The importance of dynamic capabilities on creating sustainable competitive advantage through external corporate venturing: a case study on TomTom

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Abstract

In 2008 the Dutch company TomTom finalized the acquisition of its supplier Tele Atlas. The main goal for this acquisition was to increase its competitive advantage in the rapidly changing market of (mobile) navigation. This study tries to examine the importance of dynamic capabilities on creating sustainable competitive advantage through external corporate venturing, instead of classical merger and acquisition theory. Thereby the acquisition of Tele Atlas by TomTom is presented as a case study using a sample of 7 interviews with (former) employees of TomTom, annual reports, press releases and other existing case studies on TomTom. The findings show that the dynamic capabilities TomTom held prior to the acquisition changed over time and didn't create sustainable competitive advantage in the market of (mobile) navigation in the years following the acquisition.

1. Introduction

'We are well placed to consolidate our leading position.' (Harold Goddijn, CEO of TomTom, 2008)

The following thesis presents a study into the importance of dynamic capabilities on sustainable competitive advantage through external corporate venturing. External corporate venturing is the creation of new business activity for established organizations by developing, sponsoring or investing in other firms (Keil, 2004), and is a form of corporate entrepreneurship. Corporate entrepreneurship is defined in academic literature as a process for innovation and/or renewal by large firms, through extending their existing capabilities internally or by creating new organizations (Kuratko, Ireland & Hornsby, 2001). Previous research has already shown that external corporate venturing enables firms to create new capabilities and businesses, while existing merger and acquisition theory only described situations of realizing synergies by increased economies of scale and economies of scope (Hitt et al., 2001; Narayanan, Yang & Zahra, 2009). Also, researchers have found that when these new capabilities are rare and inimitable they can be described as dynamic capabilities, and will effect a firm's innovativeness and competitive advantage (Teece, 2007; Barreto, 2010). Academic literature describes dynamic capabilities as assets that enable firms to integrate, build, and reconfigure internal and external competences to address rapidly changing environments and hypercompetitive markets (Teece, Pisano & Shuen, 1997).

Prior research on the creation of these capabilities through external corporate venturing showed this is the effect of corporate entrepreneurship and organizational learning, and described how they could be used to improve a firm's performance and competitive advantage (Keil, 2004; Barreto, 2010). As organizational learning is a process of creating, sustaining and transferring knowledge within organizations, it is closely related to corporate entrepreneurship. The purpose of this research is to link the concepts of corporate entrepreneurship and organizational learning to the creation of dynamic capabilities that lead to sustainable competitive advantage, by approaching the acquisition of Tele Atlas by TomTom as a case of external corporate venturing. In order to investigate how these new capabilities

that are created through corporate venturing can be used to capture the effects of dynamic capabilities on sustainable competitive advantage, the following research question can be constructed:

> *To what extent did TomTom's dynamic capabilities create sustainable competitive advantage through the acquisition of Tele Atlas in 2008?*

The approach to answering this question is to describe the process of creating dynamic capabilities and to define these capabilities, using three sub questions: (1) *What was the level of corporate entrepreneurship at TomTom before the acquisition of Tele Atlas and how was this affected by this acquisition?* (2) *What impact had the acquisition of Tele Atlas on the existing organizational learning processes at TomTom?* (3) *Which dynamic capabilities were formed at TomTom through its path, processes and positions?*

Although the concept of dynamic capabilities is often being criticized for being too tautological and vague, some aspects can be measured through qualitative research. Dynamic capabilities are hard to measure using quantitative research as these capabilities are formed by processes, positions and path; not by measurable business results. Using qualitative research methods TomTom's processes, positions and path can be described and measured by analyzing their annual reports over the years 2007 until 2012, studying relevant case studies of TomTom and similar firms in similar markets and finally by interviewing (former) personnel of TomTom.

2. Background

The company TomTom (previously known as Palmtop) was founded in 1991 and focused on software development for business-to-business applications. Later TomTom started to develop assistance and mapping software for consumers, which could be used on PDA's. Just after their ten-year

anniversary, in 2002, their first official personal navigation application was launched. The TomTom Navigator was very successful and showed the need for an all-in-one solution for personal navigation. By hiring an experienced hardware team, TomTom was able to made the transition from being just a software company to being a more mature company. When they released the TomTom Go in 2004 they created an entire new category in consumer electronics, Personal Navigation Devices (PND's), that marked the start of their initial public offering in 2005 (Mulder, 2006).

In 2008 TomTom acquired its supplier Tele Atlas, which was as a form of vertical corporate venturing as Tele Atlas was supplying TomTom with maps which they used for the software of their navigation devices. Their main goal for this acquisition was to sustain their competitive advantage in the market of portable navigation devices and telematics. In order to meet this goal, they had set multiple strategic goals: realizing synergies through reducing the costs of producing maps and improving the quality of these maps. Although the acquisition strategy of most firms fail, other large firms like Toyota[1], Cisco[2] and Google[3] were able to realize synergies by acquiring external firms and their knowledge. Whether or not TomTom was able to achieve the same outcome in the fast changing market of personal navigation software and telematics, would mostly depend on their dynamic capabilities.

3. Literature review

External corporate venturing leads to the formation of new capabilities and businesses through organizational learning. These new capabilities can help firms to create sustainable competitive advantage, if they meet certain criteria. The concept of external corporate venturing is defined in the

[1] Dyer, J., & Nobeoka, K. (2002). Creating and managing a high performance knowledge-sharing network: the Toyota case. Retrieved on 20-09-2015 from http://dspace.mit.edu/bitstream/handle/1721.1/1441/147b.pdf

[2] Mayer, D., & Kenney, M. (2004). Economic action does not take place in a vacuum: Understanding Cisco's acquisition and development strategy. *Industry and Innovation, 11*(4), 299-325. Retrieved on 01-10-2015 from http://www.tandfonline.com/doi/abs/10.1080/1366271042000289333#.Vpga-5MrLVo

[3] Finkle, T. A. (2012). Corporate Entrepreneurship and Innovation in Silicon Valley: The Case of Google, Inc. *Entrepreneurship Theory and Practice, 36*(4), 863-884. Retrieved on 06-10-2015 from http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6520.2010.00434.x/epdf

theory of corporate entrepreneurship; while the approach to organizational learning, dynamic capabilities and competitive advantage is found in the fields of strategic management.

3.1. Corporate entrepreneurship

The concept of corporate entrepreneurship is derived from the term entrepreneurship, as described by Schumpeter (1949). An entrepreneur is someone who creates new goods or new methods of production, opens new markets or discovers new sources of supply, or carries out whole new organizations or industries. By doing so, entrepreneurs can change the traditional way of thinking and replace it with their own methods. When this phenomenon is applied to large firms, the concept of corporate entrepreneurship can best be described as the development of new ideas and businesses within large organizations – which is also called intrapreneurship (Burgelman, 1983). Zahra & Covin (1995) later defined corporate entrepreneurship as *the sum of a company's innovation, renewal, and venturing efforts*. The process that leads to the creation of these new organizations, renewal or innovation within an existing firm; is a firm's entrepreneurial activity. Existing research already showed that firms undertaking such entrepreneurial activities are able to improve their existing capabilities, create new capabilities and can realize synergies using the resource already present in their organization (Burgelman, 1983). However, for firms to be able to become entrepreneurial and introduce the entrepreneurial culture and mindset to their employees, it could take years of reorganizing and restructuring (Kuratko, Ireland & Hornsby, 2001).

3.1.1. Types of corporate entrepreneurship

Existing literature distinguishes four types of corporate entrepreneurship: (1) sustained regeneration, (2) organizational rejuvenation, (3) strategic renewal and (4) domain redefinition. The first one – sustained regeneration – is the most frequently adopted type of corporate entrepreneurship where

firms develop culture, processes, and structure in order to enable innovations that lead to new products in its current markets and the entrance to new markets with its current products. Organizational rejuvenation on the other hand aims at enabling internal processes and structure innovations, thereby making the firm more entrepreneurial without the creation of new businesses. Strategic renewal primarily aims at repositioning the firm in its external environment based on the nature of its competitors, while firms explore new products and markets that other firms have not yet discovered through domain redefinition. The main focus is not exploiting current opportunities, but exploring new opportunities (Dess et al., 2003; Covin & Miles, 2007). These four types of corporate entrepreneurship could aggregate three forms of new knowledge: (1) technical knowledge, which can be acquired through innovation and is used to refine current products and extend current product lines; (2) integrative knowledge, which is derived from the learning processes that combine a firm's resources and capabilities to create value; (3) exploitative knowledge, which combines technical and integrative knowledge to find new ways to create value. Firms can differentiate by using any of these three forms of knowledge in order to create new value (Dess et al., 2003).

3.1.2. External corporate venturing

As mentioned before, corporate venturing is a type of corporate entrepreneurship in which existing firms create new businesses or take an interest into firms outside their organizational domain in order to take advantage of new opportunities to aggregate knowledge that exceeds their current boundaries. This can either be setting up a new business within their organization (internal corporate venturing), setting up a business – joint venture – with a strategic partner (collaborative corporate venturing), or creating a new business outside their organization (external corporate venturing). It enables firms to create growth by: monitoring the development of technologies outside their own knowledge, taking in technologies previously used by partners, entering and expanding into emerging markets, and to become more innovative overall (Barkema & Vermeulen, 1998; Keil, 2004). Further research on

external corporate venturing through acquisitions by Vermeulen & Barkema (2001), has found a similar relationship between acquisitions and organizational learning. Acquisitions often lead to realizing synergies and create opportunities for learning through knowledge transfers. Although firms often pay a relatively high takeover premium, acquisitions can result in greater market power, help overcome entry barriers to new markets and increase knowledge and resources within an organization. As corporate venturing can best be described as a learning process in which a firm learns to operate in a different business domain by building new capabilities, reconfiguring existing capabilities, or developing processes to acquire firms and maintain their innovativeness, experience and knowledge; the concept of organizational learning will be described in the next section.

3.2. Organizational learning

Organizational learning is the process in which organizations acquire new knowledge, processes and maintain this knowledge and eventually uses or exploits it. These processes are formed through the firm's previous experiences and have lasting effects on the firm's ability to integrate research, development and manufacturing.

3.2.1. Types of organizational learning

However, Firms don't only learn from previous experience through path dependency. Huber (1991) noted five distinctive organizational learning processes: (1) congenital learning, (2) experiential learning, (3) vicarious learning, (4) grafting and (5) searching and noticing. The congenital learning process brings in all the knowledge at the time the organization is founded and cannot repeat itself afterwards. This process depends strongly on the path dependency of the founders. Experiential learning is a learning process that creates knowledge through direct experience, for instance through learning-by-doing or trail-by-error. Trial-by-error is a form of experimentation where different routines are tested at

the same time. Routines that meet their target – for instance that reach a certain productivity threshold – will be considered successful and are thereby increased, while less successful ones – meaning they don't meet their target – are decreased (Levitt & March, 1988). When firms learn from other organizations this is called vicarious learning, which is mostly based on imitation and thereby limited by intellectual property in the form of patents. Grafting describes a learning process where knowledge is transferred by hiring new employees or through the acquisition of other organizations. And finally, learning through searching and noticing – also called organizational search – is a gradually adopting and routine-based process in which firms search within their network for information that can be used to create new knowledge. The outcome of organizational search depends a lot on the firm's path dependency, as the variation of the pool and the intensity of the search depend on the firm's history of success and failure (Radner & Rothschild, 1975; Levitt & March, 1988).

3.2.2. Other influences on organizational learning

Zahra, Jennings & Kuratko (1999) first introduced the term acquisitive learning, which describes the transfer of knowledge that already existed, but didn't fit within the boundaries of the organization. Acquisitive learning is accumulated through the acquisition of other firms, thereby internalizing the knowledge of the incorporated firm. However, the concept of acquisitive learning processes is not an entirely new concept. It can be seen as a mixture of vicarious learning, grafting and organizational search. Knowledge transfers and ex-post case analysis also influence organizational learning. Knowledge transfers within firms usually result from organizational proximity, which can be defined as *two or more people being in the same location where there is both the opportunity and psychological obligation for face-to-face communication* (Monge et al., 1985). The implications on organizational learning are the greatest when communication, both physically and virtually, is stimulated. Another way for organizations to learn is through organizational growth, either by hiring new personnel or by the acquisition of an other firm. Organizational growth can be an important mechanism in learning processes, both within external

corporate venturing units and internal business units, when it's used as a method to transfer knowledge. It can increase communication between units when personnel is moved between different units (both internal and external). Also, experienced managers can be used to transfer knowledge in a teacher-pupil relationship with less experienced employees. Ex-post case analysis gives employees insights in what went wrong and what went right, which gives them the opportunity to learn. The quality of learning from these experiences largely depends on the amount of effort spent on analyzing the cases and capturing the lessons learned. Such cases have often been used to define processes and policies for future cases and are part of the path dependency of the firm.

3.2.3. Restrictions to organizational learning

However, organizational learning can also negatively affect a firm's dynamic capabilities. Firms that are active in rapidly changing markets often choose to hold on to a certain stability, thus firms will focus on the exploitation of markets they are already specialized in. Not only will firms alienate other markets they could exploit, their focus will also shift to the improvement of existing capabilities that fit these markets instead of the exploration of new capabilities. Overall this will lead to the crowding out of explorative activities, which is likely to be effective in the short-run but probably turns out to be self-destructive in the future (March, 1991; Levitt and March, 1993; 1998). This is also known as the *Icarus Paradox*. Basically this means that firms that are successful on a certain market for a long period, have the tendency to turn a successful pattern into a pattern of failure by (over)simplifying their operations and overrating their own procedures. The paradox in this theory is that the source of a firm's success is also the source of their failure (Miller & Chen, 1994). Firms can however prevent this and thereby be both successful on the short- and long-term by keeping the organizational structures, processes, systems and culture from their traditional business and new ventures separated. This form of structural ambidexterity requires strong relations between senior and executive levels across all units in the organization (Tushman & O'Reilly, 2006)

3.3. Dynamic capabilities

Dynamic capabilities are an approach to creating sustainable competitive advantage by firms in rapidly changing environments and hypercompetitive markets. They include the *ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments* (Teece et al., 1997). A firm that can exploit these capabilities, will be able to use this a basis for sustainable competitive advantage. This approach was preceded by another approach, called the resource based view (RBV) – to competitive advantage that shared a lot of characteristics. The RBV mentions the presence of assets that meet certain criteria (also called VRIN) firms needs to hold in order to be profitable and, in the end, competitive. These criteria are: valuable, rare, in-imitable and non-substitutable. Firms can for instance hold competitive advantage if they own a dominant brand or have economies of scale (Wernerfelt, 1984). The main difference between dynamic capabilities and the RBV is the focus on the capabilities instead of resources, as changes on managerial routines and capabilities can be accomplished easier. Wang & Ahmed (2007) stated that existing qualitative research has already revealed that certain dynamic capabilities are highly specific to a firm or industry, such as acquisition capabilities and knowledge management capabilities. The rarer, and less imitable these capabilities are - thus the more heterogeneous they are - the greater the influence on a firm's sustainable competitive advantage they have (Barney, 1991). The firm-specificity of these dynamic capabilities depends on three categories: (1) organizational and managerial processes, (2) asset positions and (3) path.

3.3.1. Processes

Processes are formed through a firm's positions and path and define their dynamic capabilities and ultimately its competitive advantage. These processes serve three distinctive roles: (1) coordination/integration, (2) learning and (3) reconfiguration. Managers are responsible for coordinating

both internal and external activities in order to achieve and maintain strategic advantage, which can merely be seen as a static concept. More important in the creation and aggregation of dynamic capabilities are learning and reconfiguration, which are partially described the concept organizational learning in section 4.2 (Wang & Ahmed, 2007; Teece et al., 2007).

3.3.2. Positions

The asset positions of a firm have great influence on its processes and thereby its dynamic capabilities. Within the theory of dynamic capabilities seven classes of assets are identified: technological, complementary, financial, reputational, structural, institutional, and market (structure) assets. Technological assets can be seen as difficult-to-trade intangible knowledge assets, often protected by intellectual property, which are complemented by other assets in order to be used in new products and services, either tangible (in example a device) or intangible (software). Firms that own technological resources that are relevant in their market, can create great strategic advantage over its competitors. Financial assets are tangible assets, either borrowed or generated internally, that include the capacity of a firm to fund its business activities. Reputational assets are intangible assets that shape response actions from buyers, suppliers and customers; and enable firms to reach certain goals in their market. Structural assets include the formal and informal structure of firms, that form its internal environment and their links to other firms. The formal structure includes the formalization – the level of standardization in jobs – and centralization – the level of distribution of hierarchy decision-making – of the organization, while the informal structure includes mostly culture. Culture can best be described as the character and personality of an organization; which makes it unique due to its values, traditions, beliefs, interactions, behaviors, and attitudes. Finally, institutional assets include public policies like regulatory systems, antitrust laws and intellectual property regimes; and market (structure) assets describe the market a firm is active in, meaning its external environment (Barney, 1986; Wang & Ahmed, 2007).

3.3.3. Path

The firm's path dependency describes its current and future decisions as a function of its previous decisions, and therefore affects their dynamic capabilities. Path dependency is different across firms and therefore hard for other firms to imitate. Although most researches note the positive effects of path dependency on dynamic capabilities, it could also lead to negative effects. Path dependency doesn't only means historical imprinting, but also refers to a situation in which successful activities lead to self reinforcing processes. These processes could lead to decisions that narrow down the scope of a firm's managerial strategy. In certain cases this could lead to such a narrowed down scope, and thereby such heterogeneous dynamic capabilities, that it could lead to lock-in or exclusion of plausible alternatives (Arthur, 1989). Also, the evolution of new capabilities is impacted by the vision of the founders through a process of local search and adaptation. These cognitive frameworks are part of the learning process before the existence of the firm, whereby the knowledge of the organization is brought in when the firm is founded (Keil, 2004, pp. 810-813).

3.3.2. Restrictions to dynamic capabilities

However, existing research is struggling with finding the level at which dynamic capabilities create conditions in which a firm can create and sustain competitive advantage. According to Porter & Millar (1985) this is at the level of product market positioning, where dynamic capabilities are heterogeneous across firms and have a direct effect on a firm's competitive advantage. Something that is backed by other researchers who assumed that the more heterogeneous dynamic capabilities are, the more they will contribute to a firm's performance (Drnevich & Kriauciunas, 2011) Next to the level of product market positioning, dynamic capabilities could also contribute to a firm's performance and competitive advantage at the level of factor market sourcing (Barney, 1991; Peteraf, 1993).

3.4. Competitive advantage

Competitive advantage refers to a situation where a firm is able to perform better than other firms in their industry or market, through the use of their attributes and resources (Porter, 1980). Multiple theoretical approaches describe how firms can create such competitive advantage, starting with the five forces framework of Michael Porter (1980). According to this framework, competitive advantage depends on the environment of the firm. Firms can be profitable if they understand the underlying reasons for the profitability of competitors and are able to take defensive actions against these competitors. Another approach relies on game theory and is called the strategic conflict approach, where firms can create competitive advantage if they are able to outplay their competitors using strategy (Shapiro, 1989). Research by Barney (1986) has showed that organizational culture is a source of sustained competitive advantage for firms. Also, in order to be competitive firms need to address rapidly changing environments by creating an internal environment that encourages creativity, innovation and entrepreneurship in order to achieve both product and process innovations (Hull & Rothenberg, 2008). The more of these innovations a firm is able to implement, for instance by commercializing them or achieving synergies, the more competitive it will become in their market (Koellinger, 2008).

Finally, Teece et al (2007) defined three major dynamic capabilities that a firm should hold in order to grasp the most of today's resources tomorrow – which ultimately leads to competitive advantage. These capabilities are sensing, seizing and transforming; where sensing means the process in which firms identify and assess external opportunities. Seizing describes the process in which firm mobilize their resources in order to grasp value from these opportunities, and transforming stands for continuous renewal by a firm.

4. Research Methodology

The research methodology for this thesis can best be described as a case study – a *research strategy that examines, through the use of a variety of data sources, a phenomenon in its naturalistic context, with the purpose of "confronting" theory with the empirical world*' according to Piekkari et al. (2008). Therefore, the dynamic capabilities of TomTom in the years before and after the acquisition of Tele Atlas are examined by qualitative research. This case study consists of an analysis of documents that can be found online – e.g. websites, annual reports, press releases – and interviews with (former) personnel of TomTom.

4.1. Data Collection

Existing theory described four methods that can be used to gather information for qualitative research: participating in the setting, direct observation, in-depth interviews and analysis of documents (Merriam, 2009). For this particular research only the last two methods are used to collect data: 7 in-depth interviews with (former) personnel of TomTom were conducted over a short period; and annual reports, press releases and existing case studies on TomTom were analyzed.

In order to gain additional information on the topic an estimated 5-10 participants needed to be interviewed to meet the small participant research norm – which is the expected norm in qualitative research. These participants needed to be employees at TomTom or Tele Atlas in the period prior and/or after the acquisition of Tele Atlas by TomTom. Preferably they were somehow affiliated to this acquisition, either directly or indirectly. Using the business-orientated social networking platform LinkedIn and own business networks a pool of 25-50 potential participants were created and recruited by email, which resulted in 7 participants for the in-depth interviews. These interviews were semi-structured – only four questions were predefined – had an open character, and usually lasted somewhere between 15-20 minutes. The interviews were conducted by the researcher, either in-person or by phone, and whenever possible recorded with approval of the participant (Creswell, 2009). Annual

reports and press releases were collected from TomTom's corporate website, and any related case studies where found on Utrecht University's online library or on Google Scholar.

4.2. Research design

The process to approaching the research question involves combining the analysis of TomTom's annual reports and press releases, the analysis of previous case studies on TomTom and the results of interviewing (former) employees of TomTom. Altogether they are used to provide a clear image of what dynamic capabilities TomTom holds and to what extent they were able to help TomTom grasp sustainable competitive advantage through the acquisition of Tele Atlas.

The first draft of this case study was constructed from the analysis of TomTom's annual reports and press releases, which was later complemented with information gathered from previous case studies on TomTom. Insights into the history and structure of TomTom gives a good first look on the presence of dynamic capabilities at TomTom and were the starting point of this thesis. However, as this information was still incomplete, additional data was gathered with the help of the earlier described in-depth interviews. The main goal of these interviews was to find information that wasn't publicly available: such as the corporate culture of both TomTom and Tele Atlas, the presence of human resource processes, and the level of freedom employees had to explore own initiatives. This could be used to identify the level of organizational learning and to determine whether or not corporate entrepreneurship was part of TomTom's culture.

The interviews were recorded – whenever allowed by the participant – and later transcribed. Interviews with participants that didn't allowed the interview to be recorded where heavily documented. Later the interviews were imported into Nvivo10 and coded in order to gain a structured overview of the collected data. Answers from the participants were filtered into ten categories, that helped to normalize to data and make it usable for the research. Along with the information gathered from the document analysis this provided a feasible basis to answer the research questions.

4.3. Limitations

The greatest limitation of this case study is that the collected data is derived from only one company. Also, the participants were constricted to a Non Disclosure Agreement (NDA) and therefore the extent to some of their answers was limited or some answers might even be biased. The interpretation of the results is subjective and however the small participants' norm is fulfilled, additional participants would give more insights into this topic. The results are mostly descriptive and give an overall insight into organizational learning, corporate entrepreneurship and dynamic capabilities at TomTom.

5. Findings

With use of the theories and concepts mentioned above, dynamic capabilities at TomTom are researched using qualitative research methods. Corporate entrepreneurship and organizational learning at TomTom, together with its processes, positions and path can be described and/or measured by analyzing their annual reports over the years 2007 until 2012, relevant case studies of TomTom and by interviewing (former) personnel of TomTom. This section will describe the dynamic capabilities that TomTom had before and after the acquisition of Tele Atlas, how they did evolve over time, and finally how they impacted TomTom's performance and possibly led to sustainable competitive advantage.

5.1. Corporate Entrepreneurship

At first the level of corporate entrepreneurship at TomTom prior to the acquisition of Tele Atlas is investigated, followed by the level of corporate entrepreneurship after the acquisition. Most of these findings are conducted from interviewing (former) TomTom employees. Corporate entrepreneurship depends on a firm's entrepreneurial activity and can thereby be recognized by the creation of new organizations, organizational renewal or innovation using existing sources. In the end this will lead to

the formation of firm-specific capabilities, e.g. dynamic capabilities. Four types of corporate entrepreneurship at TomTom are analyzed: (1) sustained regeneration, (2) organizational rejuvenation, (3) strategic renewal and (4) domain redefinition.

Sustained regeneration

TomTom emerged to the market for PND's when it started to create its own hardware which ran the navigation software they had previously sold to handheld companies like Hewlett-Packard. Hereby TomTom created a new market from existing sources (sustained regeneration), which had a huge impact on their competitive advantage as they – especially in the beginning – had a monopoly on this market (Hoffman, 2010). However new players started to emerge fast, which forced TomTom to act upon the rapid change of their market as Participant #2 described: *"We kept getting new competitors, at first it were Hewlett-Packard and Compaq, then it were Garmin or Navtech, and around 2009/2010 Google started to supply smartphones with free navigation software. Nowadays we compete with companies like Apple, Uber and Waze, who are also our customers. Our competitive landscape keeps changing, we don't have a classic competitor like Philips and Samsung have"* (translated from Dutch). Eventually TomTom bundled services from companies they acquired; the services of Datafactory, Applied Generics and DLR were combined in order to keep the PND's of TomTom connected everywhere in order to deliver accurate information (Participants #2 & #3). Another example of sustained regenerating.

Organizational & strategic renewal

Prior to the acquisition of Tele Atlas TomTom was growing very fast and, according to all participants, becoming more corporate which led to both organizational and strategic renewal. The organizational structure of TomTom still allowed for internal innovation: *"If you had a good idea and a proven track record, you were given the possibility to present it"* (Participant #5, translated from Dutch).

According to 3 out of 7 participants, their level of entrepreneurial freedom dissolved as a result of growing organizational hierarchy and bureaucracy within TomTom, especially after the acquisition of Tele Atlas. The other 4 participants noted that there was still enough room to conduct into entrepreneurial activities, although – except for Participant #7 – this wasn't as much as prior to the acquisition and depended mostly on the mindset of your manager. Also, TomTom treated their innovation processes differently than their day-to-day business processes. As both participants #6 and #7 recall; the regular rules don't apply to new projects and development can occur much faster.

Domain redefinition

Although the creation of the PND can be seen as a form of domain redefinition, similar devices already existed. Meaning that TomTom already created navigation software for handheld devices of competitors, but weren't solely dedicated to personal navigation. Another possible occurrence of domain redefinition is TomTom's investment in automotive by buying Siemens VDO. However, during the studied time period no new markets or products resulted from this investment.

Knowledge & value creation

Using these four forms of corporate entrepreneurship, TomTom could derive value using the knowledge it created. They derived technical knowledge by both developing the PND, additional software and the acquisition of all related navigation firms – Datafactory, Applied Generics, DLR, Tele Atlas. The bundling of services from multiple acquisitions and products TomTom developed internally, show forms of integrative knowledge. TomTom didn't really seem to derive any value from this, as the acquisition of Tele Atlas was very expensive. By combining the technological knowledge and integrative knowledge TomTom derived from their corporate entrepreneurship, they could find new ways to create value – although during the time period of this research no concrete examples were present.

5.2. Organizational learning

Secondly the level of organization learning at TomTom prior and after the acquisition of Tele Atlas is investigated. Most of these findings are conducted from annual reports in the period 2007-2012 and from interviewing (former) TomTom employees. Firms gain knowledge that allows them to create value through five distinct organizational learning processes, namely (1) congenital learning, (2) experiential learning, (3) vicarious learning, (4) grafting and (5) organizational search.

Congenital learning

As congenital learning depends on the knowledge that is brought in when a firm is founded, the path dependency of TomTom prior to the acquisition of Tele Atlas is analyzed. TomTom's path dependency starts with the founding of the company Palmtop by Peter-Frans Pauwels and Pieter Geelen in 1991. They started developing software for the first generation of handheld computers, which reunited them with their old friend Harold Goddijn – back then the CEO of Psion, one of the largest producers of handheld computers. In 1994 they were joined by Corinne Vigreux, the wife of Harold Goddijn, with the intention to expand their sales across Europe. After years of focusing completely on business-to-business solutions, Palmtop started to produce consumer products and got renamed to TomTom in 2001 (Hoffman, 2010; Mulder, 2006). Harold Goddijn joined TomTom as a partner and got appointed as CEO of the company, that had a total of thirty employees at that time (TomTom, 2008).

After the initial public offering of TomTom in 2005, the number of employees started growing rapidly. But as of 2007 Goddijn still holds his chair as CEO of TomTom and the other co-founders are holding senior management positions, however none of them are part of the Management Board or the Supervisory Board. According to almost all participants the influence of the founders can still be noticed within the company. They regularly propose new ideas and initiate employees to elaborate on them, thereby also neglecting internal standard processes that apply to new projects (Participants #1, #2 & #5-#7). As participant #2 stated: *"The speed at which they [the founders] want to see their new ideas*

developed into products helps TomTom to stay innovative and somehow to remain a startup" (translated from Dutch). At the start of the business-unit Automotive CEO Harold Goddijn even acted as managing director until proper replacement was found internally in 2015, which also shows how involved the founder still is. Some participants still see as TomTom as the "family company" it once was, but indicated that the influence of the founders was degrading over the years (Participants #3 & #4).

Experiential learning

This organization learning process derives knowledge through direct experiences, either by testing out new products or processes or by benchmarking production methods. As TomTom is active in a rapidly changing market, it needs to continuously innovate itself in order to remain relevant. This is partially shown by the description of the sustained regeneration type of corporate entrepreneurship – in which new innovations are pushed forward through the organization, thereby neglecting the standard rules and processes. An example of a new innovation that was pushed forward was 'Map Share', which according to Participant #5 was created by TomTom co-founder Pieter Geelen in just one day. From 2010 onwards TomTom started to divide its organization into different business units with each were also divided into multiple teams. Hereby TomTom hoped to accelerate new innovations as employees were working closely together and were encouraged to change roles often (TomTom, 2010; Participant #3). Participant #1, whom started working at TomTom just before this division occurred, validated this practice: *"I didn't mind changing roles regularly, as this made my learning curve steeper. In my first few years I learnt a lot at TomTom, which helped me getting my priorities straight"* (translated from Dutch).

Vicarious learning

Vicarious learning is the process of creating knowledge by looking at other firms, mostly by imitation their ideas and/or products. As TomTom often turned their clients into competitors (or vice-versa), it sure looks like they were inspired by these (former) clients. At first they were only producing

software for the handhelds of Hewlett-Packard and Compaq, but later on they started to produce hardware (the PND's) very similar to these handheld devices that were dedicated to their own software. TomTom got competition from Google, which produced their own software for smartphones, and was forced to produce software for smartphones as well (Hoffman, 2010; TomTom, 2012). With the creation of MapShare TomTom hoped to force Waze out of the market, using a similar approach to community based maps (TomTom, 2011; Participant #2 & #3). Just at the end of the researched time period production on "TomTom Taxi" – a on demand taxi application – was started, but as their effort failed they have signed a deal with their competitor Uber to deliver them maps years later[4].

Grafting

The term grafting can certainly be applied to TomTom, as this describes organizational learning through hiring new employees or acquiring other companies. In the case of TomTom both the enormous growth the company experienced and the acquisition of numerous companies contributed to their organizational learning processes. Previous to the acquisition of Tele Atlas, TomTom already took over other companies including their technologies and employees – which gained them knowledge through organizational learning and more specific acquisitive learning. Although these companies were a lot smaller than Tele Atlas, the lessons learnt from these acquisitions could be used to smoothen the integration of Tele Atlas. In the end of 2005 the German based firm Datafactory AG was acquired, which had around 30 employees whom were working on telematics and fleet management software that was later used for TomTom's WEBfleet platform (TomTom, 2005b). One year later TomTom took over the technology and all 18 employees of the Scottish company Applied Generics Limited, which enhanced TomTom's mapping software with real time traffic information (TomTom, 2006b). Simultaneously TomTom took over a team of the research facility DLR, with formed the business unit Traffic Solutions

[4] http://corporate.tomtom.com/releasedetail.cfm?ReleaseID=942202

with the teams of Datafactory AG and Applied Generics. The acquisition of the R&D-department from the company Siemens VDO in 2007 included transferring all 90 engineers that worked on numerous automotive solutions – which is a clear example of acquiring. These technologies were mainly used to launch a new automotive division that is used to support TomTom's sales to car manufacturers (TomTom, 2007a, pp. 17-18). Also, TomTom acquired multiple patent portfolios from large firms in their industry; like Horizon Navigation Inc. in 2007, which developed navigation solutions for car producers like General Motors and Ford (TomTom, 2007b). By acquiring their supplier Tele Atlas in 2008, they hoped to reduce their cost and improve the quality of their maps. According to participant #5 TomTom was having trouble determining strategy: *"Buying Tele Atlas mostly resulted from frustration of our customers about the inaccuracy of our maps"* (translated from Dutch).

After the acquisition of Tele Atlas in 2008 Alain De Taeye, head of Tele Atlas since 1990, joined the Management Board of TomTom (TomTom, 2009a). One year later Joost Tjaden, who had been on the Supervisory Board of Tele Atlas from 1996 until the acquisition, joined the Supervisory Board of the TomTom Group. However, he resigned from his position in 2010 following accusations of possible bribery at a board position of another company (van der Boon & van der Marel, 2011). Despite the sudden leave of Tjaden, there were few transitions in members of both the Management Board and Supervisory Board. TomTom also acquired the relatively small technology company iLocal in 2009, which employed 70 people that all transferred to TomTom (TomTom, 2009b).

Also, as TomTom was growing rapidly their total number of employees was also growing at high pace. Were the company had only thirty employees at the time it changed its name to TomTom, in 2006 that number grew to 818 employees. One year later TomTom had almost 1,500 employees.

Table 1 – Number of Employees and Employee Growth at TomTom

	2006	2007	2008	2009	2010	2011	2012

Employees	818	1,337	3,498*	3,089	3,487	3,677	3,490
Growth (%)	-	63.4%	161.6%	-13.2%	12.9%	5.5%	-5.1%

Source: Data retrieved from the Annual Reports of TomTom (2007-2012).

* *Including 1822 new employees from the acquisition of Tele Atlas, excluding Tele Atlas the number of employees grew by 23.3% to 1,676*

As can be seen in Table 1, the number of employees at TomTom grew at a high pace. After the acquisition of Tele Atlas their number of employees grew by an astonishing 161.6% – even without this acquisition the total number of employees would have grown by 23.3%. Participant #2: *"The company was growing very fast, which you could notice by: the number of new colleagues I got every day, changing roles within the organization, meeting rooms were demolished to accommodate desks and meetings needed to be held in the café across the street"* (translated from Dutch). This participant however also stated that from 2006 onwards new management layers started to originate across the organization, and TomTom started to become more "mature". Other participants relate to this by stating that with both the growing number of employees and the growing importance of the business units, the organization itself became more hierarchical. Altogether, this required the new employees TomTom hired to think more in terms of processes: *"As a company grows, it will get more processes and more bureaucracy. I think this would happen at any other company as well. Otherwise the company could grow towards anarchy"* (Participant #7).

Organizational search

Organizational search describes the process of firms looking to create knew knowledge using information that's available inside their network. This is partially influenced by grafting, as TomTom either bought other firms and patents or hired new employees that extended their network. After the

acquisition of Tele Atlas, TomTom made rigorous changes to their human resources organization and started working on one single Performance Management System for all employees. Their renewed human resources structure is build upon best practices from the whole TomTom group and delivers efficient and effective human resources support, with feedback gathered though Employee Engagement surveys. Also, parts of their Human resource departments where placed in Tele Atlas' former office in Ghent, Belgium (TomTom, 2009a). In 2010 TomTom implemented their new talent management strategy that would replace all their other employee acquisition, management, retention and compensation strategies. This new strategy aims to provide a creative and stimulating work environment that should enable employees to use their skillset to build great experiences for TomTom customers, by giving them all the opportunities to fulfill their aspiration by interesting and challenging them. By matching senior executives to talented employees, knowledge could be transferred easier and vacancies in executive and key managerial roles could be filled easier from within. The whole strategy is based upon the fact that TomTom is operating in a fast moving and ever changing market. The renewal of TomTom's human resource strategy in 2010 was only the start of the restructuring of TomTom's entire organization, that aims to ensure all their processes are streamlined and effective. The three main goals of this restructuring were: (1) further improve relevance, usability and quality of their products, (2) empower all business and engineering units and further improve their accountability, and (3) save costs. From 1 January 2012 this renewal became effective. In order to meet these goals, they divided engineering units into smaller ones that report directly to business units that secure the company's high-level strategic objectives. Also costs were saved by moving a number of these engineering units, meaning at the end of 2012 about 65% of all TomTom employees were working outside The Netherlands.

5.3. Dynamic capabilities

The formation of dynamic capabilities depends on three categories: (1) organizational and managerial processes, (2) asset positions and (3) path. In order to have these capabilities generate sustainable competitive advantage they need to be valuable, rare, in-imitable and non-substitutable.

Processes

Within processes three types of processes can be indicated: (1) coordination/integration, (2) learning and (3) reconfiguration. Coordination/integration processes of TomTom are described in the following subsection about (structural) asset positions. Learning processes can be found in section 5.2., where four types of organizational learning processes within TomTom are defined. Lastly, reconfiguration processes depend on a firm's path.

Structural asset positions

Especially structural assets are important to the concept of dynamic capabilities given the constraint of this research – as the formal and informal structure of TomTom reflects its internal environment. The formal structure of TomTom can best be described by its level of formalization and centralization, while the informal structure can be described by its culture.

To describe TomTom's formal structure prior to the acquisition, at first its formalization should be analyzed in order to classify the level of standardization of jobs. A way of doing this is by looking at how TomTom tracks its employees, which showed that TomTom embedded a "General Performance Scheme" in 2007 and implemented a new "Training and Development" strategy. They also specified the individual development needs of their employees through their "Personal Navigation Plan" which shows that TomTom not only cared about their employees on group level but also on personal level (TomTom, 2007a). Centralization describes the hierarchy decision-making structure of a firm and an analysis of TomTom's corporate governance before the acquisition showed how risk is managed within the

organization. TomTom applies a top-down approach, where all the decision-making goes through an internal control system. This system is reviewed by TomTom's management board and is discussed at least once a quarter with the Supervisory Board. Some important features of TomTom's systems of internal control include the segregation of risk and accountability through the delegation of authority (TomTom, 2007a). From 2010 onwards TomTom made structural changes to its coordination/integration programs.

Participant #1, who works at TomTom since 2009, confirmed the approach of decision-making at TomTom is certainly top-down, however communication lines between employees and top-management are relatively thin. Multiple participants stated that the hierarchy at TomTom can be seen as "ever-changing": reorganizations that decrease the amount of management layers are followed by the creation of new management layers moments later. Although the vision of TomTom's management is to keep the organization as "flat" as possible, in practice this turns out to be hard. With the creation of the business units, such as Automotive, the creation of new management layers is unpreventable, notes participant #2: *"sometimes a manager only "manages" three other employees"* (translated from Dutch). Other participants whom are still working at TomTom – or worked there after the acquisition of Tele Atlas – agree with these two participants. The organization at TomTom is constantly changing and although the top-management remains approachable, the hierarchy cannot be described as "flat". This new approach also became apparent to TomTom's (former) employees that participated to this research. All participants stated that TomTom started to hire employees with more corporate experience, which reinforced the changing hierarchy inside TomTom even more.

A firm's culture is part of the informal structure of an organization and at TomTom all employees come from diverse nationalities. *"TomTom is born from a certain vision, formed through success, but our greatest challenges still lie ahead"*, according to Willem Bekkema – whom was working as a global manager on the human resource department from 2004 until 2006 (Mulder, 2006). Before the acquisition TomTom recruited, trained and developed every employee based on certain core competencies – leaving

role-specific competencies out of scope. These three core competencies were: open spirit, passion for result and innovative thinking. New employees at TomTom start with a standard induction program, in order to make sure they fit into their culture and don't dilute current values and beliefs. Also the previously mentioned General Performance Scheme allows TomTom to identify and fulfill the need for certain capabilities among their employees through their Training and Development strategy (TomTom, 2007a). According to participant #5 TomTom had no proper induction program for new employees when he started working there in 2004: *"we started working at 8 o'clock in the morning until 8 o'clock in the evening. We didn't have the processes TomTom has nowadays, those started to develop somewhere between 2004 and 2005"* (translated from Dutch). The other participants that worked at TomTom prior to the acquisition validated the answer of participant #5 by stating they either had a one-day or a two-day induction program that acknowledged them with TomTom's key values (e.g. core competencies) and made them familiar with all departments.

The acquisition of new companies led, according to all participants, to a change in the informal structure of TomTom, as there was a major culture difference between "new" employees from Tele Atlas and employees that were hired through TomTom's own human resources. Participant #1 clearly pointed out that being led by a TomTom manager has defined his own values, stated as "young and dynamic", in a different way that a Tele Atlas manager would have. Next to the acquisition of Tele Atlas; the acquisitions of Siemens VDO and a team of DLR influenced the culture at TomTom. According to participants #2 the largest difference between employees of Siemens VDO and TomTom was age: *"At Siemens VDO the average age fluctuated between 40 and 50 years old, while the average TomTom employee was 33 years old"* (translated from Dutch). Both participant #2 and #3 noticed differences between the team of DLR that was acquired and appointed to work on real-time traffic solutions from Berlin. Participant #2: *"They were far more a research facility than a business and didn't understand the startup culture at TomTom"* (translated from Dutch), which was acknowledged by participant #3 whom stated that: *"Germans are by definition different from the Dutch, as they tend to value hierarchy*

more. They also showed to take less initiative than other employees at TomTom" (translated from Dutch). Especially new employees that weren't transferred to an existing TomTom office, but remained working from their current location tended to deviate most from the informal organizational structure at TomTom. This became evident from the acquisitions of Siemens VDO, DLR and iLocal; according to the participants. With the acquisition of Datafactory AG the transition to working at TomTom was much smoother, as participant #3 explained: *"Datafactory AG was just a small club and used to the startup way of working"* (translated from Dutch).

Path

A firm's path doesn't only describe its previous decisions, but also describes its current and future decisions. TomTom started out as an innovative company that found itself active in a market that they had created themselves, but that was soon incubated by many competitors. As its path in the beginning was mostly formed by the cognitive learning processes of its founders, choices that they made along the way started to influence its future decisions as well through the formation of organizational learning processes. The most important decision TomTom probably made after entering the PND market was the acquisition of Tele Atlas. By acquiring their supplier, they hoped to reduce their cost and improve the quality of their maps. According to participant #5 TomTom was having trouble determining strategy: *"Buying Tele Atlas mostly resulted from frustration of our customers to inaccuracy of our maps"* (translated from Dutch). Also, TomTom invested in markets like the Automotive market by acquiring Siemens VDO; and for the market for business-to-business Traffic Solutions they acquired multiple companies like Datafactory AG, Applied Generics and DLR (Participant #2). These previous decisions influenced TomTom's current and future decisions, thereby they are essential to TomTom's strategy.

6. Discussion

After presenting the findings on the dynamic capabilities before and after the acquisition of Tele Atlas, a closer look on the impact these capabilities had on TomTom's competitive advantage taken. This however will remain a qualitative research, therefore no actual revenue or market share figures will be presented. TomTom's path and positions before the acquisition of TomTom have formed organizational and managerial processes, through organizational learning and corporate entrepreneurship, which created firm-specific dynamic capabilities. In theory dynamic capabilities should lead to increased competitive advantage, in the case of TomTom competitive advantage can be gathered by staying ahead of their competitors – such as Google – by adjusting their strategy to the rapidly changing markets they are active in. In order to do so, they had to be able to sense and seize opportunities while also begin able to transform along the way.

By both stepping into new markets and by acquiring firms and patents TomTom showed that is was able to sense opportunities and ultimately seize those opportunities. They created the market for PND's and continued to innovate this market, by acquiring firms and patents that allowed them to further improve their product. TomTom's formal and informal structural organizational were transitioning during this time from a startup to a (pre)mature company, in which certain core competencies were the common thread. They established human resource processes – such as induction days and personal development training – and created basic management processes.

As TomTom had previously acquired other firms and thereby also acquired their employees and technologies (e.g. patent portfolios), certain acquisition capabilities where formed through acquisitive learning. With the acquisition of Tele Atlas, TomTom wanted to consolidate their position on the market of PND's. However, this market started to dissolve – with the rise of smartphones and internal car navigation devices – which made it unable for TomTom to seize the short-term outcome of this acquisition. TomTom started to enter new markets as Automotive and Traffic Solutions. However, these entries weren't always successful as products like TomTom Taxi failed.

TomTom transitioned from a premature company, to a more mature company. This required them to continuously grow, which resulted in a huge amount of new employees. The acquisition of Tele Atlas almost doubled their number of employees, leading to changes in both their formal and informal organizational structure. However, in practice these transformations leaded to the division of TomTom into different business units and created cultural differences between employees. According to the participants of this research this transformation resulted in more bureaucracy, leading to less entrepreneurial freedom among TomTom's employees. Also, the acquisitions mostly created even more bureaucracy as communication between these newly created "institutions" within TomTom was hard and cultural differences between existing employees and acquired employees were present.

Altogether it seems as if TomTom's growth created bureaucracy, both by hiring more corporate employees – either through human resources or by acquisitions – and the division in different business units. Not only did this result in less entrepreneurial freedom – something which previously distinguished TomTom from other firms – it made it harder for new innovations to reach the market and also leaded to TomTom not being able to adjust to rapidly changing markets. Thereby losings its ability to sense new opportunities and therefore its ability to seize these opportunities. Although TomTom's organization was subject to constant renewal, this transformation didn't lead to an increased competitive advantage. However, as TomTom entered new markets that are still developing – like Automotive and Traffic Solutions – the odds could be in its favor in the future.

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