DYNAMIC CAPABILITIES AND PROCESS MANAGEMENT: SYNERGIES, CONFLICTS AND MISSING RELATIONS

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Abstract

Purpose of the paper: To explore the relations between the process management methodology (PM) and the Dynamic Capabilities theory (DC) by identifying synergies, conflicts, and missing relations between them.

Methodology: The paper is based on a systematic and two narrative literature reviews with a snowballing approach.

Main Findings: In this paper we identify two types of relations between these two concepts: conceptual, in terms of principles and their definitions; and for support. Moreover, we identify conflicts for companies to strive for exploration and exploitation simultaneously, which might be required for some of the synergies between the concepts. In terms of support synergies, certain preconditions were found for the synergy to occur.

Practical implications: A better understanding of the synergies between PM and DC and the identification of preconditions that enable the support of PM for DC and vice versa.

Originality/value: PM and DC have been researched since the 80s. However, their relation under-researched and it might have potential for enhancing the flexibility of the methodology, allowing companies to rapidly adapt to changes and innovation.

Type of paper: Conceptual paper

Keywords: process management; dynamic capabilities; business innovation.

Introduction

Process management (PM) has been proven to be helpful for identifying and fulfilling customer demand (e.g. Palmberg, 2009). Indeed, this methodology has been overly criticized for its need for structurisation, formalisation and standardisation. Specifically, some researchers debate that process management's formalisation and standardisation might limit a company's flexibility and adaptability to changes (e.g. Benner, 2009). On the contrary, some researchers hypothesize that the formalisation and standardisation might facilitate adaptation (e.g. Bergman, 2016). Process management is a methodology within quality management that deals with continually operating and improving processes. Researchers have proven that PM can bring benefits in terms of more effective use of resources, higher quality, more satisfied customers and non-conformance costs reduction (e.g. Palmberg, 2010, Cronemyr, 2007).

Nowadays, many companies are subject to fast changes. Regardless on the rapidness of the business sector they belong to. Some business sectors require high adaptability for new technologies and new requirements of their customers, which can vary significantly. For example, the road freight transport business sector is constituted by small and medium size companies. The business sector is not typically described as rapidly changing. However, the business sector is currently in a panic state for implementing new technologies and solutions to achieve the goals of the 2030 Agenda (REF). This agenda states that the road freight transport sector should decrease its CO_2 emissions to zero by the year of 2030. Examples of these new technologies and solutions are electric vehicles, optimisation routes and collaborations throughout the supply chain. In turn, this calls for rapid changes in both operational and strategic levels, while continuing to be a sector with low margin of profits. More specifically, the managers of these companies face challenges connected to these new technologies and solutions such as a need for clear and prompt communication with customers and suppliers and continuous monitoring of their services to ensure compliance with the customer requirements. A concern for the managers in these companies when introducing process management is that, while the methodology might contribute to an increase in the efficiency of the companies and their customer satisfaction, their flexibility for facing the needs from their customers and technology might be reduced by the appearance of standardisation and formalisation.

The dynamic capabilities theory emerged several decades ago and relates to the identification of needs for change and the adaptation and reconfiguration of resources for increasing sustainable competitive advantage (REF). The original idea for this study emerged from PM researchers and the possibility for dynamic capabilities (DC) to increase the flexibility and adaptability of the methodology. By studying PM from this perspective there could be a potential to the adaptability that DC provide companies through the development of sustainable competitive advantages (e.g. Teece et al., 1997; Teece, 2007, Kindström et al., 2013, Chen et al., 2019). Some researchers have studied the opportunities of intersecting the DC view and PM in the past (i.e. Benner, 2009, Bergman, 2016, Mitrega and Pfajfar, 2015, Trkman, 2010). However, to our understanding, the relation between them has not yet been researched in depth, which presents opportunities to fill the gap. Moreover, DC could contribute to understanding if process management could enhance efficiency without been a hinder for flexibility or for the methodology to be an enabler for this much needed flexibility.

Hence, the purpose of this study is *to explore the relations between the process management methodology and the dynamic capabilities' theory*. To achieve this purpose, two research questions were designed.

RQ1: What are the synergies between DC and PM?

The intention with this research question is to identify aspects that relate PM and DC to each other, for example in terms of support to one another, preconditions, theoretical and practical

connections between them. Nonetheless, it is important to investigate the other side of this potential relation. Therefore, RQ2 is designed as follows.

RQ2: What are the conflicts and missing relations between DC and PM?

This research question was designed to identify aspects that would distinguish PM and DC from each other; and aspects that could make them incompatible. This question is also intended to identify potential relations that are currently missing between the two concepts.

Method

This initial study is intended to be a basis for later determining if companies in the road freight transport sector can make use of PM to develop DC in a way they can improve their sustainable competitive advantages in terms of strategy, operative performance and environmental sustainability. However, this initial phase of the study limits to an exploratory literature review of the connections between PM and DC, by the means of a systematic literature review (Tranfield et al., 2003) and a narrative literature review in the form of a snowball approach (Wohlin, 2014). The method used for these literature reviews as well as for the analysis are explained in this section.

1. Systematic literature review

This type of literature review was selected due to the explorative nature of the study (Tranfield et al., 2003) with the purpose of discovering literature that related to the connection and misfits between PM and DC. This literature review was performed in the database Scopus due to its large collection of peer-reviewed literature, including scientific journals, books and conference proceedings. The search string for the literature review was "dynamic capabilit*" AND "process management", where * was a wild-card. No initial filters were applied to the search in order to fully scan the possibilities. A total of 44 articles resulted from the search. The first filtration of results was done by document type. Three of the results were excluded after this filter, they were conference proceedings that included one paper from each area but none in which both were studied. The second filtered applied was abstract, all the abstracts from the articles were read for identifying those mentioning possible synergies, conflicts and missing relations of PC and DC, simultaneously. The result from this filtering were 23 papers.

From these results, 22 papers were read, since one of the results was not available for reading. Then, these results were filtered by content, the entire papers were read and we tried to identify elements in which they had a connection to the purpose, RQ1 and RQ2 from this study. Finally, 15 papers resulted from this systematic literature review.

2. Narrative literature review

Smith (2012) mentions that narrative reviews are able to provide a broad view on a subject with a topical approach. For this narrative review, a snowball approach was used. This means that new sources were found from previously selected articles, such as the results from the systematic literature review (Wohlin, 2014). This was done in an iterative way, by identifying sources from the ones captured from the previously selected articles. All the articles derived from this search were preliminary filtered by abstract, followed by a filter by contents. Finally, six articles resulted from the narrative literature review.

3. Analysis of results

To ensure the correct interpretation of the findings, the researchers developed a document including all the relevant citations from the results with the respective interpretation and

potential connection to the purpose and research questions of the study. The connections included theoretical connections and misfits between PM and DC, as well as cases in which there was an implementation of one of the areas where the analysis involved a view from the other area. This document was reviewed by the other researchers and the findings were discussed when required.

Considering the purpose of the paper, as well as the research questions, we conducted an analysis of the results from both literature reviews based on the connections with the purpose and research questions of this study. We focused on identifying citations and statements in which other researchers had addressed the use of PM and DC or a theoretical connection between them. The aim was to find information that could contribute to identifying the synergies, conflicts and missing relations between these two areas, more specifically to answer RQ1 and RQ2.

Frame of reference

1. Process management

Process Management (PM) is a way to organize and manage operative, improvement and strategic processes to achieve customer, employee and owner satisfaction (e.g. Palmberg, 2009).

A. Principles in process management

PM is a methodology with quality management (Hellström and Eriksson, 2008) therefore has certain shared principles. First, PM distinguishes for the use of a process orientation. This process orientation identifies the activities necessary to deliver satisfactory products and services to the customer. Hellström and Eriksson (2009) explain that by using this orientation, companies can focus on the flow, instead of the hierarchical structure of the company. Through the bifurcation of a company into processes, it is possible to have a clearer view of the company and state a clear connecting between the different processes. In turn, this allows a system view of the company (Palmberg, 2009; Cronemyr and Danielsson, 2013). Moreover, the structure provided by PM facilitates the communication among the company, as well as with external actors (Palmberg, 2009). Among PM there is also a need to state clear responsibilities for the maintenance and continuous improvements of the processes (e.g. Balzarova et al., 2004; Spanyi, 2010; Hernaus et al., 2016). Balzarova et al. (2004) further explains that these governability over processes is done through the establishment of process teams and owners. Moreover, some researchers state that process ownership enables the institutionalization of process management and represents an organisational commitment vom Brocke et al., 2014; Van Looy, 2015). Hernaus et al. (2016) expand in the organisational commitment by highlighting the importance of top management commitment. The authors showed empirically that organisations with top management for the implementation of process management had better results in terms of process efficiency, process quality and process agility. Moreover, Hernaus et al. (2016) refer to the importance of the maturity of PM in the organisations by discussing that higher levels of maturity are associated with the creation of business areas specifically dedicated to process improvement which enhances the continuous improvement of the companies. Continuous improvement is another principle of PM that consists in continuously monitoring and gathering information about the processes to decide on improvements required for them in a continuous way (Cronemyr and Danielsson, 2013).

B. Processes and process maps

In the domain of PM, a basic term used is process, which can be defined as: '*a group of interconnected activities that transform input into a valuable output for a customer, who can be either internal or external*'. In literature the definitions vary some, but most definitions are very similar to this one, see *e.g.* Harrington (1991), Davenport (1993), Hammer & Champy (1993), Palmberg (2009), Bergman & Klefsjö (2010), Cronemyr & Danielsson (2013), Navarro (2019). A *process* is the *actual work* that is carried out in an organisation – planned or unplanned – while a *process map* is a graphical representation of how the activities in the process work *should be carried out*. In this way planning and coordination between actors and departments in the organisation can be improved while misunderstandings and errors can be minimised, in order to fulfil the customer needs (Cronemyr, 2007; Palmberg, 2010). Processes are often divided into Core processes with external customers, Support processes with internal customers, and Management processes which fulfil the strategic plans and requirements of the owners or top management (DeToro & McCabe, 1997; Nilsson, 1999; Cronemyr & Danielsson, 2013; Navarro, 2019).

C. Process Management maturity

The PM methodology that can be divided in three major and sequential tasks: (1) Process establishing, mapping and development; (2) Process analysis and improvement, and (3) Strategic process control, as described by Cronemyr (2007) and Cronemyr and Danielsson (2013). They also argued that, in order to succeed with a PM implementation, the three tasks should be carried out in the specific order: 1-2-3. Companies doing it in another order, or all at once, often failed because the tasks rely on results from the previous steps, as given 1-2-3. In step 1, processes are established from analysis of market, customers and business/core activities. In this step, the processes are developed and mapped. In step 2 processes are analysed and improved by studying feedback from employees and customers, as well as from monitoring and control. By measuring and analysing data, root causes to recurring problems can be eliminated by structured analysis and process improvement by e.g. the Six Sigma methodology (Cronemyr, 2007). In addition to an improved process, i.e. improved results, one will also understand what are the significant control variables that need to be controlled (statistical process control), and what are the significant noise variables whose impact need to be reduced (robustness). Finally, in step 3, the control variables are measured and controlled according to relations to result variables found in step 2. Results are monitored and if/when results do not reach targets, either the process needs to be controlled or, due to new internal and external circumstances, step 2 needs to be re-done to get new control laws. It must be stressed that all processes of a company are not at the same maturity level, and they do not need to go to level 3. It is decided by each management and process team, based on the process performance. Most companies working with PM have mainly processes at level 1, some at 2 and seldom at level 3.

2. The dynamic capabilities view

The dynamic capabilities' view seeks to explain how companies can sustain competitive advantage over time (Teece et al., 1997, Teece and Pisano, 1994), with the premise of changing the resource base as a prerequisite in today's volatile and turbulent business environment. Inspired by earlier theoretical lenses such as the resource based view of the company (Wernerfelt, 1984; Barney, 1991) and evolutionary theory (Nelson & Winter, 1982), and as an attempt to structure the growing body of literature dealing with resources and capabilities, it has been suggested that resources can be organised at different hierarchical levels (Winter, 2003). According to such a framework, a competitive advantage at a given point of time (Teece, 2007) is ensured by valuable, rare and imperfectly imitable resources (Barney & Clark, 2007),

thus explaining "how we earn a living now" (Winter, 2003). To sustain this advantage over time, such operational, static capabilities need to be coupled with dynamic capabilities that are hence aimed at the creation, extension and modification of the existing resource base (Helfat et al., 2007).

A. Processes in dynamic capabilities

Following this view, dynamic capabilities are often considered to be embedded in organisational and managerial processes or routines (Eisenhardt & Martin, 2000; Zollo & Winter, 2002). The concept of process, however, has not been clearly defined within DC literature. Nonetheless, the terms routines and processes are common within literature on DC. In recent years scholars have added other "managerial tasks" to be understood as dynamic capabilities, which are less routinised. For instance, Teece et al. (2016) argues that as DCs are needed to manage the "unknown unknowns", DCs may also contain an entrepreneurial component, in which finding new ways to operate is emphasized. Such a component is less routinized and repeatable than the original understanding of DCs as presented in e.g. Teece et al.'s (1997) original description of DCs and may be better described as a capacity or ability. Thus, apart from managerial and organizational change processes or routines that is featured by repeatability, dynamic capabilities have also been understood as a capacity or ability to change in a wider sense (see e.g. Helfat et al., 2007; Teece, 2007, Winter, 2003; Zahra et al., 2006; Barreto, 2010). Moreover, Farzaneh et al. (2022) highlight the importance of processes for knowledge creation. The authors mention that for firms to have competitive advantage, they should develop DCs that allow them to develop new knowledge and translate that knowledge into new processes and routines. The authors hypothesize that this increases the probability of innovating in terms of new services and products, as well as increasing the adaptability and flexibility of the organisation. Their results show that the structural capital of an organisation (i.e. processes, routines, instructions and other structures that support knowledge creation and management) is important for translating knowledge from an individual level to the entire organisation, which in turn enables change and innovation.

Trkman (2010) explains that the quest for achieving sustainable competitive advantage of process management can be explained by the DC theory in terms of continuous improvement. The author explains that a process view allows the monitoring of performance, as well as the analysis, design, management and optimisation. These aspects, in turn, enable the dynamic structure of an organisation, allowing it to better scan its environment and adapt to the required changes. Also, it supports the reconfiguration of resources, when needed. This capabilities are in line with the types of dynamic capabilities presented by Teece (2007) for sensing business opportunities and threats.

B. Types of dynamic capabilities

As a means to structure the growing body of literature on dynamic capabilities, Teece (2007) has proposed a general framework of the three capability classes of sensing, seizing and reconfiguring, in which microfoundations of the different classes, defined as "the distinct skills, processes, procedures, organizational structures, decision rules, and disciplines", are outlined.

Sensing (and shaping) business opportunities and threats cover a wide range of processes aimed at "discovering" opportunities and threats such as new technology or business models, as well as subsequent analysis and sensemaking of their potential. Continuously scanning, searching and exploring local as well as distant opportunities must thereafter be followed by appropriate analysis (Teece, 2007). Seizing business opportunities mainly involves the development and commercialization processes for the opportunities sensed. In this class, new products, services and processes are developed (Teece, 2007). Finally, managing and reconfiguring threats include the long-term coordination of tangible as well as intangible

resources, internally as well as externally to the company. The objective is to adapt the resource base to changing customer and technology developments, but also shape the market and ecosystem where it operates (Teece, 2007). Reconfiguring of organisational structures as well as other resources internally as well as external to the company, is hence needed for a sustained evolutionary fitness in relation to company growth and changes in markets and technologies (Helfat et al., 2007).

Results of literature study

1. Conceptual synergies and conflicts between PM and DC

Among the found literature, a synergy in terms of a theoretical perspective and principles was found between PM and DC. Several researchers identified a relationship in the definitions of DC and PM (Eisenhardt and Martin, 2000, Niehaves et al., 2014, Bernardo et al., 2017). Most of these researchers indicated that DC, PM and strategy are connected to each other in terms of their concepts by managing operational routines systematically. Within PM, process is a central concept, and the process orientation is a principle of the methodology. However, even when PM and DC share the focus on process, certain distinctions can be made in term of the rigorosity used for managing and improving those processes. For example, researchers within PM highlighted the importance of process governance through the establishment of process teams and owners (e.g. Barzalova et al., 2004; Trkman, 2010). The researchers state that this governance is a prerequisite for achieving a process orientation, and specifically for maintaining a continuous improvement. Furthermore, Kohlbacher (2013) identified a connection between PM and DC through continuous improvement. However, the author makes the remark of a conflict in that continuous improvement requires to be supported by management commitment and process orientation for it to contribute to innovation in a way that can be considered as a DC. Nadarajah and Kadir (2014) also intended to strengthen the theoretical fundamentals of PM and determined that it can be studied based on DC theory. This is due to the opportunities it represents for increasing sustainable competitive advantage. However, they found a conflict for this connection, PM requires the support of IT capabilities for achieving sustainable competitive advantages.

The DC theory also highlights the importance of processes and continuous improvements, separately. Researchers within DC explained that processes can be part of microfoundations for seizing opportunities and reconfiguring the resource base (Teece, 2007). However, there was no evidence of the level of rigorosity required for the management of the processes. Furthermore, within the results of the literature review, there was no evidence of the level of governance required for achieving the process orientation in DC.

Bernardo et al. (2017) concluded that one of the main points of convergence of the literature was that DC contributes not only to the conceptualisation of business process management but also to understanding the methodology. This is also in line with Trkman (2010) who suggested that the strive for continuous improvement from PM can be grounded in the DC theory, in combination with contingency theory ana task-technology fit. Anand et al. (2009) suggested that the continuous improvement principle of PM underlies that the methodology can be seen as a DC.

Ortbach et al. (2012) and Niehaves et al. (2014) took a step further into the relation between PM and DC by specifically considering that PM as a DC. Eisenhardt and Martin (2000) did not directly refer to the relation between PM and DC. However, these researchers defined dynamic capabilities as *"specific organizational and strategic processes (e.g., product innovation, strategic decision making, alliancing) by which managers alter their resource base" (p.1111)*. Furthermore they explained that the value of these dynamic capabilities lies in their ability to modify the resource base of a company.

Some other researchers did not identify PM as a DC but see a possibility for PM to be turned into a DC. Ambrosini and Bowman (2009) proposed that PM can become a DC when there is a proper process orientation and continuous improvement orientations. Ambrosini and Bowman (2009) highlighted that the continuous improvement orientation allows organisations to monitor their processes, determine needs for changes, and develop and implement improvement. Poeppelbuss (2012) identified a potential for PM to become a DC when there is a cooperation with inter-organisational partners in which the processes can be (re)designed. Contrary to this finding, Bititci et al. (2011) made a distinction between the types of processes included in PM. They conclude that managerial activities and processes are not valuable, rare, inimitable and non-substitutable resources and therefore they cannot be considered as DC. However, they propose that when managerial processes have high maturity, they can be difficult to imitate or replaced by competitors and therefore might contribute to sustainable organisational performance.

Poeppelbuss (2012) identified the possibility for PM to be connected to the dynamic capabilities theory through the DC classes proposed by Teece (2007), sense, seize and transform. This connection was also mentioned by Ortbach et al. (2012) and Bernardo et al. (2017). These researchers classify activities within PM connected to improvements as capabilities for sensing opportunities and threats. They classified activities for developing solutions as seizing capabilities; and activities supporting the implementation of those solutions as transformation capabilities. Table 1 summarizes the main synergies, conflicts and missing relations between PM and DC.

2. Practical synergies and conflicts between PM and DC

Several results from the literature reviews referred to practical aspects of the synergies and conflicts between PM and DC, in terms of implementation, uses and applicability. They are presented in this section.

The first synergy found in this category is the potential for PM to become a DC (Benner, 2009; Bagheri et al. 2019). Benner (2009) found that PM practices, such as codification and routinization, could be an indication of dynamic capabilities in companies. These practices cannot be considered as DC themselves, but PM has a potential to be considered as DC when it is used correctly and not only just for mapping and standardizing processes. De Oliveira Lacerda et al. (2014) suggested that PM may become a DC when it expands its objective from a seek for effectivisation and standardisation to a seek for identifying opportunities. This seek towards opportunities is done by identifying activities that hinder the goals' achievement for the company and finding alternative ways to use the available resources to achieve strategic goals and to generate sustainable competitive advantage. Moreover, Bagheri et al. (2019) suggested that PM can be considered as a dynamic capability when supported by IT-systems and when learning mechanisms are in place. This would support, according to the researchers, the co-development of key business process and IT-based systems that assist those processes. Nonetheless, the researchers mention that IT-systems should be based on the processes' needs, instead of basing the processes on the IT-systems.

Zollo and Winter (2002) did not specifically refer to a synergy between PM and DC. However, the authors do make a connection between learning mechanisms and some kinds of processes. They argued that a systematic way of designing, managing and improving the processes of the companies could support DC (Zollo and Winter, 2002). However, there was a distinction on the type of processes involved. Several authors suggested that it is the managerial processes the ones that have a stronger connection to DC since they deal directly with improvement, strategy and the future performance of the company; while support and core processes deal with operative efficiency (Zollo and Winter, 2002, Bititci et al., 2010, Bititci et

al., 2011). An important aspect of PM that makes this connection between the methodology and DC is the strive towards continuous improvements and the availability of established processes in charge of this task.

Some researchers have found that it is necessary for companies implementing PM to embrace change to obtain competitive advantage (Trkman, 2010; Bernardo et al., 2017). For embracing this change, they should ensure that their business processes are aligned with the environment and provide the flexibility and continuous adaptations needed for their core processes.

Some of the results pointed towards the ability of DC for enhancing PM performance (Seethamraju, 2012; Bernardo et al., 2017). Seethamraju (2012) explained that this enhancement is possible when the visibility and transparency of the company are improved through a better understanding, documenting, modelling and analysis of the company's business processes. However, Seethamraju (2012) highlighted the need for operative efficiency in terms of cost reduction and reduction of resource requirements.

Ambidexterity is a term linked to the relation between PM and DC. This term refers to the need of a company for both exploitation of resources and exploration of new opportunities. Benner and Tushman (2003) identified a conflict between PM and DC connected to ambidexterity, while Prester et al. (2019) suggested possibilities for a synergy between them. Some researchers argue that while PM might be beneficial for companies to deal with exploitation, it might encounter a conflict when referring to their ability to innovate (Benner and Tushman, 2003; Sehlin et al., 2019). They mentioned that the ability to innovate is one of the roots for dynamic capabilities, hence the conflict between the two concepts. Moreover, Benner and Tushman (2003) suggested that among the objectives of process management are the reduction of variation and the increase of control, which might also be hinders for innovation. Hence, PM may, over time, displace exploratory innovation, inhibiting the ability for companies to adapt to new environments such as technological ferment and uncertainty. However, Sehlin et al. (2019) presented an opportunity for reducing the conflict between innovation and business processes by incorporating knowledge exchange and digitalisation for continuously improving the processes. Contrary to the considerations made by Sehlin et al. (2019), Benner and Tushman (2003) and Prester et al. (2019) suggested that the incorporation of dynamic capabilities in the processes of a company might result in sustainable competitive advantage. They found that process exploration and process exploitation can be considered as PM capabilities needed for companies to achieve higher results in terms of business performance. They did the distinction, however, that for this to be possible, companies require to have well-established processes and constantly improve them based on the companies' learning capabilities and by scanning the environment for opportunities.

Sharma and Martin (2018) also identified the need for well- established and mature processes for PM to be able to have a synergy with DC. The authors found that only then, PM is able to support the development of innovative product and solutions through the establishment of processes specifically destined for innovation.

Table 1 summarizes the relations between PM and DC. In the table, the practical relations are included.

Table 1. Relations found in literature between PM and DC

Type of relation	Relation	Author
Synergies	Definition of DC as processes and routines. Systematically management of operational routines.	Eisenhardt and Martin (2000) Niehaves et al. (2014) Bernardo et al. (2017)
	DC can help understand PM	Trkman (2010) Nadarajah and Kadir (2014) Bernardo et al. (2017)
	Process management can be seen as a dynamic capability	Anand et al. (2009) Ortbach et al. (2012) Kohlbacher (2013) Niehaves et al. (2014)
	Process management can become a DC when used properly.	Ambrosini and Bowman (2009) Benner (2009) Poeppelbuss (2012) De Oliveira Lacerda et al. (2014) Bagheri et al. (2019)
	PM enables sensing, seizing and reconfiguring.	Poeppelbuss (2012) Ortbach et al. (2012) Bernardo et al. (2017)
	The structurisation from PM can increase the visibility and transparency of organisations, enhancing its performance and becoming a DC	Seethamraju (2012)
	Knowledge exchange and digitalisation can minimise the risk of sacrificing innovation for effectivisation.	Sehlin et al. (2019)
Conflicts	PM requires the support of IT capabilities for it to become a DC	Nadarajah and Kadir (2014) Bagheri et al. (2019)
	PM cannot be considered a DC until the managerial processes have reached a high maturity level.	Benner and Tushman (2003) Bititci et al. (2011) Sharma and Martin (2018) Prester et al. (2019)
	PM cannot be considered a DC if the focus of its utilisation is strictly on effectivisation	Benner and Tushmann (2003) De Oliveira Lacerda et al. (2014) Sehlin et al. (2019)
	It is managerial processes the ones that can become DC since they are directly connected to improvement, strategy and future performance.	Zollo and Winter, (2002) Bititci et al. (2010) Bititci et al. (2011)
	PM needs to embrace change and align with the environment to provide competitive advantages	Trkman (2010) Bernardo et al. (2017)
Missing relations	Rigurosity of structure and governance	Trkman (2010)

3. Preconditions and opportunities for synergies between PM and DC

Among the results we found that while several researchers mentioned synergies, they also mentioned prerequisites for the synergies (Bititci et al., 2010).

Some researchers highlight the importance of establishing mature processes that are controlled and managed properly before the possibility of PM to be linked to DC is considered

(Bititci et al., 2010; Sharma and Martin (2018). The reason for this argument is that the maturity and capability of business processes is a key determinant for their ability to adapt and respond to emerging threats and opportunities, which leads to the company's sustainability.

Contrary to these findings, Niehaves et al. (2014) argue that is it not always true that higher maturity processes are always the most desirable ones. Albeit, the researchers suggest that PM can be a dynamic capability by focusing on the business process management capability which they consider as the skills required to use PM methods and tools for improving the processes of the company.

We also found results that mentioned opportunities for developing DC through PM by, for example, the use of relations within the supply chain. Mitrega and Pfajfar (2015) propose that companies can be transformed through reshaping their resources based on information collected through those relations, which can help them cope with emergent threats and opportunities in their environment.

Bititci et al. (2011) suggest that the company's dynamic capabilities are partly determined by the interconnectedness of its managerial processes and how they are built into a system, including its organisation and manager perceptions. Additionally, Bititci et al. (2011) mention that a company can develop dynamic capabilities by having the ability to rapidly develop and implement responses to changes in an innovative way.

Another prerequisite found in literature for PM and DC to have a synergy is the scanning of the environment. Several researchers mention that it is important for companies to be aware of their environmental variables and organisational characteristics and that it is through these factors that they can improve their processes adequately (Niehaves, Poeppelbuss et al., 2014; Ali et al. (2019). On this aspect, Niehaves, Poeppelbuss et al. (2014) recognise that fitting PM to the environment can be costly and in cases where the environment is stable, it might then represent unnecessary costs that would not result in reasonable benefits.

Analysis

From the results we could identify two types of relations between PM and DC. They are analysed in this section.

The first type of synergy is a conceptual one, from the point of view of their principles and definitions. Several researchers identify a synergy between PM and DC in terms of their definitions (Bernardo et al., 2017, Niehaves et al., 2014). They highlight a connection between the strive towards continuous improvement from PM to the adaptability from DC. They also identify a connection in the systematic aspects of both concepts. Therefore, it is possible to identify an interesting connection between them and a potential consideration of process management as a dynamic capability or as a second order dynamic capability as are learning mechanisms when considering the findings from Zollo and Winter (2002) and viewing them from a PM perspective. From the literature on PM, among the purposes of using this methodology is to have a systematic way of working with processes and managing them so that they reflect what the company does and make all operations and leading activities work towards achieving customer satisfaction (e.g. Cronemyr and Danielsson, 2013, Palmberg, 2010). We found a potential conceptual synergy in the definition of dynamic capabilities provided by Eisenhardt and Martin (2000). They consider that dynamic capabilities can be processes when they are stable and provide the companies with the ability to adapt to changes and reconfigure their resources according to their current needs. This can be linked to the process maturity model exposed by Cronemyr and Danielsson (2013) where steps 2 and 3 provide processes that are in control and continuously improved to the needs of the business, based on data and input from customers, employees and partners. These processes could additionally be improved by scanning the environment for threats and opportunities, which could potentially lead to competitive advantage.

Following this line, PM can become a DC (Ortbach et al., 2012, Niehaves et al., 2014). If process management, combined with technological solutions such as IT-based systems, can generate valuable and hard-to-imitate properties in the processes, they could have a potential to translate these characteristics into dynamic capabilities. This could then generate a sustainable competitive advantage, given that these technological solutions are based on the requirements of the processes, as exposed by Bagheri et al. (2019). Furthermore, the improvement opportunities that PM present have potential for becoming dynamic capabilities, according to several researchers, by establishing systematic processes that guide the identification of improvement opportunities, the development of solutions and the implementation of improvements (Ortbach et al., 2012, Bernardo et al., 2017). However, this seems to be limited to the level of maturity of the processes, the learning capabilities of the company, such as those from their resources and their past experiences.

The second type of relation is of support, where process management might support the development of dynamic capabilities through the establishment and control of processes that not only deal with the operation of the companies but also sustain innovation and strategic development (Benner, 2009, Bernardo et al., 2017, Bagheri et al., 2019, Ortbach et al., 2012). Furthermore, companies should have processes that deal with innovation and the implementation of improvements to support the transformation of the companies. PM can then support the development of dynamic capabilities by the liberation of resources and operative effectivisation from exploitation, while also support to exploration, through processes dedicated to assist innovation and transformation. Hence, the ambidexterity presented by some of the findings can be achieved. The results suggest then that implementing process management could allow companies to have well-structure processes that are regularly evaluated and that support the creation of new products and services. This support from PM for DC could be assisted using other concepts, such as digitalisation (Sehlin et al., 2019).

The types of processes are also an important distinction in this relation. Core and support processes are of great need for the companies since they make it possible to deliver satisfactory products and services to the customers through effective processes (Porter, 1996). However, it was found that several researchers see in managerial processes the opportunity for PM and DC to have a synergy (e.g. Bititci et al., 2011, Bititci et al., 2010). These processes lead the companies and determine its future, strategies, goals and, more importantly for DC, the way the company strives towards innovation and improvement. Furthermore, as mentioned by Bititci et al. (2011), there is an opportunity for the development of DC in the interconnectedness of these managerial processes.

The suggested classifications of the relations between PM and DC are summarized in Table 2. The conflicts and missing relations between PM and DC were limited in the results found. They were used for establishing the differences between the table.

Companies might struggle to find a balance between exploitation and exploration which can limit their ability to innovate and in turn some of their dynamic capabilities. Additionally, innovation can be inhibited by PM due to the reduction of variation and the control that the methodology provides (Benner and Tushman, 2003).

Furthermore, there are several preconditions for each of the synergies detected. These preconditions could be considered as conflicts when missing. For the synergies to be present, companies should have well-established and mature processes (Bititci et al., 2011, Bititci et al., 2010, Sharma and Martin, 2018, Prester et al., 2019). Managerial processes are essential for the development and support of DC through PM. Among these processes, companies should establish processes dedicated to innovation and improvement (Bititci et al., 2011, Bititci et al., 2010, Zollo and Winter, 2002). Moreover, managerial process should have an appropriate interconnectedness to increase the sustainable competitive advantage of the companies and have potential to develop DC (Bititci et al., 2011).

Table 2. Proposed classification for the relations between PM and DC.

Relation	Similarities	Differences
Conceptual-Principles	Common principles between PM and DC include a process orientation and a strive towards continuous improvement	PM has a high structurisation and governess for the processes. DC requires high maturity levels of the processes.
Conceptual-Definition	The concept of routines and processes are defined a DC when they lead to sustainable competitive advantage. The concept of processes is central for PM and is the unit of work and analysis of the methodology.	Processes are defined in PM literature, basic requirements for the processes are also established. Processes within DC are seen as a potential DC but it is not all processes that can be related to DC.
Support	The DC theory can help understand the PM methodology. Processes within PM can support the identification of opportunities and treats and the development of innovative solutions. In turn, they may support the adaptability, flexibility and reconfiguration required for DC.	PM can be an inhibitor for innovation and in turn for the development of DC when used inappropriately.

Finally, the scanning of opportunities and threats is relevant for PM to support and develop DC. Companies should constantly scan their environments and even consider the development of relations with other links of their supply chain in order to identify opportunities and threats By doing so, companies can develop improvement solutions that significantly increase their adaptability to changes and potentially develop capabilities that are sustainable (Niehaves et al., 2014, Ali et al., 2019).

Conclusions

In response to RQ1, the synergies between process management and dynamic capabilities can be categorized in two different types: conceptual and support. Furthermore, the concepts might be on different levels of abstraction.

For answering RQ2, the literature suggests that conflicts between process management and dynamic capabilities can be found in the difficulty that some companies might have for striving towards exploitation and exploration simultaneously. We also found preconditions that are required for PM be a support to DC and for PM to provide companies with the ability to develop new DC.

Overall, the connections of DC and PM have been scarcely researched and the available literature for the intersection is limited. However, the findings suggested that there is potential for PM and DC to have considerable synergies. Albeit, we identified a need for further research in those connections, specifically by the means of case studies. This type of research would also allow the identification of new relations between the concepts which was limited when using literature reviews as a method for this study. An important consideration is that while the definition of process has been widely attempted among PM literature, it has not been defined within DC literature. This concept is sometimes used differently in both PM and DC perspectives which makes the analysis of the literature between them more challenging. In this study, we were a team of both PM and DC researchers which provided a ground to study the results from both perspectives.

This study contributes to the identification of the gap in the intersection between PM and DC. It contributes to literature within PM by identifying opportunities for strengthening the

methodology with possibilities to increase adaptability and flexibility. Furthermore, this paper may serve as a basis for future research on the intersection between PM and DC. Moreover, it can provide strengthening for developed theories and support the development of new models. This paper also contributes with the conceptual relations between PM and DC which can partly contribute to explaining the PM methodology. This paper presents a theoretical view of the relation between the two concepts. Therefore, we suggest that empirical studies should be conducted to explore this relation and to assess the veracity of the findings from literature.

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