. Although these studies imply that time considerations matter in the deployment of dynamic capabilities, only Zott (2003) studied explicitly the timing of dynamic capability deployment but did so to a limited extent as we outline in a later section.

Thus, notwithstanding that the deployment of dynamic capability affects growth and such effects can be contingent on aspects such as speed and timing, the rate of dynamic capability deployment has not been comprehensively examined. That is, we know little about the extent to which the rate of dynamic capability deployment influences the rate of firm growth. The relevance of timing with respect to management decisions—or the deployment of dynamic

capabilities—has further been stressed by Penrose in that “*the sense of timing, and the ... recognition of what will catch on or how to make it catch on become of overwhelming importance. These services [or dynamic capabilities] are not likely to be equally available to all firms. For those that have them, however, a wider range of investment opportunities lies open than to firms with a less versatile type of enterprise*” (Penrose, 1959: 36). Thus, firm differences in how timely they deploy their dynamic capabilities should matter.

Although previous research has offered valuable insights into the evolution and micro-foundations of dynamic capabilities (e.g., Fuhl, 2006; Narayanan et al., 2009; Teece, 2007), there is limited research investigating how specific attributes concerning the deployment of dynamic capability processes affect firm growth (Macher and Mowery, 2009; Moliterno and Wiersema, 2007; Protojerou et al., 2012; Teece, 2007; Zahra et al., 2006). A better understanding of the performance effects of dynamic capabilities conditional on their deployment rate with respect to the three embedded organizational processes will improve strategic decision making that underpins investments developing the firm’s resource base.

Our current understanding is bounded by several limitations in prior literature: 1) a focus on examining the development of dynamic capabilities; 2) a lack of being familiar with the interrelationships between the three dynamic capability processes; and 3) a lack of understanding concerning the specific performance-relevant attributes that characterize dynamic capability deployment and help explain how and when dynamic capabilities matter. This paper advances current thinking on dynamic capabilities and their growth implications through identifying attunement, speed and frequency as important dimensions that characterize the deployment rate of dynamic capabilities. Thus, this paper answers the following research questions: What are important performance-relevant attributes that characterize the deployment rate of dynamic

capabilities and how do these relate to a firm's rate of growth? Following Graebner et al.'s (2012) recommendations, we derive propositions grounded in existing research and illustrate these through firm vignettes based on vivid, concrete and rich qualitative data (see for example Kauppila, 2010; Siggelkow, 2001).

The remainder of this paper is organized as follows: In the next section, we discuss dynamic capabilities and their growth impact. In the subsequent section, we outline the empirical approach used to illustrate the theory development derived from the literature, including our procedures for selecting and interviewing senior managers from suitable firms, and of analyzing these data. Thereafter, we report the findings, which are framed as a set of propositions to extend the debate on the role of dynamic capabilities in affecting a firm's rate of growth and advance our understanding of the unique role of the characteristics that specify the rate of dynamic capability deployment. The paper concludes with a discussion of implications for theory and practice.

## **BACKGROUND**

Faster technology life-cycles, rapidly evolving customer requirements and tightened regulations increase the degree of environmental turbulence, thus providing and/or limiting growth opportunities (Teece, 2007). Dynamic capabilities play a significant role in the way in which firms respond to environmental turbulence (e.g., Helfat et al., 2007; Winter, 2003) "*as they renew resources so as to achieve congruence with the changing business environment*" (Teece et al., 1997: 515). They are a "*set of specific and identifiable [managerial and organizational] processes*" (Eisenhardt and Martin, 2000: 1105). Processes constituting dynamic capabilities can be grouped into three categories: 1) sensing and shaping opportunities, 2) seizing opportunities,

and 3) reconfiguring (creating, extending and modifying) the organizational resource base (Eisenhardt and Martin, 2000; Jantunen et al., 2005; Teece, 2007; Zahra et al., 2006). Sensing and shaping opportunities and threats imply scanning, search, and exploration activities across technologies and markets, often reflected in investments in research activity and the probing of customer needs and technological possibilities (Teece, 2007). Sensing leads to creating knowledge about opportunities and crucial insights concerning a large variety of factors that directly or indirectly affect the firm. Upon sensing and shaping opportunities, the firm is required to seize those opportunities through prototyping and developing new practices as well as new products or services. This frequently involves investments in the development and commercialization of new ideas and products and reacting to defects pointed out by customers, employees, and suppliers (Teece, 2007). Seizing opportunities comprises, in essence, investment decisions concerning opportunities as well as the specification and assessment of potential business models. Those business models that are deemed to have potential in contributing to sustainable business growth are progressed whereas those that do not meet evaluation criteria are not considered any further. Consequently, seizing involves a decision concerning whether identified growth opportunities represent investment prospects and, if so, how to formulate an effective strategy to leverage such an investment. Such a strategy requires the appropriate implementation to achieve anticipated returns on dedicated investment. Teece (2007: 1335) states that a *“key to sustained profitable growth is the ability to recombine and to reconfigure assets and organizational structures as the enterprise grows, and as markets and technologies change [...]. Reconfiguration is needed to maintain evolutionary fitness.”* The process of reconfiguring the resource base concludes in the creation, modification or extension of resources and capabilities; such as the establishment of refined or new manufacturing and operating

systems that enable or improve the efficient production of new products, delivery of new services, entering new markets or changing target markets. Hence, it is the reconfiguration process that enables a firm to effectively leverage the insights gained, and strategic conclusions drawn, from the seizing process.

Studies explicitly investigating the effects of dynamic capabilities on performance in general, and on firm growth in particular, are sparse (Zollo and Winter, 2002) and have mainly focused on establishing the general relationship between dynamic capabilities and performance; notably neglecting the identification of the attributes that characterize the rate of dynamic capability deployment. Thus far, dynamic capabilities have been found to affect performance by matching the resource base with changing environments (Teece et al., 1997); supporting both the resource-picking and capability-building rent-generating mechanisms (Makadok, 2001); and creating market change (Eisenhardt and Martin, 2000). They further support the organization in increasing revenue, adjusting its operations to reduce costs (Drnevich and Kriauciunas, 2011: 258), and provide the firm with a new set of decision options, which have the potential to increase firm performance (Eisenhardt and Martin, 2000; Teece, 2007). The limited knowledge of the performance effects of dynamic capabilities is exacerbated by the fact that the testing of hypotheses regarding the dynamic capability–performance relationship is in its early stages. Thus far, a positive relationship between dynamic capabilities and performance has been reported (e.g., Arthurs and Busenitz, 2006; Protogerou et al., 2012; Schilke, 2013; Wilden et al., 2013).

The specific relationship between dynamic capabilities and firm growth as a performance measure has been discussed in the context of using evolutionary fitness as a performance yardstick for assessing dynamic capabilities. Evolutionary fitness describes the fit between the firm and its environment. It is assessed using measures such as firm survival and growth (Helfat

et al., 2007). The ‘growth’ dimension fits Penrose’s (1959) notion, the survival aspect aligns with foundations that Nelson and Winter (1982) brought to the dynamic capabilities.

## **RESEARCH DESIGN**

Following Graebner et al.’s (2012) recommendations, we derived propositions grounded in existing research and illustrate these through firm vignettes based on vivid, concrete and rich qualitative data (see for example Kauppila, 2010; Siggelkow, 2001). Rather than generating completely new theory, we synthesized and extended existing theory on dynamic capabilities and its foundations. Thus, we developed a conceptual framework before collecting the data (Figure 1), which served as an overarching theoretical proposition of how the characteristics that specify the rate of dynamic capability deployment relates to firm growth. Theoretical propositions are particularly valuable, as they help focus attention and organize available data and define alternative explanations that need to be (Kauppila, 2010; Yin, 1994). Similar to Siggelkow’s (2001) approach, the framework presented in the paper emerged more from a conceptual exercise than from analyzing the empirical data. However, the cases serve as an illustration and were used in that way after each of the relationships was presented.

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### ***Selection of case vignettes***

We use a series of firm vignettes based on in-depth interviews in conjunction with an examination of available secondary data (Edmondson and McManus, 2007) to support the synthesis of previous findings. To enable the study of firm settings within which processes that underlie dynamic capabilities are more likely employed, we only contacted firms that

experienced moderate to high turbulence in their environment over the previous three years. This selection was based on available industry reports and peer discussions. We used theoretical sampling of case firms until saturation was achieved (Charmaz, 2006; Strauss and Corbin, 1998). Following the systematic replication logic advanced by Yin (1994) and used in related previous research (e.g., Brown and Eisenhardt, 1997; Ellonen et al., 2009; Madhavan and Grover, 1998; Martin and Eisenhardt, 2002), our sample comprises 12 business services firms in Australia. We chose to focus on business service firms (such as market research agencies, consultancies and accounting firms) as the contribution of services to the GDP of developed economies is substantial and continues to grow. Further, technological advances decrease geographic barriers to service provision, opening up new opportunities for service firms and also giving rise to new threats as competitors enter. This competition combined with changes in technology and increasing customer demands means that such firms compete in increasingly turbulent markets. Thus, business service firms provide a suitable setting for a study to examine whether and, if so, how the rate of dynamic capability deployment relates to the rate of firm growth. We chose case firms that varied substantially in size (between 30 and 6,500 employees), with an annual turnover ranging from U\$3.2 million to U\$1,833 million (see Table 1).

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Insert Table 1: Overview of firms  
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### ***Data Sources***

To support the theoretical development of our framework and embedded propositions, we synthesized findings from primary data gathered from senior managers with those identified from secondary data sources. We used triangulation of data to validate the accuracy of our findings. Furthermore, we used peer debriefing and spent a prolonged time in the field (i.e., three

months) to enhance our understanding of the service firms in our sample and their industries before we conducted interviews (Creswell, 2003). We also observed these firms over time in that we obtained data concerning their growth (note, that all firms were still operating by the time this paper was finalized). Finally, we used rich, thick description to present our findings to offer a more comprehensive understanding of the settings and data obtained.

Senior managers were chosen as informants in this study, because they are involved in strategic actions in their firms and possess knowledge about dynamic capabilities and their deployment which comprises tacit organizational processes that are difficult to observe (Chen et al., 1993). This key informant approach is suitable to researching the rate of dynamic capability deployment, as there is a lack of archival data on such firm-level concepts (Kumar et al., 1993). Respondents within the firms held various positions, including Chief Executive Officer (CEO), Managing Director and Director of Finance and Business Operations, and they were identified through company lists, contacted personally via e-mail initially and invited to participate.

Data relating to managers' understanding and perceptions of their firm's dynamic capability deployment and performance were collected through in-depth interviews, supported by a theory-derived interview guide in a semi-structured format (Lee, 1999). The interviews began by asking about the respondents' background and the role that they had in the firm. Subsequently, respondents were asked to name events and conditions that have significantly affected the firm over the last few years. We then allowed interviewees to speak freely about their perception of how these events and conditions had affected their business in the past three years; including events such as changes in customer requirements, the competitive landscape and technology. Whenever interviewees mentioned a certain event specifically, we used it as basis for further discussion. Subsequently, we asked which processes and activities the organization

had used to prepare for these changes, which processes and activities were used to identify these changes, how the changes had affected the business, and how the firm had dealt with the changes. Finally, we asked informants to report firm performance data (including growth data) and to offer their views into how precisely these processes and activities had affected their firm's performance. To stay away from imposing our own theoretical frame of reference on our interviewees' interpretations, we carefully avoided referring explicitly to concepts such as 'dynamic capabilities' or 'evolutionary fitness'. We were specifically interested in, and accordingly focused on, organizational processes making up dynamic capabilities; such as environmental scanning and seizing market opportunities and the implementation of new business models or the acquisition of new resources; and specifically the rate of their deployment.

The predefined questions were supplemented with further questions that emerged during the interview (Eisenhardt, 1989b). Following the approach by Patton (1990), informants were not given predetermined categories of responses or topics to be covered. This helped minimize interviewer bias and maximize information regarding the empirical relevance of the concepts included in our study. We stopped interviewing when the saturation point was reached, that is, when additional questions would not have added new insight to our understanding of the phenomenon (Glaser and Strauss, 1967): the impact of the rate of dynamic capability deployment. The interviews lasted on average about 70 minutes and were digitally recorded and transcribed in full.

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Insert Table 2  
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### ***Data Analysis***

Our analysis approach can best be labeled as analytical abduction (Kauppila, 2010). Based on pre-existing theoretical knowledge, we first derived a conceptual framework and then evaluated this framework against the data. Abduction is an ongoing process that transcends throughout all stages of the research process (Van Maanen et al., 2007). It describes not only the data analysis but also the theoretical development and relevant iterations between theory and data. As recommended by Scroggins (2006), the interview data were triangulated with other data in an attempt to establish an in-depth understanding of the research phenomena and to improve the validity of our findings (Denzin and Lincoln, 2000; Eisenhardt, 1989a). We collected diverse secondary data (financial reports, industry studies, press releases, news clippings, and data from company websites), which were examined to develop an understanding of the context of firm actions, to verify respondents' comments, and to provide additional insights into the activities related to the rate of dynamic capability deployment, to the extent identifiable, and firm growth. This triangulation of data between multiple sources provides greater accuracy and depth to our findings (Yin, 1994).

The analysis stage comprised a number of phases. First, following typical qualitative procedures, the transcripts were analyzed for content and emerging themes were coded. Second, following the approach put forward by De Chernatony and Cottam (2006), phenomena emerging within and across the interviews were compared, grouped, and contrasted to develop a set of phenomena that collectively represented dynamic capabilities and the attributes that characterize their deployment. This resulted in a comprehensive categorization of the concepts (i.e., dynamic capability deployment and firm growth) and their roles; as identified in the literature and in the

data (see Tables 2 and 3). Third, the case findings were combined and compared with the findings from secondary sources and the literature review.

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## **DYNAMIC CAPABILITY DEPLOYMENT RATE AND FIRM GROWTH**

As stated above, the aim of this paper was to develop a better understanding of how the three processes characterizing the rate of dynamic capability deployment affect firm performance in terms of firm growth. Based on the synthesis of relevant studies, we chose Zott's (2003) work as a starting point. Zott identifies three attributes of dynamic capabilities that lead to intra-industry performance differentials; learning, costs and timing. Of these three attributes, learning and costs have received greater attention in previous studies than timing. Amongst others, Zollo and Winter (2002) examined learning mechanisms and their roles within the context of dynamic capabilities (see also Banaszak-Holl et al., 2006; George, 2005; Romme et al., 2010) and Winter (2003) examined costs associated with dynamic capabilities (see also Ethiraj et al., 2005; Maritan and Florence, 2008). Relatively less research has investigated explicitly the timing of dynamic capability utilization. Furthermore, and consistent with Penrose's (1959) notion of how the sense of timing concerning the use of such managerial processes affects firm growth, other studies found that the speed with which firms developed experience-based knowledge positively influenced firm growth (Chang, 1995; Delios and Henisz, 2003; Vermeulen and Barkema, 2001); or identified that fast strategic decision-making affects subsequent firm growth (Baum and Wally, 2003).

Consequently, we focus on the timing aspect which Zott (2003: 107) defined as both “*the rapidity with which existing resources are reconfigured, and [...] the rapidity with which entirely new resources are acquired.*” Penrose (1959) also puts emphasis on appropriate timing being crucial to open up investment opportunities ahead of competitors.

As we will outline in greater detail in subsequent sections, we argue that the concept of ‘timing’, as an attribute that concerns the rate by which dynamic capabilities are deployed, has to be broken into sub-components. We put forward and discuss three performance-relevant attributes of dynamic capability deployment that broadly speaking are associated with timing: attunement, speed and frequency. In its basic form, we refer to attunement as the instant (i.e., point in time) when a firm engages in a process; speed as the pace with which a firm moves through a process; and frequency as the number of occurrences a process happens within a given period of time. Further, we show how these attributes differ in their relevance for sensing, seizing and reconfiguring processes.

### ***Speed of dynamic capability utilization***

Zott (2003) found that the timing of dynamic capability utilization leads to performance differentials across firms. He stressed that his study focused on “*the effects of the differential timing of moves rather than on the pros and cons of specific orders of moves (such as moving first).*” To be precise, Zott incorporates two time-related aspects in his consideration of timing: 1) the speed with which firms use dynamic capabilities; and 2) the point in time firms use dynamic capabilities. In the operationalization of the timing of dynamic capabilities, Zott referred to the speed of dynamic capability utilization rather than the actual point in time at which dynamic capabilities are used. However, our review of relevant literature and the

illustrative empirical cases reveal that that the concept of ‘timing’ with respect to utilizing dynamic capabilities encompasses both components: the speed and the point in time of dynamic capability deployment (we will refer to the latter aspect from here on as ‘attunement’).

Consequently, in this and the subsequent section we will discuss the relevance of these two performance-relevant and time-related attributes of dynamic capability deployment separately.

The speed of response to environmental turbulence is an important driver of evolutionary fitness (Porter, 1985). Empirical studies have revealed that firms that respond quickly to environmental turbulence improve their alignment with their environments (Bourgeois III and Eisenhardt, 1988; Collis, 1991; Powell, 1992). Teece et al. (1997: 521) observe that it is essential for firms *“to scan the environment [...], and to quickly accomplish reconfiguration and transformation ahead of competition.”* Consequently, we define the speed of dynamic capability utilization as how fast firms undertake the processes of sensing, seizing, and reconfiguring. It describes how quickly firms identify and respond to environmental turbulence (Chakravarthy, 1982; McDaniel and Kolari, 1987; Oktemgil and Greenley, 1997; Zott, 2003). Differences in the speed of dynamic capability utilization can result from management’s (un)willingness to take action (Stinchcombe, 1965) or coincidence (Barney, 1986).

There is little empirical research directly examining the speed of dynamic capability use; except drawing on the findings of Baum and Wally (2003) that imply that fast strategic decision-making, and accordingly fast deployment of dynamic capabilities, influences firm growth. Our data support that quickly adapting to changing demand structures improves growth. For example, in Company I the change of its product portfolio (transition from a qualitative-only research agency to an integrated agency providing both qualitative and quantitative services) happened quickly once the firm sensed that clients were expecting full service offerings. This opportunity

was seized by investing in recruiting specialists and by adjusting its marketing strategy. This quick response had a positive impact on firm performance as evidenced by increased growth in sales. This is exemplified by the following remark:

It was a relatively quick transition; in the space of four years the revenue generated from quant[itative research] equals the one from qual[itative research]. So you are talking about going from relatively nothing to an A\$2 million business, which is a lot in a service context in such a short time. (*Director, Company I*)

There is further support for the positive effects of speedy utilization of dynamic capabilities on growth in our data. A slow response may lead to negative growth. Firms that are slow to implement new service solutions, such as a new service for collecting data from supermarkets and turning it into data reports, had lost ground to smaller firms that were faster at reconfiguring their service lines. This is illustrated using the example of a large competitor in the market research industry:

Because they are such a large global organization with lots of power brokers in different regions [...], it has become very political about changing that software and that system. So, whilst the slow-moving argument goes on and on and on within the company, [...] the smaller companies have just taken more and more share of them. [...]. (*Managing director, Company H*)

Another example substantiating the relevance of speed is evident in Company E. The courier industry faced severe change caused by the massive impact that the Internet had on the typical business model of the industry. Besides changing the way clients book services, the Internet caused a major change in the target market. Many players in the industry were too slow to identify and understand the major impact that the Internet would not only have on the way

orders were made, but also on the business model and the client base. Growth within the industry was possible through fast decisions, making early marketing investments, and swift reconfiguration of operations. Many competitors were slow to recognize and assess the market change and took much longer to respond. Company E responded faster than competitors and changed their marketing focus from moving documents to larger physical items and as a consequence grew sales more quickly than it seemed competitors did:

So instead of having [...] salespeople targeting customers who mainly moved documents, such as solicitors, accountants or advertising agencies, we basically felt that these would be most impacted by the Internet and e-mail. A lot of those people operated in the CBD. So we took our efforts away from the city, we focused our selling to the suburbs and told our salespeople to focus on people who had products to move. Sales efforts [were focused] away from accountants to people who move products. [...]. The new service allowed [the company] to grow. Probably ten years ago, the courier service [of documents] was about 90% of our business, now it is about a third, it is a huge change. (*CEO, Company E*)

Increased alignment with the environment (strategic fit) is an indicator that dynamic capabilities have been used. Ferrier, Smith, and Grimm (1999) have shown that incumbent firms are more likely to maintain their position when moving swiftly against competitive challenges and that fast-acting challengers tend to grow their market share. These findings are consistent with research suggesting that a quick reaction to environmental changes positively influences firm growth (Dess et al., 1999; Helfat et al., 2007; Zahra et al., 2006). Zott's (2003) work supports Eisenhardt and Martin's (2000) findings that quick use of dynamic capabilities creates

the basis for long-term competitive advantage. Therefore, following the above logic and our empirical insights, we propose:

*P1: Other things being equal, the quicker a firm goes through the processes of a) sensing, b) seizing and c) reconfiguring, the greater its rate of growth.*

### ***Attunement of dynamic capability utilization***

While the speed of dynamic capability utilization refers to how quickly a firm goes through the processes of sensing, seizing and reconfiguring, attunement refers to when dynamic capabilities are actually used and particularly refers to seizing and reconfiguring processes. Attunement is the result of organizational decisions concerning when alignment of internal conditions with the environment occurs in order to promote positive outcomes of seizing processes and resource reconfiguration (Fahey et al., 1986). Teece and Al-Aali (2011: 514) add that in “*some cases it’s beneficial to be a first mover while in others it may be more advantageous to exploit a gap left by a pioneer.*” Thus, differences in the attunement of dynamic capability use can reflect deliberate decisions to move first or to follow others (Lieberman and Montgomery, 1988), or as a result of ‘randomness in competition’ (Porter, 1994).

The resource-based theory, a foundation of the dynamic capabilities theory, is closely linked to the logic of first-mover advantage. Research linking resource-based theory and theory on first-mover disadvantage argues that it is not simply the speed but rather the attunement that leads to improved performance (Lieberman and Montgomery, 1998). Early acquisition of a scarce resource may enable the firm to benefit from a first-mover advantage in the form of a resource position barrier, which indicates a potential for greater sales and, hence, high returns (Wernerfelt, 1984). Dynamic capabilities can support the firm to either create or overcome

resource position barriers. Thus, firms seeking to use their dynamic capabilities may require certain resources and capabilities to do so (Schoenecker and Cooper, 1998). Pioneering is more beneficial for firms that have strong research and development capabilities, whereas firms with strengths in marketing and manufacturing may choose to enter at a later stage (Lieberman and Montgomery, 1988, 1998). Firms that follow a cost-leadership strategy may decide to wait until after technological and market uncertainties have been resolved (Lieberman and Montgomery, 1998). Furthermore, “*changing routines is costly, so change will not be (and should not be) embraced instantaneously*” (Teece, 2007: 1335).

As indicated above, our data show that the speed with which dynamic capabilities are deployed is distinct from the attunement of when dynamic capabilities are used. Although our empirical insights stress the importance of speedy utilization of dynamic capabilities, data from several case firms demonstrate that the attunement of their deployment to market conditions may also have an impact on their rate of growth. Even though prompt utilization and pioneering would be possible, some companies do not aim to be first-to-the-market, but rather wait until market uncertainties are resolved before making adjustments to their resource base. For instance, Company G identified that new regulations would lead to changing client demands, requiring new service offerings. Consequently, the firm was aware that changes needed to be made to their business model in order to maintain growth. However, due to resource restrictions (Company G is a medium-sized player in the industry) the firm followed an analyzer strategic orientation (see Miles and Snow, 1986), and focused on delivering high quality services in its established markets while looking for new opportunities. Consequently, while competing in their established markets, they developed complementary skills and resources, through staff training and new staff recruitment, in order to reconfigure their business model and respond to the apparent new market

development. From an industry perspective an instant response once the opportunity was identified would have likely been desirable. However, in this case the firm was not able to respond instantly without compromising quality of services that clients were accustomed to. Although their inability to immediately respond to this latest market trend resulted in the firm being a relatively weaker competitor against the ‘big four’, it was better for the firm to choose a later time of dynamic capability utilization to get the conditions for market entry right before entering with a new service and generating additional sales and improving firm growth. In support, Abell (Abell, 1978: 21) suggests that “*there are only limited periods during which the ‘fit’ between the key requirements of a market and the particular competency of a firm competing in the market is at an optimum.*” He further argues that entering a new market requires effective attunement to that it coincides with a suitable ‘strategic window.’ Bucknell (1982) makes reference to three different circumstances that may affect attunement: when the window is open (optimal entry), when the window moves (poor timing), and when the window does not exist (improper market assessment).

In a similar vein, Company K illustrates the impact of attunement on firm growth. The firm sensed that customer demand and technologies were changing; landline, broadband, and mobile services were becoming increasingly integrated. Following a prospector strategy (see Miles and Snow, 1986), the firm was prompt in seizing this opportunity; they invested heavily when entering the landline and broadband markets. This led to a reconfiguration of company strategies, internal technologies and staff resources. In retrospect, using dynamic capabilities straight away and entering the broadband market so promptly was poorly attuned for the firm. This new venture was more complex than anticipated and crucial complementary capabilities were lacking. As such, the firm is still dealing with the consequences of limited product

knowledge and financing issues arising from their inappropriately attuned implementation of the new strategy:

The complexity of selling a broadband [ADSL] product is much higher compared to just selling a SIM card to customers [...]. As we sold the broadband product first to our best clients and the product didn't work, this had a massive negative impact on the customer satisfaction and we lost high-quality customers. (*Head of Division Strategy & Business Development, Company K*)

However, despite the short-term negative implications of this move, the prompt seizing of this opportunity through investments and resource base reconfigurations, secured a reputation for the firm as a 'triple-player' in the telecommunications market. This led to medium and long-term growth which outweighed the short-term losses.

Summing up, our findings are consistent with research on first movers, which indicates that it may be more beneficial for a firm not to be the first one to deploy its dynamic capabilities to seize an opportunity but rather to wait for appropriate attunement. Based on the preceding discussion, we propose that the attunement of dynamic capability utilization strengthens the resource base and, ultimately, improves firm growth.

*P2: Attunement of a firm's a) seizing and b) reconfiguring processes is positively related with a greater growth rate.*

### ***Frequency of dynamic capability utilization***

A complementary time-related attribute concerning the utilization of dynamic capabilities is the frequency with which firms deploy them in a given time period. Frequent use of opportunity sensing processes indicates that a firm scans the marketplace for opportunities and threats (Daft

et al., 1988). Teece and Al-Aali (2011: 514) state that “‘*sensing*’ includes detecting the right timing for market entry.” Consequently, frequent sensing activities as described earlier in this paper will render the firm more likely to attune the utilization of dynamic capabilities to internal and external conditions. Firms that frequently exercise their scanning processes increase their knowledge of competition, markets and technologies; that is they are more likely to detect suitable opportunities and ‘windows’. For example, increased market knowledge is necessary to increase market performance (Dierickx et al., 1989; Kohli and Jaworski, 1990; Narver and Slater, 1990); the increased stocks of market knowledge are executed through the firm’s marketing capabilities (Barney, 1991; Day, 1994). Frequent engagement in sensing processes may further lead to earlier detection of technological developments and may ultimately increase a firm’s technical knowledge (Cohen and Levinthal, 1990). Increased technical knowledge may positively affect technological capabilities, for example, by leading to a more efficient and effective production department through which firm profitability increases. Consequently, the more often the firm scans the environment for opportunities and threats, the more likely it is that the firm identifies market developments in time and can make appropriate investment decisions (i.e., seizing processes) and adjustments to the resources base when required (i.e., reconfiguring); all to improve growth.

The second mechanism through which frequent dynamic capability use influences the speed and the attunement of dynamic capability utilization and growth is derived from organizational learning theory and, thus, is related to Zott’s (2003) finding that learning is a performance-relevant dynamic capability attribute. Zahra, Sapienza and Davidsson (2006) state that both operational and dynamic capabilities improve commensurately with the frequency with which they are used, as firms gain expertise simply through repeated activities. Capabilities

develop and improve through learning from repeated trials (Cohen and Levinthal, 1990; Zahra and George, 2002) and through experiential learning (George, 2005). As firms use their dynamic capabilities in similar and dissimilar situations, “*they learn more about cause-and effect relationships and how to achieve desired results*” (Zahra et al., 2006: 927). The more frequently firms use processes relating to sensing and seizing opportunities and reconfiguring their resource base, the more these processes become part of the organizational memory. Thus, the learning inherent in frequent utilization of dynamic capabilities leads to the stronger effect of dynamic capability use (Zollo and Winter, 2002).

Indeed, Jantunen et al. (2005) found that frequent reconfiguring improves firms’ ability to compete and, in turn, their performance. Firms that frequently use reconfiguring processes will be more prepared and capable to adjust their resources and capabilities matching conditions in the environment, and will achieve growth and ultimately survive. Firms with limited familiarity in reconfiguring their resource base will find adjusting them more costly, more difficult, and less effective, thus reducing evolutionary fitness (Helfat et al., 2007). Furthermore, less experienced firms will be less likely to benefit from gains in efficiency when major changes are suddenly determined to be necessary (Zahra et al., 2006). Firms that effectively implement new strategies and processes to align their resource base with environmental conditions achieve greater growth than their more passive counterparts (Jantunen et al., 2005). Also, frequent reconfiguration of resources and capabilities reduces the risk of organizational inertia (Levinthal, 1991).

On the other hand, using dynamic capabilities frequently may have negative performance consequences. Frequent adjustments of the resource base may lead to a loss of short-term efficiency (see also Helfat and Peteraf, 2009). Also, frequent use of capabilities may foster ‘superstitious learning’ which results in overconfidence in a firm’s use of its capabilities and may

ultimately negatively affect a firm's evolutionary fitness (Zollo, 2009). These findings pose some additional issues about the effects of frequent dynamic capability use on evolutionary fitness.

Our data indicate that the improvements from using dynamic capabilities outweigh the negative consequences. This positive net effect of dynamic capabilities on evolutionary fitness has also been established in previous research (Drnevich and Kriauciunas, 2011; Zahra et al., 2006). The positive effect of frequent use of dynamic capabilities is, for example, illustrated by Company E. Frequent use of dynamic capabilities led the firm to become

more familiar with change and [...] less threatened by it and gain confidence that you can deal with it. (*CEO, Company E*)

This enabled the firm to reconfigure its resource base ahead of competition by quickly changing its target market and changing the way business was executed through, for example, implementing an online ordering system; which resulted in both sales growth and efficiency gains. Given our secondary research, there was no evidence that competitors of this firm dealt as confidently with change and reacted as quickly as Company E. Further cases have also shown that frequent use of dynamic capabilities improves the processes of sensing, seizing and reconfiguring and ultimately enhances evolutionary fitness, even if the situations in which dynamic capabilities have been utilized previously may differ. Company J's industry experienced a period of negative growth, and overall risk in the industry was higher than the ten-year average (IBISWorld, 2012). However, its previous experience with such situations allowed the firm to be quicker in reconfiguring its resource base through better management processes:

It doesn't matter whether it is growth or shrinking or the recession or merger or acquisition. The ways around how to manage people [when making adjustments to your business] are equally applicable. People worry whether it is good news or bad

news, people are always concerned about what does it mean for me. So applying lessons from this becomes really important. (*CEO, Company J*)

Closely related, Company J's previous experience of deploying dynamic capabilities in similar situations of financial turmoil enabled it to seize market opportunities and improve overall sales. According to independent industry reports and financial news<sup>1</sup>, Firm J went out stronger from this financial turmoil than most competitors. The main reasons for this were that due to previous frequent engagement in merger and acquisition activities and international expansion, Firm J was able to quickly reconfigure its resource base through acquiring competitors and expanding into new international markets. These examples show that improving the processes that make up dynamic capabilities leads to improving the effectiveness of their utilization; and ultimately to strengthening their rate of growth. Accordingly, we propose:

*P3: The more frequently a firm engages in sensing processes, the quicker it goes through the processes of a) seizing and b) reconfiguring.*

*P4: The more frequently a firm engages in sensing processes, the more attune the utilization of a) seizing and b) reconfiguring processes will be.*

*P5: The more frequently a firm engages in a) sensing, b) seizing and c) reconfiguring processes, the greater the firm's rate of growth.*

## **DISCUSSION AND CONCLUSION**

This article explores the performance-relevant attributes concerning dynamic capability deployment, highlighting the usefulness of integrating first-mover literature (Lieberman and Montgomery, 1998), learning theory (Zahra and George, 2002; Zollo and Winter, 2002) and the

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<sup>1</sup> The relevant information was extracted from an independent industry report and several financial news sources; however, referencing the source would make it possible for the reader to identify the organization.

dynamic capability view (Teece, 2007; Zahra et al., 2006; Zott, 2003). The findings are a set of propositions.

The findings of this research are relevant to both managers and scholars. Market change calls for control and reconfiguration of the organizational resource base in order to maintain or increase firm growth and evolutionary fitness. This paper outlines the development of a conceptual framework describing the influence of the rate of dynamic capability deployment on firm growth. Dynamic capabilities comprise a firm's capacity to sense, shape, and seize opportunities and to reconfigure the resource base, which in turn affects its growth and evolutionary fitness. The framework proposes three important attributes that characterize the rate of dynamic capability deployment: attunement, speed, and frequency. More frequent use of dynamic capabilities improves firm growth and evolutionary fitness, as firms gain confidence in responding to change situations, and increases the likelihood of well-timed utilization of seizing and reconfiguring processes. Further, the speed of dynamic-capability deployment has a positive relationship with firm growth. Finally, opportune attunement of dynamic capabilities utilization has a positive impact on firm growth.

### ***Implications for theory***

This study contributes to dynamic capability research as it explicitly investigates the performance-relevant attributes of dynamic capability deployment and provides new insights into how and when dynamic capabilities affect firm growth. Previous research mainly focuses on the development and existence of dynamic capabilities; few studies explore the growth implications of dynamic capability deployment. Consequently, few insights are available into why it is important for organizations to develop dynamic capabilities in the first place and how and when

they matter. By adopting a process view of dynamic capabilities, this study identifies frequency, attunement and speed as important performance-relevant attributes of the rate of dynamic capability deployment and describes how dynamic capabilities affect firm growth.

More specifically, differences in attunement, speed, and frequency of dynamic capability utilization lead to differences in growth between firms. We show that the processes underlying dynamic capabilities, in the form of sensing, seizing and reconfiguring, differ in their impact depending on the level of attunement, how often they are utilized and how quickly the firm goes through these three processes. Frequent dynamic capability utilization is positively related to firm growth through two mechanisms. First, frequent engagement in sensing processes increases market knowledge and increases the likelihood that opportunities and threats are discovered at the right time which leads to better quicker seizing processes (such as investments in new product development and new markets) and reconfiguring processes (such as a change of the business model). Second, frequent utilization of dynamic capabilities leads to an improved understanding of how to best use them, enhances their quality and thus ultimately increases the likelihood of achieving desired outcomes of their utilization.

Also, speedy use of dynamic capabilities, that is, quickly undergoing the processes of sensing and seizing opportunities and reconfiguring the resource base, is positively related to firm growth. This is in line with previous research that states that firms that swiftly react to change increase the likelihood of survival and growth. Finally, this research finds that attunement of using dynamic capabilities is positively related to firm growth. Attunement refers to firms making appropriate decisions regarding aligning organizational actions with internal and external conditions in a timely manner which favors the deployment of dynamic capabilities.

In terms of performance-relevant attributes that characterize the rate of dynamic capability deployment, we found that the timing of using seizing and reconfiguring processes needs to be attuned, for example, with the firm's overall strategic orientation. Strategic orientation is defined as *"how an organization uses strategy to adapt and/or change aspects of its environment for a more favorable alignment"* (Manu and Sriram, 1996: 79). Strategic orientation influences actions within the firm and is concerned with a firm's decisions aimed at achieving superior performance outcomes (Slater et al., 2006). It further offers general guidance for resource base creation and utilization and how to respond to opportunities and threats (Zhou and Li, 2007). As one example, Miles' and Snow's (1978; 1986) framework differentiates strategic orientations along the rate at which a firm changes its products or markets (Hambrick, 1983). They identify four different strategic orientations: prospectors, defenders, analyzers and reactors. Our findings show that early utilization of dynamic capability processes is beneficial and has positive performance effects for prospectors that aim to be first-to-the-market and act proactively. The success of prospector firms depends on strong opportunity-sensing processes (Teece, 2007), which are supported, for example, by strong market-research capabilities and close ties with distribution channels (Hambrick, 1983; McDaniel and Kolari, 1987; Shortell and Zajac, 1990). On the other hand, analyzers that intend to diversify into new markets and are characterized as seeking to achieve both efficiency and flexibility benefit from waiting with utilizing seizing and reconfiguring processes until uncertain market situations have been resolved. Further, analyzers that benefit from continually monitoring developments in markets and responding to these developments frequently become leaders in prospector markets or secure efficiency in defender markets. Thus, frequent opportunity sensing is crucial for analyzer organizations and has strong growth implications.

In conclusion, this study makes an important contribution to understanding firm growth through explicating the extent to which the rate of dynamic capability deployment matters. This study's propositions extend the present conceptualization of the dynamic capabilities view and echo Penrose's (1959) emphasis on considering the time dimension when improving firm growth through continued efforts in creating innovative resource configurations; the sense of timing of the underlying processes has, however, not been sufficiently examined for more than half a century since she has alluded to its importance.

### ***Managerial implications***

From a managerial point of view, our study carries some important implications. The deployment of dynamic capabilities enables firms to respond to the environment and to shape opportunities. Thus, it is essential for firms that seek to grow to systematically invest in dynamic capabilities as well as in their actual deployment: possessing them is not sufficient but the rate of their deployment matters. Sensing activities imply scanning, search, and exploration activities across technologies and markets, using for example close university and researcher contacts, exchange of staff with relevant firms, and attendance of scientific and industry conferences. Further, close customer and employee interactions enable firms to identify opportunities ahead of competition. Seizing and reconfiguring occur through entering new markets, changing business structures and strategies, mergers and acquisitions, and providing new products and services. Faster utilization of dynamic capabilities may lead to increased firm growth. Further, more frequent use of dynamic capabilities improves the quality of a firm's dynamic capabilities and leads to improved alignment of the firm with environmental conditions.

### *Implications for future research*

Further research could explore the contexts in which the identified attributes that characterize the rate of dynamic capability deployment are most likely to affect firm growth. What are the boundary conditions under which speedy, timely and frequent dynamic capability utilization positively contributes to the rate of firm growth? Our case vignettes have described unique situations in which certain rates of dynamic capability deployment have influenced firm growth.

It seems therefore likely that the influence of the three dynamic capability processes and their performance-relevant deployment attributes of attunement, speed and frequency vary with different contextual factors. Thus, further research could investigate in more detail the contextual factors in which the rates of dynamic capability matter, such as a firm's culture and strategic orientation. Also, previous research suggests that performance differences among firms can be attributed to heterogeneity in distinct bundles of resources and capabilities (Barney, 1991; Peteraf, 1993; Wernerfelt, 1984). As dynamic capabilities are deployed on the resource base, this heterogeneity may be the result of dynamic capability use. Firms may control similar dynamic capabilities but their capacity to make use of them in consideration of a suitable deployment rate may differ (Eisenhardt and Martin, 2000). Different utilization of dynamic capabilities can lead to heterogeneous resource base configurations that in turn affect performance (Zott, 2003). Thus, further research could specifically analyze how the firm's idiosyncratic resource base mediates the relationships between the performance-relevant dynamic capability deployment attributes frequency, speed and attunement and firm growth.

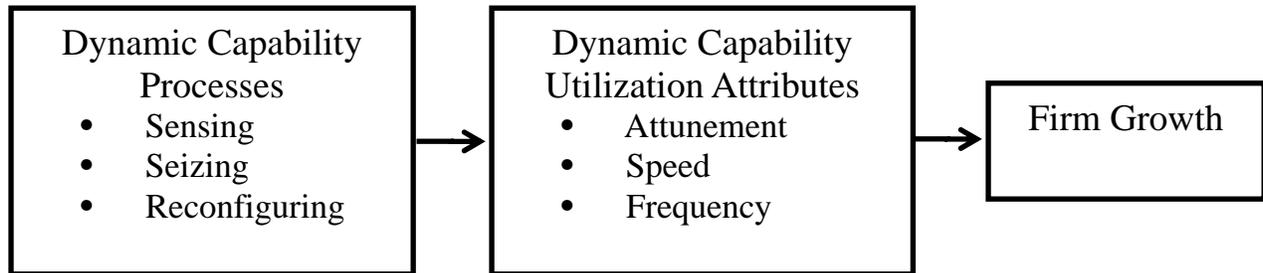
Second, although the focus of this study was to theoretically derive performance-relevant dynamic capability deployment attributes and offer tentative support from empirical cases, a limitation of this study is that it is based primarily on data from key informants. The key-

informant method may be restrictive, as it may lead to informant bias. Thus, to reduce this informant bias, we triangulated the insights gathered from key-informants with data from other sources (e.g., financial reports, news clippings, and industry reports). Additional research could aim to use multiple key informants to develop a more complete picture of a firm's processes underlying the rate of dynamic capability deployment and associated outcomes of such activities.

As described by Helfat et al. (2007), both firm survival and firm growth are relevant measures of evolutionary fitness. All of our case vignettes firms have survived the three years following the initial data collection (at the time of writing this paper). Further research could investigate the firm survival component of this performance measure in more detail, such as through using credit ratings (which may provide an indication of the likelihood of firm survival for a given timeframe) or a genuinely longitudinal study. Further, such a longitudinal study would provide additional insight into how the rate of dynamic capability deployment affects changes in the resource base and ultimately a firm's rate of growth, as the effects of dynamic capabilities and associated reconfiguring activities are typically occurring over time.

**FIGURE 1**

**A framework of the rate of dynamic capability deployment**



**TABLE 1**  
**Overview of case vignettes**

<b>Firm</b>	<b>Business description</b>	<b>Employees</b>	<b>Data sources</b>
A	Auditing & accounting services	6500	Interviews (Managing Partner; three experienced auditors), company reports, news clippings, industry reports
B	Auditing and accounting services	>900	Interview (Principal Auditing & Assurance), website, news clippings, industry reports
C	IT service provider	3000	Interview (CEO), website, company reports
D	Business services	>80	Interview (General Manager)
E	Business services	>150	Interview (CEO), industry reports
F	Business services	120	Interview (CEO), industry reports
G	Consulting	120	Interview (Managing Director), website, industry reports
H	Market research	372	Interviews (Managing Director; one experienced employee), website, industry reports
I	Market research	>30	Interview (Director Quantitative Research; former employee of new quantitative division)
J	Financial service provider	>1300	Interview (CEO), website, news clippings, company reports, industry reports
K	Telecommunication services	3000	Interview (Head of Division Strategy & Business Development; Head of Product Marketing Devices), company reports, news clippings, website, industry reports
L	Contract research provider	400	Director - Finance and Business Operations, company reports, news clippings

**TABLE 2**

**Categories for data analysis**

<b>Theoretical Categories</b>	<b>Sub-categories</b>	<b>Operationalization</b>
<i>Dynamic capabilities</i>	Sensing & shaping	Frequency and speed of search procedures for knowledge acquisition from internal and external sources to identify opportunities and threats
	Seizing	Frequency, speed and attunement of organizational processes aimed at responding to opportunities and threats
	Reconfiguring	Frequency, speed and attunement of activities concerning change such as in business strategies, business operations and markets
<i>Evolutionary fitness</i>	Firm survival	Likelihood of future business operations
	Firm growth	Growth in sales and market share

**TABLE 3**

**Categories and data**

Theoretical Categories	Representative Data
<i>Dynamic capabilities</i>	
A. Sensing & shaping	<p>A1. “We have a number of alliances with companies in other states. [...] My fellow director is in a courier association, he has been president of that association and so we gathered information about what was happening in the industry. [...] And also our clients gather information [...]; that is where our salespeople get involved.” (CEO, Company E)</p> <p>A2. “We started the scenario planning exercise; it will capture a lot of information. We developed four scenarios of future state of [our industry]. Against those four scenarios we tested current trends in technology, social aspects, political aspects, consumer drivers.” (director, Company L)</p>
B. Seizing	<p>B1. “We have reacted to technological changes such as SMS and the iPhone as the market required this.” (general manager, Company D)</p> <p>B2. “We used to have manufacturing but funding got reduced there as they give it to nano-technology [due to the growing importance of this sector].” (director, Company L)</p>
C. Reconfiguring	<p>C1. “Our task was to restructure the organization from ten areas to four areas to build a more transparent organization.” (managing partner, Company A)</p> <p>C2. “[Entering into quantitative research created] a few challenges; first of all [...] quant research is fundamentally different to qualitative research. So it meant new people in the business that had a very different view on research than then qualitative people, so this company is set up as a qualitative shop, it has this qualitative feel about it, but obviously quantitative research is different.” (director quantitative research, Company I)</p>
<i>Evolutionary fitness</i>	
D. Firm survival	<p>D1. “[This fiscal year has shown] evidence of our ability to deliver surpluses in our finances for reinvestment in subsequent years.” (corporate report, Company G)</p> <p>D2. “We lost [our biggest customer] and in order to retain our cash flow we had to drop back the rest of our prices to the rest of our customers of about 20%, we couldn’t sustain that long-term. [...] We saw it as a way to retain out cash-flow in the short run.” (CEO, Company F)</p>
E. Firm growth	<p>E1. “Fiscal 2007 was another year of steady growth, strong operating performance and continued global expansion for [company x]. Company revenue increased by 16 percent to a \$736 million record. For the past five years, our compound average growth rate has exceeded 30 percent.” (corporate profile, Company G)</p> <p>E2. “We have seen growth from \$9 to 14 millions in two years.” (managing director, Company I)</p>

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