TOWARDS STRATEGIC AGILITY: INTELLECTUAL ROOTS, KEY EMERGENT CONCEPTS AND FUTURE DIRECTIONS

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ABSTRACT

Purpose: The purpose of this paper is to examine the phenomenon of strategic agility thought various theoretical lenses, with the ultimate objective being to identify those critical factors and mechanisms that contribute towards the development of strategic agility. While the concept of strategic agility has been gaining momentum among various key scholars, there is an outstanding gap in the literature regarding the way that critical factors among different theoretical views and disciplines can be codified and connected to provide a holistic model that enables organizations to cultivate strategic agility capabilities. Specifically, several studies that emphasize on strategic agility, identify critical factors in a single theoretical perspective, and yet the literature and empirical studies lack a holistic approach that integrates all the factors in order to provide a comprehensive overview to the field.

Design/Methodology/Approach: This paper follows a narrative literature review and focuses on two main streams. Firstly, it defines the nature, and the main capabilities of strategic agility, and secondly discusses the main critical factors that facilitate strategic agility as those emerge from various theoretical perspectives.

Findings/Results: The literature review indicates that strategic agility is characterized by three meta-capabilities, namely, strategic sensitivity, leadership unity, and resource fluidity and those capabilities enable organizations to participate in high-velocity competitive environments, while facing fast-paced changes in different directions. Paradox theory, ambidexterity and strategic change are found to be crucial for achieving strategic agility, where factors related to knowledge management, information technology, leadership, and human resources management specifically are identified as equally important.

Originality/Value: The overall aim of the research is to bridge the gap in the literature by providing a holistic investigation towards strategic agility, as the title clearly suggests. This paper serves as a conceptual foundation based on which empirical studies can examine the integration of those factors and their intra/inter relations that enable the cultivation of the meta-capabilities of strategic agility.

Keywords: Strategic Agility, Strategic Change, Ambidexterity, Literature Review.

INTRODUCTION

Today's business environment is characterized by rapid and unexpected changes, both in their frequency as well as in their direction. These circumstances constitute what scholars in the field of organizational studies define as hyper-competition, turbulent environment, or high-

velocity environment, (Bourgeois & Eisenhardt, 1988; McCarthy et al., 2010; Wirtz et al., 2007). As it is stated by Bourgeois & Eisenhardt (1988), the dimensions of these concern technology, regulations, competition, and demand (customers). Recent literature in the field refers to the high-velocity environment with the initials VUCA, which stand for Volatility, Uncertainty, Complexity, and Ambiguity therefore highlighting the main outcomes of those circumstances in high-levels (Sharif & Zahir, 2017; Kaivo-oja & Lauraeus, 2018; Bennet & Lemoine, 2014), while also emphasizing that organizations should rethink and redesign their strategic planning process in a way that is aligned with the VUCA conditions by addressing the need for agility. Strategic agility refers to the *"ability to remain flexible in facing new developments, to continuously adjust the company's strategic direction, and to develop innovative ways to create value"* (Weber & Tarba, 2014), and is a fundamental ability to compete in high-velocity environments (Brueller et al., 2014; Doz & Kokosen, 2008b; Xing et al., 2020).

In the attempt to examine the concept of strategic agility, there have been many theoretical explorations and empirical investigations through multiple frameworks, which report dynamic capabilities, ambidexterity and strategic change and renewal as the most crucial characteristics of an organization with strategic agility (Shams et al., 2020; Doz & Kosonen, 2008a; Weber & Tarba, 2014). However, while the definition, the association with high-velocity environment and the meta-capabilities of strategic agility have all been widely discussed, there is an outstanding gap in the literature regarding the integration of the mechanisms towards the cultivation and the maintenance of this ability (Morton et al., 2018; Nejatian et al., 2019; Liang et al., 2017). Specifically, there has been a trend amongst scholars to examine the topic from a single theoretical perspective such as leadership (Lewis et al., 2014; Doz & Kokosen, 2010; Brannen & Doz, 2012; Rigby et al., 2020), knowledge management (Vecchiato, 2015), organizational development (Brueller et al., 2014; Arbussa et al., 2017), human resources management (Doz, 2020; Cunha et al., 2020; Ananthram & Nankervis, 2013; Xing et al., 2020; Shams et al., 2020) and information technology (Weill et al., 2002; Morton et al., 2018; Overby et al., 2006), without however providing a framework that combines and integrates factors and mechanisms from multiple theoretical perspectives that can help organizations increase their agility levels. In other words, to date the literature lacks a holistic framework that combines and integrates, success factors and practices emerging from multiple disciplines and organizational functions, in a way that organizations can apply to benefit from the outcomes of strategic agility. Consequently, the objectives of this paper are as follows:

i)   To conduct a literature review through various theoretical lenses and uncover/surface the main critical factors and mechanisms, and
ii) To provide deep knowledge and theoretical foundation for developing a holistic framework based on a set of practices and critical factors towards, ambidextrous and strategically agile organizations.

The adopted structure of the paper is as follows:

i)   Initially, it provides the definition and explains the intellectual roots of strategic agility,
ii) Furthermore, it describes the key emergency concepts and their associated factors related to strategic agility, and,
iii) Finally, it provides recommendations for future research in the field.

Intellectual Roots of Strategic Agility

The concept of agility is widely accepted by the scientific community as the core ability to compete and gaining competitive advantage, in turbulence and high-velocity environments. Following the literature on strategic management, agility specifically refers to the strategic redirection of organization by the ongoing innovation development to create value, (Weber & Tarba, 2014), and indicates a spirit of proactiveness rather a fast reaction (Doz & Kokosen, 2008a).

Doz & Kokosen (2008a) note that strategic agility is mainly *"about the capability to think and act differently, leading to business model innovation"*, and introduce the three meta-capabilities of strategic agility, namely, strategic sensitivity, collective commitment, and resource fluidity. They conclude that the three meta-capabilities of strategic agility can be defined as follows:

i) Strategic sensitivity refers to the organization capability, that senses environmental trends, and consequently threats and opportunities in real-time as they develop.
ii) Collective commitment or leadership unity reflected on the top team's ability to make, fast pivotal and bold decisions, away from hidden agendas and win-lose politics.
iii) Finally, resource fluidity refers to the ability, to redeploy the organization's resources, smoothly and fast across the various functional boundaries in a way that allows easy and fast processes and business model transformation.

As stated, it is imperative that the development of these meta-capabilities does not follow a linear path where a certain capability supports and reinforces another; instead their cultivation should be undertaken simultaneously, with equal priority to each of them (Doz & Kokosen, 2008a). Outcomes and benefits of strategic agility include the creation of new markets through innovation, that is linked with long-term financial benefits (Denning, 2016 & 2017), business model renewal, transformation, and innovation (Arbussa et al., 2017; Doz & Kokosen, 2010), sucessful and sustainable Expansion and growth (Brannen & Doz, 2012), and sustainable competitive advantage (Brueller et al., 2014), without however, sacrificing efficiency (Junni et al., 2015). These contradictory arguments, of exploring new opportunities, business model renewal and innovation on the one hand, and exploiting of current resources and business models for efficiency on the other, prove that the overall concept of strategic agility can be examined under the theoretical lenses of paradox theory and ambidexterity.

Paradoxical Nature of Strategic Agility and Ambidexterity

Paradox can be defined as *"contradictory yet interrelated elements that exist simultaneously and persist over time"* (Smith & Lewis, 2011). Lewis et al. (2014), shed light on the paradoxical nature of strategic agility, by highlighting the contradictory elements required to cultivate a strategically agile organization. As they mention, in order to move towards strategic agility, organizations have to deal with the contradictions of:

i) Focus on both, the external environment to maximize information gathering, and the internal so as to promote ideas from the bottom-up and achieve strategic sensitivity,
ii) Strong commitment to both top management as well as to the middle management, in order to cultivate leadership unity, and
iii) Stability versus change, thus aim to gain resource fluidity and simultaneously capitalize resources in full advantage of.

In the overall picture of the organization, contradictions can be summed up to *"innovation versus efficiency, global versus local demands, and social missions versus financial outcomes"* (Lewis et al., 2014). Opposite to the notion of trade-off and compromise which require a sacrificing of the one contradictory element, a paradoxical approach refers to a pluralistic approach to these dualities by accepting, searching, and taking actions that embrace both sides of the contradiction (Lewis et al., 2014; Smith & Lewis, 2011). Adopting a paradoxical approach to the strategic agility dualities tensions, can be translated as corporate practices that focus on both i) innovation, renewal and exploration for new markets and directions, and ii) efficiency by exploitation of current knowledge and resources. As the literature points out, this ability to simultaneously corporate efficiency while exploring new opportunities and innovation is defined with the term ambidexterity. As Tushman & O' Reilly (1997) explain, ambidextrous organizations operate in multiple modes simultaneously, by emphasizing on both stability and control to ensure efficiency and experimentation and improvisation for long-term innovation, a simultaneous multidimensionality that strategic agility calls for (Junni et al., 2015; Weber & Tarba, 2014; Doz & Kokosen, 2008a).

Strategic Agility and Strategic Change

The next intellectual root of strategic agility is the concept of strategic change, as by definition strategic agility includes the ability for continuous business model renewal, and constant redirection (Doz & Kokosen, 2010; Weber & Tarba, 2014; Shams et al., 2020). Traditional approaches to change, classify changes into two main categories. First, planned change where the change follows a linear process through various steps with clearly defined milestones, and second, emergent change when the change is an interactive process, discovered within the organization as a part of the dynamic world (Liebhart & Lorenzo, 2010; Carnall, 2007). The recent strategic management literature taxonomizes strategic change in four types by considering the nature of changes in combination with their desired results (Balogun et al., 2016). As Balogun et al. (2016) explain, the dimension of the end results refers to the scope of the change needed in order to achieve the desired results and can take place either in the form of transformation or realignment. Transformation takes place when organizations aim to a deep chance that challenges their current norms, mission and the overall organizational culture and business model. On the other hand, realignment reflects more shallow changes that may include daily activities and operations but does not challenge the current organization beliefs and assumptions neither does it require fundamental changes of the current business model (Balogun et al., 2016). The dimension of nature refers to the way or the speed and timeframe according to which organizations aim to implement the change, by considering as an incremental change, the changes that are implemented in a linear, step by step and gradual manner, and big bang as the changes which are implemented rapidly, and usually efforts take place in an all-at-once logic (Balogun et al., 2016).

A careful and critical examination, of these types of change, lead us to the conclusion that they all assume a defined and framed desired result, and their main difference is regarding to the elements that a certain organization needs to change, and the timeframe within which the benefits of the change are meant to be reaped. In other words, organizations need to first identify what they need to change and then to undertake certain sets of actions, either by challenging the current culture or not, or based on whether the efforts will be in an incremental or in an-all-at-once manner, in order to achieve a clearly defined desired result. However, while efforts towards strategic agility may require changes of the organization mindset, at a cognitive and emotional

level (Doz & Kokosen, 2008a), as by denition strategic agility includes the ability for continuous and ongoing change and transformation, it is highlighted that the required changes for strategic agility should be examined under the lens of complexity theory, which views organizations as complex, and non-linear adaptive systems that continually transform themselves by continuously incorporating innovation (Burnes, 2004; Brown & Eisenhardt, 1997).

As Brown & Eisenhardt (1997) observe, organizations that have the ability to incorporate ongoing transformation to their business model, present three shared fundamental characteristics. Firstly, these organizations are designed and framed as semi-structures, with clearly defined responsibilities, priorities, and timeframe among projects allowing at the same time for open communication and space for innovation. Semi-structured organization designs are located between the two main categories of design i) heavy hierarchical structure that focuses on standardization and allows for efficiency but can lead into rigidity (Miles et al., 2009) or ii) purely organic structures that allow space for improvisation and innovation but at the same time can lead into unmanageable situations and chaos. Secondly, these organizations are characterized by a proactive spirit, by probing low-cost future thought experiments, and by forging strategic alliances (Brown & Eisenhardt, 1997). According to Costanzo (2003), organizations that are probing into the future, do not rely on long-term strategic plans and associated tools[1], instead they explore future situations through experimentation, strategic partnerships, and rich networking with active stakeholder participation, together with practices that allow organizations to acquire valuable knowledge about the future. Finally, the third characteristic, are the time-framed sequential steps through projects. As Brown & Eisenhardt (1997), highlight, organizations that have the ability to incorporate ongoing change do not consider innovation as a timeless development process, but they define a certain timeframe and milestones for each project. In other words, they connect sequential projects through a well-defined and careful transition process by allowing in this way, ongoing monitoring and knowledge sharing between the current and the future projects in a gradual manner. This characteristic can be identified in the literature of project management as a corporation of chain program management, where the transition period between the predecessor and the successor is smooth and aims to maximize knowledge by sharing lessons learned.

Based on the above discussion, it can be said that corporate ongoing change and business model transformation, which are the main outcomes of strategic agility, cannot be approached as a one-time strategic change, but emphasis should be given on the cultivation of certain capabilities that lead to the achieving the ultimate ability of ongoing change. Consequently, theorists of strategic agility view competitive advantage under the lens of dynamic capabilities, and argue that sustainable competitive advantage is not an outcome of a careful industry analysis and of a superior positioning of the organization's products, as Porter (1980; 1985) refers to, but rely on organizational managerial processes, supported and shaped by asset's positions and paths available to them (Teece et al., 1997), and therefore can be taxonomized in three sets of dynamic capabilities namely, sensing, seizing, and transforming (Teece, 2007).

This section of our conceptual investigation brings forth that the overall concept of strategic agility is characterized by a paradoxical nature and is located at the heart of strategic change, ambidexterity, and dynamic capabilities. To achieve sustainable competitive advantage though, strategic agility requires not only a one-time change, but the development of an organization that continually senses environmental trends and revises its business models to them. Therefore, to achieve the research aim and objectives, our investigation focuses on the

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[1] Such as SWOT analysis

identification of those organizational mechanisms and critical factors that enable the cultivation of the capabilities needed to achieve strategic agility. The next section discusses those factors emerging from a multidisciplinary examination.

Key Emergency Concepts

Leadership and strategic agility

The first theoretical concept that emerges from the strategic agility literature is leadership. According to Mundra (2018), the level of agility that an organization can achieve depends heavily on its leadership, thus leaders influence a plethora of organizational aspects such as the vision, structures, processes, culture, and the overall organizational mindset. Additionally, he states that a hyper competitive environment calls for a leadership style that embraces change and innovation and motivates knowledge workers rather than focusing on stability and maintaining the status quo. Rigby et al. (2020) argue that *"to create a truly agile enterprise, top officers -if not all, of the C- suite, must embrace agile principles too"*. Lewis et al. (2014) note that *"leadership is central to managing tensions of strategic agility"*, and that leaders are responsible to cultivate a vision that recognizes paradoxes as an investable asset of the organization, and therefore they should lead the efforts to explore both sides of the duality. To successfully fulfill this responsibility, leaders must exude confidence, inspire trust, and embrace tension and conflicts in a proactive manner, which refers to an interactionist view of conflicts and as a vital organizational necessity that can lead to collective agreements and minimize stagnation (Roobins 1978 as cited in Afzalur, 2011). Similarly, Doz & Kokosen, (2008a) also recognize the value of embracing conflicts and they argue that this approach helps organizations to avoid traps of familiarity. A comprehensive set of leadership practices can be found in Doz & Kokosen's (2010) work, which identify and categorize practices and factors that can support organizations towards strategic agility based on their contribution in each meta-capability. These are further expanded in the following section

Leadership practices that support strategic sensitivity

Strategic sensitivity can be influenced by five leadership sets of practices, namely *"anticipating, experimentation, distancing, abstracting and reframing"*. The first two are in the line with Brown & Eisenhardt, (1997) and Costanzo (2003) regarding probing into the future, and consequently we will not analyze them further at this point. "*Distancing"* refers to emphasizing on a holistic analysis of the business model outside of the leaders' comfort zone, in order to capture a comprehensive picture of the organization business model in its totality, rather than being limited to minor improvements. Following the explanation by Doz & Kosonen (2010), leaders should collaborate with their personal contacts outside of the organization in order to question and explore the true roots of their business model value. Once leaders gain the required distancing, and identify the roots of their value creation, then the *"abstracting"* phase begins. Abstracting refers to the separation of the general enduring characteristics of the business model from those that are context-specific therefore allowing leaders to identify: (i) what components of their business model reflect the deep roots of the company and (ii) what characteristics are tailored to a specific, serving market and may need justification with appropriate corporate language. According to Brannen & Doz (2012), strategically agile organizations incorporate language that combines characteristics from, firstly, conceptual

abstraction which is aligned with the organization's core purpose, values, and enduring identity and secondly, with contextual specificity that suits the needs of the market that it aims to serve. Finally, *"reframing"* refers to the development of alternatives through analyzing and justifying abstractions according to new needs and it is a result from an open and honest dialogue which allows an organization to gain the ability to incorporate multiple and complex business models simultaneously.

Leadership practices that support collective commitment

With respect to collective commitment, the cornerstone of enabling organizations to cultivate this capability is *"dialoging",* which refers to transparently sharing assumptions among the totality of the leadership team, rather than one-to-one negotiations between a CEO and functional leaders separately. Rigby et al. (2020) highlight the need for a replacement of heavy forecasts with assumptions that aim to provide a holistic picture which may lead the top-leadership team to establish more comprehensive and realistic targets. As they observed, strategically agile firms do not rely only on forecasting based on sales, instead they incorporate various assumptions, such as the number of customers per year and the frequency of purchases, and consequently are able to obtain a more holistic idea for their portfolio. By adopting the practice of open and collective dialogue, leaders are able to *"reveal"* their colleagues' fears and aspirations, thus personal motives become visible. Another important benefit of open dialogue is the elimination of hidden agendas, since all individual thoughts are expressed and revealed, and with the proper commitment by the leader, and a mutual respect can be cultivated. The leaders, through "caring", which is mentioned to offer several benefits, aim to meet their fellows' expectations, achieve mutual respect, fulfil motivational needs, create empathy, and create a safe personal environment for each member in the leadership team. According to Doz & Kosonen, (2010), caring companies are more prone to experimentations, and change. Following their arguments, another critical factor that contributes to collective commitment is "alignment" which refers to the identification of common ground around the various opinions' interests and the development of those strategies that fulfil those interests and inspirations. Finally, a successful alignment can be achieved though *"integration"* which refers to the establishment of independencies within the business model that lead to the cultivation of a collective value-creation logic, allows self-efficient agendas, and paves the way to effective resource fluidity.

Leadership practices that support resource fluidity

Finally, regarding resource fluidity, Doz & Kosonen, (2010) argue that *"decoupling"* and *"modularizing"* organizations business processes and systems act as catalysts to resource fluidity, and their argument is widely acceptable within the literature. According to Wikner (2014), decoupling aims to break down the overall production flow into sub-processes and allows organizations to respond sufficiently to volume variations that may arise from the environment of high-level uncertainty thus dissociates the dependencies among the overall production operation and increases the operational flexibility. Galunic & Eisenhardt (2001) highlight that modularity accelerates the rate of sub-systems innovation, increases the adaptability of both sub-systems and of the system in its totality, and allows the reshuffling of corporate resources across the organization. Following the explanation of Doz & Kosonen, (2010), modularity paves the way for *"dissociation"*, and *"switching"*. As they point out, dissociations refer to the detachment of the corporate resources from ownership and it can be

further supported with information technology platforms which allow a smooth flow of information and increase the level of communication across the whole organization. Switching refers to the usage of parallel multiple business models in order to serve multiple market segments as an integrated organization. Finally, they argue that *"grafting"*, which refers to the import of an acquiring business model to the organization, may be beneficial to the efforts of achieving strategic agility. Normally, at the early stages, the acquired features of the model act as complementary components to the existing one and gradually they gain ground and lead to an integrated value creation of the organization. Table 1 summarizes the main leadership factors that enable strategic agility.

Table 1 LEADERSHIP FACTORS THAT ENABLE STRATEGIC AGILITY		
Focuses on	**Key Phrases/ Factors**	**Authors/Source**
Paradoxical Leadership	Rich Networking in both internal and external environment	Battistella et al. (2017); Andriopoulos & Lewis (2010); Doz (2020); Doz & Kokosen (2008a, 2010)
	Value paradoxical thinking as core competence	Andriopoulos & Lewis (2010)
	Embrace Tensions	Andriopoulos & Lewis (2010); Doz & Kosonen (2008a, 2010)
	Cultivate Trust and confidence	Andriopoulos & Lewis (2010)
	Acquisitions	Doz & Kosonen (2010)
	Corporate Language	Doz & Kosonen (2010); Brannen & Doz (2012)
	Enable modularity	Doz & Kokosen (2008a, 2010); Wikner (2014); Pil & Cohen (2006)
	Pay emphasis on employees	Doz & Kosonen (2010)
	Experimentation	Andriopoulos & Lewis (2009); Costanzo (2003); Doz (2020)
	Transparent dialogue in the totality of the executive team	Doz & Kosonen (2010); Costanzo (2003)

Knowledge Management and Strategic Agility

The second and one of the most discussable concepts around strategic agility and agile organizations is the concept of knowledge management (KM). Dove (1999) for example, defines agility as *"the ability to manage and apply knowledge effectively"* and argues that KM is a key enabler to agility. At the same time KM is also associated with successful business model innovation (Meade & Sarkis, 1999; Pérez-Bustamante, 1999), and dynamic capabilities development (Valmohammadi & Amidi, 2020; Oliva et al., 2019; Helfat et al., 2007). Knowledge refers to what individuals of the organization know regarding their colleagues, the firms' stakeholders', the organizational process, and regarding personal as well as organizational strengths and weaknesses, while KM refers to those practices that enable this knowledge to flow, grow with the ultimate objective being to create value and its consequent capitalization (O'Dell & Cindy, 2011). In agile organization KM aims to distribute the right knowledge to the right places, at the right time, and this can be achieved with a dynamic knowledge portfolio, which is characterized by the components of knowledge: i) identification, ii) acquisition, iii) diffusion and iv) renewal, (Dove, 1999).

Following the KM literature, it is pointed out that knowledge identification aims to expose the current strengths and weaknesses of the organization, and to reveal present and future knowledge needs required to compete, which can be achieved though knowledge mapping

(Dove, 1999; Drew, 1999; Wexler, 2001; Lee & Fink, 2013; Ambrosini & Bowman, 2002; Soliman & Spooner, 2000). Knowledge mapping provides visibility and transparency across the organizational processes, it identifies success and failure factors (Lee & Fink, 2013), it exposes pivotal tacit knowledge that usually is invisible and hidden within specific organizational routines (Ambrosini & Bowman, 2002), while at a strategic level KM leads to the identification of strategic and knowledge gaps (Soliman & Spooner, 2000). The second element of a knowledge portfolio is knowledge acquisition. Knowledge acquisition enriches the organizations' existing knowledge pool and can be used to revise the organizational routines and procedures, consequently improving responsiveness, encouraging new entrepreneurial opportunities, and enabling organization renewal (Bojica et al., 2017). Ortiz et al. (2016), note that knowledge acquisition can take place following two main strategies: (i) through strategic partnerships and alliances, and, (ii) with direct purchase of external knowledge, with the latter being more suitable in cases the organization aims at fast usage and capitalization. The third component of a knowledge portfolio, namely, knowledge renewal, refers to those practices regarding the abandonment and subsequent replacement of superseded knowledge. As Dove (1999) explains, some knowledge loses its value over time; it becomes toxic, and may negatively affect the organization, consequently requiring replacement. Knowledge loss is described in the literature as organizational unlearning and forgetting, with the former reflecting the voluntary knowledge loss that results thought planned and manageable actions undertaken by the organization, while forgetting refers to accidental knowledge loss (Klammer & Gueldenberg, 2019; Easterby-Smith & Lyles, 2011, Tabassum, 2008). To achieve effective unlearning, organizations should facilitate an ongoing and interactive process with the individuals that are affected by the unlearning process. Specifically, organizations should explain the necessity and the importance of the knowledge loss and replacement to affected individuals, while simultaneously emphasizing their expectations and feelings, by providing a supportive environment that leads to a positive experience and an overall recognition of the value and need of the replacement (Becker, 2010).

The benefits of a successful unlearning as the literature points out, which relate to strategic agility, include the contribution to strategic flexibility (Wang et al., 2019), to innovation and organizational performance (Leal-Rodríguez, et al., 2015), to a sense-making capability, (Akgün et al., 2007), to radical innovation (Lyu et al., 2020), and acting as a catalyst to organization adaptation to high-velocity environments (Akgün et al., 2006). On the other hand, forgetting which refers to accidental knowledge loss, may result to abandoning useful and valuable knowledge (Yildiz & Fey, 2010), which may inevitably reduce the overall competency of the organization (Easterby-Smith & Lyles, 2011).

The last component of a knowledge portfolio is knowledge diffusion (Dove, 1999), or as Pham (2020) refers to, knowledge sharing and refers to those factors and mechanisms that support a knowledge mobilization across the organizational boundaries by overcoming any communication, cultural and departmental barriers. Following the relevant literature, the cornerstone for effective knowledge diffusion is the organization's individuals (Chennamaneni et al., 2012; Heniks, 1999; Ruggles, 1998; Chourides et al., 2003), with information technology platforms serving as facilitators (Ruggles, 1998; Chourides et al., 2003; Overby et al, 2006). According to Bock et al. (2005), individuals are more willing to share information and knowledge in situations where they feel that the outcome will be collectively produced, and consequently the benefits will be mutual. Furthermore, as the same authors explain, a critical component that contributes to the fostering an intention of knowledge sharing is the overall

organizational climate which should be characterized by trust, together with those necessary mechanisms that enable smooth and fluid information across the organization. Table 2 indicates the main KM factors that contribute towards strategic agility.

Table 2 KNOWLEDGE MANAGEMENT FACTORS THAT ENABLE STRATEGIC AGILITY		
Focuses on	**Key Phrases/ Factors**	**Authors/Source**
Dynamic Knowledge Portfolio	Knowledge exchange with all stakeholders (Internal and external Environment)	Ashrafi et al. (2006)
	Knowledge Mapping (for knowledge Identification)	Soliman & Spooner (2000); Lee & Fink (2013); Dove (1999); Ambrosini & Bowman (2002); Drew (999)
	Cross Functional Skills	Dove (1999)
	Collaborative workshops for learning	Ferreri & Shanna (2013)
	Knowledge Acquisition	Ortiz et al. (2016); Bojica et al. (2017); Doz & Kokosen (2008a)
	Organization unlearning for knowledge renewal	Klammer & Gueldenberg (2019); Akgün et al. (2007); Christensen (2013); Leal-Rodríguez et al. (2015); Wang et al. (2019); Lyu et al. (2020)
	Experimentation	Easterby-Smith & Lyles (2011); Doz & Kokosen (2008a)
	Social networks and culture	Easterby-Smith & Lyles (2011)
	Knowledge Sharing	Dove (1999)
	Information technology Platforms	Ruggles (1998); Chourides et al. (2003); Hendriks (1999)
	Trust (for knowledge sharing)	Chennamaneni et al. (2012); Ruggles (1998); Bock et al. (2005)

Human Resources and Strategic Agility

The next theoretical concept that emerges from the strategic agility literature is human resources management (HRM). Alavi et al. (2014) for instance, highlight that no organization can increase its agility level without first training and educating its workforce to perform in agile environments. Before to analyzing the specific factors and mechanisms relevant to Human Resources (HR) which contribute towards agility, it is important to state the overall role of HR executives which should have in agile organizations. Following the relevant literature, it is revealed that a turbulent environment requires an HR department that is actively involved in strategic issues and acts as a strategic partner of the organization, going beyond its traditional administrative responsibilities (Nijssen & Paauwe, 2012; Ananthram & Nankervis, 2013; Doz, 2020). Ananthram & Nankervis (2013) highlight that by serving as strategic partners, HR executives are involved in strategic dialogues, implement knowledge and talent management (TM) programs, facilitate change and cultivate a mindset towards agility, with organizations consequently gaining a holistic view and strengthening their collective commitment. Similar to the nature of strategic agility, HRM should act proactively (Nijssen & Paauwe, 2012), and have the pivotal responsibility to identify, select and prepare individuals for the future (Doz, 2020).

As strategically agile organizations require constant resources reconfirmation, Dyer & Ericksen (2005) claim that in agile organizations HR should be scalable, and they introduce the concept of workforce scalability. Workforce scalability refers to the capacity of an organization to *"keep its HR aligned on an ongoing basis by constantly transitioning from one HR*

configuration to another and another, ad infinitum, on a timely basis and in a seamless way'' (Dyer & Ericksen, 2006). As the authors further explain, scalability consists of two main components:

i) alignment, which refers to the timely positioning of the optimal number of individuals with the necessary skills at the right place,
ii) Fluidity, that refers to smoothly positioning, without any negative effects on their productivity and efficiency which can be achieved with a shared mindset and dynamic TM.

For Nijssen & Paauwe (2012), workforce scalability in combination with adaptive infrastructure and a fast KM approach supports organization agility while for Harsch & Festing (2019) TM enables organization individuals to grow therefore fostering agility. Collings et al. (2019) argues that in international organizations, global TM is becoming a potential source to handle environmental complexity and a source of sustainable competitive advantage. Practices that can be found in the literature that connect effective TM to agility include:

i) Identification of key positions for the future (Collings et al., 2019).
ii) Creation of talent pools based on their potential and performance (Collings et al., 2019; Doz & Kokosen, 2008a).
iii) Employees and especially young age mobility, (Doz & Kokosen, 2008a; Doz, 2020).
iv) Cross functional education (Harsch & Festing, 2019).

Table 3 HUMAN RESOURCES FACTORS THAT ENABLE STRATEGIC AGILITY		
Focuses on	Key Phrases/ Factors	Authors/Source
Workforce Scalability	Employees participation in strategy formulation	Doz & Kokosen (2008a)
	Mobility opportunities	Doz & Kokosen (2008a); Vaiman et al. (2012); Doz (2020); Collings et al. (2019); Dyer & Ericksen (2006)
	Cross-functional collaboration	Doz & Kokosen (2008a)
	Ongoing and open communication	Doz & Kokosen (2008a)
	Culture alignment with systems and structure	Ryan (2005)
	Education Programs	Battistella et al. (2017); Alavi et al. (2014); Chourides et al. (2003)
	Flat organization structure	Nijssen & Paauwe (2012); Alavi et al. (2014)
	Executives as strategic partners	Ananthram & Nankervis (2013); Dyer & Ericksen (2006); Ulrich (1997); Doz (2020)
	Identify talents (People Portfolio)	Chourides et al. (2003); Harsch & Festing (2019)
	Identify crucial positions	Collings et al. (2019)
	Create pool of talents	Doz (2020); Collings et al. (2019); Harsch & Festing (2019)
	Multidimensional and real-time feedback	Cappelli & Tavis (2018); Rigby et al. (2020)
	Knowledge sharing events	Doz (2020); Dove (1999)
	Enable improvisation	Cunha et al. (2020)
	Corporate paradox	Cunha et al. (2020)

All of the above practices are supported by organizational infrastructure that allows real time information fluidity and fostering an organizational culture that enhance learning by doing,

subsequently moving towards continued knowledge creation (Nijssen & Paauwe, 2012). Finally, Cunha et al. (2020), note the critical role of improvisation towards strategic agility, as this they argue can result to innovation. At the same time, the same authors highlight the significance of a paradoxical management of dualities as a pipeline that can host and foster improvisation. Table 3 illustrates those human resources management factors that according to the literature contribute towards strategic agility.

Information Technology and Strategic Agility

The next and final concept that emerges from the strategic agility literature is information technology (IT), which does not only refers to its direct effect on agility but is also connected with prior concepts in this paper. For instance, Chourides et al. (2003) characterize IT as the fundamental enabler for the creation of KM programs, while Alavi et al. (2014) advocate that technologies are a crucial part of agility and organizations should invest not only to the technologies themselves, but on the training of individuals on how to use them. In its boarded term, IT capability refers to the organization's ability to *"acquire, deploy, combine, and reconfigure IT resources in support and enhancement of business strategies and work processes"*, (Sambamurthy et al., 2003, as cited in Lu & Ramamurthy, 2011), and consists of three elements:

 i) Infrastructure capability, that refers to the technological foundation,
 ii) Spanning capability, which refers to strategic usage and partnerships of the foundation and of the individuals with technical expertise
 iii) Proactive stance, that refers to the organizational opportunity orientation.

Characteristics of a technological infrastructure that can enable agility are IT flexibility, (Tallon & Pinsonneault, 2011), big data analytics (Rialti, et al., 2018), and digitalization and optimization of processes and knowledge systems (Sambamurthy et al., 2003; Overby et al., 2006). IT flexibility refers to the infrastructure capability to scale and align with the demand as it is developed (Tallon et al., 2019). As Duncan (1995) explains, IT flexibility is characterized by three fundamental qualities:

 i) Connectivity of platforms across the entire organization by overcoming any geographical, and functional boundaries,
 ii) Compatibility of the technological components within the system and the individuals who use them,
 iii) Modularity.

Weill et al. (2002) provide a more comprehensive investigation of the infrastructure capabilities that enable strategic agility, by outlining ten capabilities clusters including security management, communication, research and development, data management, and education management. They argue that infrastructure that enhances agility should serve as an integrated platform across the organizational boundaries, by providing real-time communication, and allowing secure and fluid information flow, therefore connecting business units with central headcounters as well as other stakeholders such as clients and suppliers. Lee et al. (2015), stress the value of information technology ambidexterity that can contribute to organizational ambidexterity and to enhance agility. Specifically, they argue that as the nature of agility is to seek for ambidextrous organizations, then emphasis should be given towards the development of an information technology infrastructure that explores and evaluates new Information technology resources and practices, while simultaneously seeking for the best utilization of existing

resources and practices. Furthermore, they note that IT exploration leads to the ability of ongoing evaluation of new technologies and to the identification of those that their functionalities can add value to the organizational operations, while exploitation leads to the ability of capitalization of the current technological portfolio and uncovers needs for investments in complementary components that focus on greater efficiency.

Table 4 INFORMATION TECHNOLOGY FACTORS THAT ENABLE STRATEGIC AGILITY		
Focuses on	Key Phrases/ Factors	Authors/Source
Integrated IT Capabilities	Incremental Change and infrastructure development	Weill et al. (2002)
	Alignment	Lu & Ramamurthy (2011); Tallon & Pinsonneault (2011)
	Social Alignment	Zhou et al. (2018); Liang et al. (2017)
	Employees education	Weill et al. (2002); Alavi et al. (2014); Liang et al. (2017)
	Knowledge and process management (through digital platforms)	Overby et al. (2006)
	Integration	Weill et al. (2002); Lu & Ramamurthy (2011)
	Investment	Weill et al. (2002)
	Security management	Weill et al. (2002); Otero (2019)
	Research and Development	Weill et al. (2002); Lu & Ramamurthy (2011)
	Digitalization of internal systems	Morton et al. (2018); Overby et al. (2006)
	Executives as strategic partners	Morton et al. (2018); Liang et al. (2017); Rigby et al. (2020)
	IT Flexibility	Tallon & Pinsonneault (2011)
	IT Ambidexterity	Lee et al. (2015)
	Adaptive culture	Morton et al. (2018)

Beyond the technological capabilities of the infrastructure, leadership and structural characteristics are also important for an effective and efficient usage and capitalization of technology. In this respect, we recognize that the topic of information technology alignment is widely discussable in the literature. As Tallon & Pinsonneault (2011) discuss, alignment can facilitate agility and have a moderate effect on IT flexibility. Considering the dynamic nature of flexibility, Henderson and Venkatraman, (1993) describe alignment as a dynamic and ongoing adaptation and change. An important milestone in the literature of alignment and agility is the introduction of "Information Systems Alignment Ambidexterity" by Zhou et al. (2018), who separates the concept of alignment in two main components. First, they refer to structural alignment which refers to the traditional definition of aligning information technology with corporate strategy, and second, they refer to the social alignment which refers to the individuals' human relations across the organization with special emphasis given on the relation between the individual experts of technology and business, by highlighting in this way the invaluable contribution of people within the organization. Specifically, they argue that agility can be enabled when alignment includes the collaboration and the cultivation of mutual understanding among technical people, who own the technological know-how regarding the usage of

information technology, and business individuals who can translate how technological infrastructure can add value to the business process and to the organizations' costumers.

Therefore the need for organizations to pay attention not only to the technological competencies is stressed, while also the need to cultivate a climate of a shared understanding. Similarly, Morton et al. (2018) argue that the journey towards strategic agility calls for information technology executives that act as strategic partners to the chief executives, with active involvement in strategic issues dialogues, actions, and initiations. Furthermore, they note that IT executives should develop conceptual skills and adopt a participative leadership style by acting as mentors rather than to focus only on technical issues and competencies. Table 4 indicates the main IT factors according to literature that support organizations towards strategic agility.

Contribution and Future Directions

In this section we summarize our conceptual investigation and at the same we attempt to point out a research agenda for future directions in the concept of strategic agility. Strategic agility is presented as the ultimate ability for competing in turbulent environments and is achieved by the cultivation of meta-capabilities, namely, strategic sensitivity, resource fluidity, and collective commitment. Therefore, the first intellectual root of strategic agility regarding the source of competitive advantage is the dynamic capabilities perspective as introduced by Teece et al. (1997) and further developed by Teece (2007). A notable characteristic of dynamic capabilities perspectives that guides our further investigations is their nature in high-velocity environments, as expressed by Eisenhardt & Martin (2000). Specifically, they note that dynamic capabilities in such environments are simple, interactive and seek for unpredictable outcomes. The second intellectual root of strategic agility is ambidexterity as by definition refers to the ability to incorporate simultaneous, firstly ongoing transformation that aims to cope with unexpected changes thought innovation, and secondly, stability in order to ensure that the momentum and the efficiency of the organization are not sacrificed. The topic of ambidexterity is directly connected to paradox theory as explained by Smith & Lewis (2011). After our thorough multidisciplinary theoretical investigation, we recognize that paradox theory applies to agility beyond to just the organizational structure that enhances agility, by including KM, (Akgün et al., 2007), leadership (Lewis et al., 2014), HR (Cunha et al., 2020), and IT (Lee et al., 2015; Zhou et al., 2018). Consequently, we argue that the main premise and intellectual roots of strategic agility fall under the topics of strategic change, ambidexterity, paradox theory, and dynamic capabilities. Additional to the intellectual roots, we have also identified key emergent themes related to strategic agility arising from KM, HRM, IT, with special emphasis given to leadership with strategic agility calling for executives in those organizational departments who serve as strategic partners by assuming an active role in strategizing (Doz & Kokosen, 2008a; Cunha et al., 2020; Morton et al. (2018).

As our ultimate objective is to develop a holistic framework towards strategic agility, we recommend the usage of those theoretical elements that we have identified in empirical investigations. By considering the argument by Eisenhardt & Martin (2000) that dynamic capabilities in high-velocity environments are characterized as commonly heterogeneric rather than strictly idiosyncratic, we strongly encourage holistic empirical investigations that aim to define best practice frameworks towards the development and maintenance of strategic agility. Furthermore, as ambidexterity becomes a crucial component of strategically agile organizations, we recommend that future research should focus on publicly listed corporations which according

to Leppitt (2006), face the ongoing paradox of innovation for long-term survival through incremental sustainable improvements as well as the pressure for short term efficiency to satisfy the shareholders' expectations. Future research should also consider the measurable aspects of strategic agility. As Nijssen & Paauwe (2012) argue, agility does not represent an on-off situation in which organizations either are agile or not, instead it takes place on various levels and it is based on organizational capabilities and organizational dynamics which can either increase or fall. Similarly, Teece et al. (2016) argue that the challenge is not to become as agile as possible, but to identify the optimal agility needed that allows competing effectively in a turbulent environment. However, to date, the literature in strategic management and agility lacks efforts aimed at defining key performance indicators which can be used to evaluate and reflect the agility level of organizations, and consequently there is an outstanding gap and potential ground for further investigation in the field. Finally, special emphasis should be given on the human and intellectual aspects of competing in turbulent environments, and especially regarding the integration of technology in such environments. In an era where a plethora of both academics and practitioners rely heavily on the so-called digital transformation, investigation points out that in fact organizational individuals are the foundation for effective knowledge sharing, effective leadership, information technology alignment, therefore we strongly recommend investigations focusing on the role of human resources towards the capitalization of new technologies and agility.

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