



EDITORIAL

**SMEs NAVIGATING
IN COMPLEX ENVIRONMENTS**

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Abstract

Purpose: *The aim of this editorial is to develop a reflection on how small and medium enterprises (SMEs) can face the complexity that increasingly characterizes the competitive environments in which they live.*

Findings: *After defining environmental complexity, the editorial links it to the concept of ambidexterity, that is, the classic dichotomy between exploration and exploitation. In particular, the different forms of organizational ambidexterity are analyzed, emphasizing the solutions (of contextual ambidexterity) that are accessible to SMEs.*

Practical and Social Implications: *The editorial suggests and discusses two strategies that are sustainable by SMEs dealing with environmental complexity: learning to manage the (contextual) ambidexterity paradox, and SMEs' growth through acquisitions and networking.*

Originality of the Study: *SMEs and their strategic behavior are originally analyzed through the two complementary approaches of organizational ambidexterity and organizational paradoxes.*

1. Complexity in business environments

The aim of this editorial is to develop a reflection on how small and medium enterprises (SMEs) can face the complexity that increasingly characterizes the competitive environments in which they live.

There are different definitions and approaches to complexity, that are used in a wide number of areas, such as sustainability, education, health-care, public policies, engineering, economics, and management of firms (Sigahi and Sznclwar, 2024). In management studies and in this editorial, complexity refers to the competitive environment by taking on the standpoint of the firm (with its internal complexity), in particular the entrepreneurs and managers who must face it (Furlan et al., 2023).

Given this domain, scholars have emphasized three (or four) components of environmental complexity (Barrales-Molina et al., 2010; Rullani, 2022a). The first concerns the number of things (in the business environment) to be considered in the decision-making process, i.e., the number of variables that come into play and the number of modes of each of them. The second component is systemic in nature: the variables are interdependent. The third component is associated with the fact that things change, also in the sense that new ones emerge.

This dynamic complexity also increases when the changes are predictable because of the knowledge and instrumentation required to perform forecasting. But it is the emergence of unpredictable events and processes that makes dynamic complexity the most drastic generator of uncertainty. As Duncan (1972, p. 313) stated in one of the seminal contributions on organizations and environmental complexity, “individuals in decision units with dynamic-complex environments experience the greatest amount of uncertainty in decision making”. The difference between predictable and unpredictable changes is so significant that one could speak of two distinct components of complexity.

Among the different components of environmental complexity, the one concerning things that change unpredictably is the most “complex”, such that it sometimes hinders decision-making. And it is this complexity that dominates the current competitive scenario. COVID-19 pandemic offers a recent and dramatic example of this dimension of environmental complexity since its widespread and frequent mutation has left firms and organizations with high uncertainty regarding business continuity, employees’ motivation, distance working, unemployment (Azizi et al., 2021). But this is only one example of a larger problem. In a global competitive environment, where everything is connected (Barabási, 2003), events that arise in certain places can propagate with high speed on a global scale, becoming black swans (Taleb, 2007), e.g., the pandemic that started in the Chinese city of Wuhan or, ten years earlier, the global economic crisis started by the Lehman Brothers crash (Rullani, 2022b).

Today's discourse on complexity in the competitive environment must necessarily deal with two far-reaching phenomena. The first is the enormous uncertainty that characterizes the global geopolitical and economic scenario – which after the long season of hyper-globalization (1990-2008) in the following phase has also been marked by some processes of de-globalisation (Paul, 2023; Jindal and Kumar, 2024) – and in any case increasingly fluid and difficult to predict. The second is the fourth industrial revolution or digital transformation. This transition is inherently very open, full of emerging novelties and uncertainties, and this is what makes it profoundly different from the third industrial revolution (Schwab, 2017). On the one hand, technologies such as big data, artificial intelligence and the Internet of Things are creating new and powerful tools to cope with environmental complexity (Davenport et al., 2020; Rullani, 2022a). On the other hand, they represent a factor of complexity due to two concomitant causes: (i) the problems of selection, integration, and optimal use that they bring up (Cugno et al., 2021), and (ii) the organizational changes, often not easy to carry out, that the introduction of these technologies requires to obtain results in line with expectations (Pozzi et al., 2023). This double difficulty may explain, for instance, the emergence of what Gebauer et al. (2021) have called the double paradox of digital servitization, observed in manufacturing firms that have engaged in such strategies: the paradox regarding servitization occurs when firms investing in services do not earn the expected returns; similarly, the digitalization paradox highlights a similar issue with the investments in digital technologies.

2. Too much complexity for SMEs?

How do firms deal with the complexity of the current competitive scenario? Embedded in organizational studies is the theory that organizations living in complex competitive environments – in analogy to biological organisms (Jost, 2004) – respond by developing internal complexity in a mirror-image fashion to external complexity (Schneider, 2017). Following this perspective, the problem of the firm coping with external complexity is well represented by the concept of ambidexterity, that is, the classic dichotomy “between the exploration of new possibilities and the exploitation of old certainties” proposed by March (1991, p. 71), where exploitation of the already known includes refinements and incremental innovations.

In relatively simple competitive environments, which are typical of industries evolving in a gradualistic (incremental) manner, incumbent companies can live by exploitation alone (Tushman and O'Reilly, 1996). Such a regime does not result in a clear-cut discrimination between large and small firms: the former develop incremental innovations with their large

R&D structures, the latter do so with their small R&D structures, and often even without such structures (Sedita and Grandinetti, 2023; Thomä and Zimmermann, 2020).

However, this gradualistic approach becomes inappropriate in complex and rapidly changing competitive environments as it is in the era of the fourth industrial revolution. This is where ambidexterity comes into play, which implies a superior capacity on the part of the firm as exploration and exploitation are two completely different and rather conflicting processes, and getting them to work well together within the same organization is never an easy task. Precisely, and focusing on incumbent firms, ambidexterity takes on in a dual form, although the literature on ambidexterity has not shed full light on this duplicity. The first form is represented by ambidexterity as defined by March, where exploitation and exploration are two simultaneous processes, with exploration engaged in producing a new knowledge outcome with respect to the one on which exploitation is based (March, 1991, 2006). The second form is represented by ambidexterity as conceived by Teece within the theory of dynamic capabilities: these capabilities are those that firms must have in order to maintain or regain competitive advantage in rapidly changing environments (Teece et al, 1997); they relate to the three distinct core processes of sensing opportunities, seizing these opportunities, and, “when necessary, reconfiguring the business enterprise’s intangible and tangible assets” (Teece, 2007, p. 1350); sensing and seizing refer to exploration and exploitation (O’Reilly and Tushman, 2008; Teece, 2007), where, however, exploitation (seizing) refers – differently than in March – to the outcome generated by an exploration process (sensing) that sequentially precedes it. This second form cannot be addressed, as hypothesized by Tushman and O’Reilly (1996), through the solution of temporal ambidexterity, with the firm focusing first on exploration and then on exploitation, because the two processes must be close in time if not partially overlapping (Turner et al., 2013).

One path to ambidexterity that allows it to be managed in both its forms is structural ambidexterity, which can be achieved by creating spatially separated organizational structures that are coordinated at the organizational level above them (O’Reilly and Tushman, 2004; Raisch and Birkinshaw, 2008). This solution avoids the conflicts that would be created by mixing two opposite logics, particularly when the business unit dedicated to exploration has to experiment with a business model whose value components (value proposition, value creation, value capture) are distant from those that distinguish the consolidated business model (Markides and Charitou, 2004). On the other hand, the unit that has received the exploratory mandate does not only carry out pure exploration activities because the new business model must necessarily be experimented with real customers: therefore, there is coexistence in the same organizational unit of

exploration and exploitation, which is a particular form of what in the ambidexterity literature has been called contextual ambidexterity (Markides, 2013). Ultimately, in the solution we are discussing we have structural ambidexterity if we look at the corporate level, while we have contextual ambidexterity if we look at the level of the (predominantly) explorative business unit: the upper level refers to ambidexterity à la March, the lower level to ambidexterity à la Teece.

This two-level approach to ambidexterity represents a specific source of economies of scale meaning that only large organizations can create in-house ad hoc units for the experimentation of an entirely new business model (Markides, 2023), as was the case in the past, for example, with the development of an online distribution channel to complement traditional brick-and-mortar sales (Markides and Charitou, 2004). Another factor that gives rise to a problem of scale is associated with the exploration process. The scenario of the fourth industrial revolution is still so open that the possibility of exploring the opportunities it is gradually offering demands the ability to master different knowledge domains and be able to combine them together. The scale of investment in knowledge required to cope with such a level of knowledge breadth (Prabhu et al., 2005) or exploration breadth (Paiola et al., 2024) is definitely high.

The picture outlined justifies the question that gives this section of the editorial its title. We try to answer it in the following section.

3. SMEs capable of dealing with complexity

In view of the increasing complexity that SMEs have to face (Audretsch and Belitski, 2021; Rullani, 2022a; Sgrò et al., 2021), the following section discusses two strategies that are sustainable by SMEs, and which are linked to the key aspects that emerged in the previous analysis (contextual ambidexterity and exploration breadth).

3.1. Learning to manage the ambidexterity paradox

Firms, and especially those whose size does not allow for the structural solution to ambidexterity discussed in the previous section, may practice contextual ambidexterity that is not protected at the level of the whole organization by spatial separation. The concept of contextual ambidexterity deserves a foreword because it has been the subject of misunderstanding in the literature (Markides, 2013). It was first introduced by Gibson and Birkinshaw (2004), according to whom ambidexterity must involve each individual working in a given organization, who must autonomously

know how to divide his/her time between exploitation and exploration,¹ while there must be processes or systems in the organization that enable and encourage these individual behaviors. Although several authors continue to use the concept of contextual ambidexterity in the original meaning of Gibson and Birkinshaw (e.g., Reischl et al, 2022), since their article, which contributed significantly to the growth of studies on organizational ambidexterity (Birkinshaw and Gupta, 2013), there has been an evolution of the concept. Above all, it has been applied to a broader range than the within-individual solution (Pertusa-Ortega et al., 2021) so that, at present, it represents a multifaceted construct that indicates more than one way to handle two business models within the same organization (Furlan et al., 2023). For example, some authors have spoken of contextual ambidexterity to qualify those cases where some employees manage the relationships with demanding clients whose complex needs require a superior exploration investment (Bednarek et al., 2016; Im and Rai, 2008). In other studies, the concept has been used to frame cases where a project team with an exploration mandate operates within the organization or one of its units (Lavie et al., 2010; Furlan et al., 2023; Paiola et al., 2024).² Clearly, the two-level solution we have identified as accessible to large organizations also has a component of contextual ambidexterity (at the lower organizational level).

Looking at contextual ambidexterity as a multifaceted construct, it is not difficult to see its importance – in appropriate forms such as the project/exploration team – as an approach available to SMEs to deal with the complexity inherent in the digital transition (Park et al., 2020; Pencarelli, 2022).

In this respect, the conceptual intersection between contextual ambidexterity and the organizational theory of paradoxes (Andriopoulos and Lewis, 2010; Papachroni and Heracleous, 2020) appears of particular relevance. In the founding contributions of this theory (Lewis, 2000; Smith and Lewis, 2001), a paradoxical tension between two elements is defined by three core dimensions: (1) the elements involved are in opposition (contradiction); (2) they cannot be completely separated as there are strongly connected (interrelation); (3) the opposition cannot easily solved, but it remains over time (persistence). The most prominent paradoxical dualities/tensions attended by the management literature that has adopted the paradox lens are (Carmine et al., 2024): financial goal versus social responsibilities (sustainable development); collaboration and competition in inter- and intra-firm relationships (co-opetition); global demands versus local demands in

¹ Gibson and Birkinshaw (2004) use the terms “alignment” and “adaptability”, which they state are similar to those of exploitation and exploration proposed by March (1991).

² This project/exploration team-based solution could be placed on the borderline between contextual ambidexterity and structural ambidexterity.

multinational corporations; and, finally, exploration versus exploitation, or (contextual)³ ambidexterity. Regarding the latter, there has been an intense connection between the strand of studies on ambidexterity and that on organizational paradoxes (Lewis and Smith, 2022).

The fact that the two elements of the ambidexterity paradox are contradictory, interdependent and exist simultaneously over time raises a fundamental problem of paradox management. According to paradoxical thinking, firm leaders faced with these paradoxical tensions do not focus on one to the exclusion of the other (either/or logic) but try to manage both (both/and logic) (Schad et al., 2017). Lewis et al. (2014) propose five leadership practices in this regard: appreciate paradoxes as a vital Ingredient of high performance; proactively identify and raise tensions; avoid traps of anxiety and defensiveness; consistently communicate a both/and vision; finally, separate efforts to focus on different sides of a paradox. Regarding this last key requirement of paradoxical leadership, the authors point out that “a both/and vision reminds organizational members of the paradoxical, overarching objective, as separation enables focused action on each side of a tension” (p. 71).

Interestingly, Lewis et al. (2014) draw these lessons from the observation of some big corporations such as IBM, Lego and Unilever. However, none of these practices seem precluded to SMEs, including the last one that has the greatest structural implications: in fact, working (also) distinctly on the two sides of the paradox – in our case, exploration and exploitation – is a requirement for all the forms that fall under the label of contextual ambidexterity.

Of course, stating that managing ambidexterity through a paradoxical approach does not pose a problem of scale excluding SMEs does not mean that it is an easy task. Indeed, paradoxical leadership is an individual capability that is not currently widespread among the top managers of firms, regardless of the size of the firm itself (Trieu et al., 2023). Moreover, in the case of SMEs, a problem occurs that has been read by Chrisman et al. (2015) as a paradoxical tension between ability (discretion to act) and willingness (disposition to act). In other words, applying this general paradox to paradoxical ambidexterity,⁴ entrepreneurs in SMEs have all the freedom they need to take this path, but are reluctant to take it (De Massis et al., 2015; Rondi et al., 2020).

³ Note that in the case of structural ambidexterity, the second condition (interrelation) is necessarily not present.

⁴ The focus of Chrisman et al. (2015) is on every kind of innovation that the firm (family business) can develop. The recognition of the innovation paradox is aligned with the organizational theory of paradox: “The greater discretion that family owners are believed to have in combination with family firms’ unwillingness to innovate thus constitutes a paradox, by which we mean they have contrary elements that are interrelated, concurrent, and durable (Smith and Lewis, 2011)” (Chrisman et al., 2015, p. 312).

In any case, the way SMEs deal with contextual ambidexterity and the related issue of paradoxical leadership represent a promising avenue for future research and for managerial actions aimed at managing uncertain processes such as disruptive innovation, or even unexpected events. To deal with unexpected events that can generate crisis situations, in a logic of strategic ambidexterity, SME'S must pay attention to current management, but also prepare managerial prevention tools capable of facilitating the dealing with unexpected situations. For example, it is necessary to adopt organizational structures capable of grasping weak signals coming from the environment and sufficiently flexible and prepared for resilience activities in emergency cases. One way to mitigate possible negative impacts induced by unexpected events and crises could be also the stipulation of insurance policies and the setting up of capitalized financial structures, capable of ensuring adequate liquidity even in adverse and unexpected moments. During the recent crises induced by the health emergency and the Russian-Ukrainian conflict, in fact, many companies went bankrupt or were on the verge of closure due to the lack of cash flows associated with situations of high debt and financial fragility. Crisis prevention also requires the preparation of effective alert systems, based on suitable sector indicators, such as those introduced by the Italian legislator in 2019, in the wake of crisis prediction models (Gabbianelli, 2016; Falini et al., 2021).

3.2. SMEs' growth processes through acquisitions and networking

We must now return to the topic of firm size, this time within the broad category of SMEs. Some useful data to start this reflection comes from the observatory on merger and acquisition (M&A) transactions built by KPMG, which has been quantifying and analyzing this type of external growth in Italian firms since the late 1980s (Fiani, 2024; KPMG, 2010). According to this source, the recent phase is characterized by a significant growth in M&A transactions and – even more interesting in the context of our analysis – the phenomenon has not reproduced the pattern of strong concentration that marked it in the past – a few large transactions by a few large companies – being fuelled above all by an unprecedented involvement on the part of SMEs, particularly with regard to acquisitions. This change is associated with the formation of an M&A “ecosystem” that is now capable of supporting SMEs interested in growing (also) through these transactions, thanks to a wide variety of investors specialized in their financing as well as players operating at the interface between firms and financial institutions.

Many acquisitions carried out by SMEs do not represent a simply faster alternative to internal (organic) growth within the domain of the firm's already known, but a way to leapfrog the firm's stock of knowledge and

skills, in other words, to cope with competitive complexity (Furlan and Grandinetti, 2011; Salvato et al., 2007). The acquisition of another firm, if framed in a clear strategic vision and supported by a careful evaluation of the firm to be acquired, then becomes the effective solution for: strengthening the acquiring firm in a functional area in which it is weak, acquiring know-how regarding specific technologies or services to be added to products, facilitating entry into foreign markets that are culturally distant from the domestic market, or diversifying into product markets that have not yet been explored.

Through acquisitions, or takeovers as they are otherwise known, firms purchase all of another firm's shares or at least a share that grants control of that firm (De Pamphilis, 2015). Other transactions deserve a mention in which the focal firm: acquires a minority share of another, gives up a minority share to another firm, exchanges shares with it, or creates a joint venture with it. In our perspective of analysis, all these forms of ownership structure openness become important for SMEs (the vast majority of which are family businesses) to the extent that they lead to an enhancement of the entrepreneurial resources and dynamic capabilities (Teece et al., 1997) with which the firms involved deal with the complexity of their competitive environments.

As mentioned above, takeovers provide access to resources and capabilities that the acquiring company lacks. Another way to strengthen the management structure with fresh knowledge and skills is the recruitment of external managers, provided that the owner-entrepreneurs do not make the mistake of seeing the recruited "external 'professional' managers (assuming they can attract them) as 'quick-fix' solutions to possibly deeper structural/cultural problems within the business" (Fletcher, 2002, p. 404). Recently, some scholars have emphasized the roles that middle managers can play in their companies' discontinuous change processes: developing ideas and proposing them to top managers, adapting the strategy defined at the corporate level to the specificities of the organizational units they preside over, or experimenting the innovation project in their organizational unit (Tarakci et., 2023). For instance, a functional or product manager proposes to develop in his/her unit a new business model based on digital servitization that has relevant corporate implications, obtains the approval of the top managers(s) and organizes a project team within his/her unit (contextual ambidexterity) in order to carry out the experimentation (Paio-la et al., 2022). It would be interesting to study the strategic roles that middle managers play in SMEs/family businesses also because in many cases the top managers with whom they interface are the owner-entrepreneurs.

The competitive relevance of inter-organizational relations for SMEs is well known (Agostini and Nosella, 2019). SME'S can develop inter-firm agreements, which represents a "light" form of external growth, less de-

manding and risky from an economic and financial point of view than M&A, although with the constraint of having to share the value created through the alliance with the partners. These are forms of external growth that allow companies to face the challenges of complexity quickly and with modest use of resources. These are maneuvers indicated both for winning “resource-driven” strategies, based on the search for exogenous skills to enhance strategic formulas based on the resources and skills already possessed by the company, and for winning “opportunity-driven” strategies. in search of the resources necessary to seize opportunities that distance the company from the strategic path of consolidating it, enriching it and completing it.

The growing complexity of markets is urging companies to collaborate with other actors to strengthen their skills, share risks, access complementary know-how and therefore accelerate innovation. The main objectives concern: (1) specialization in their “core business” by improving the quality of the products offered, in order to obtain a competitive advantage not only for individual partners, but also for the entire network; (2) the increase in strategic and operational flexibility, favored by the rapid mobilization (in and out) of the complementary resources necessary for the businesses managed and by the expansion of the relational capital of each partner in the network; (3) facilitated access to new markets, leveraging a greater critical mass and the exploitation of economies of scale, promoting stability and growth in turnover; (4) the expansion of the range of goods and services produced and offered, reaping the advantages of variety and breadth of value propositions; (5) increasing efficiency by achieving economies of scale and reducing management costs; (6) the reduction of the financial needs relating to investments; (7) better access to credit and incentives to encourage the reduction of indebtedness and financial risk; (8) access to knowledge and skills of other companies, through the exchange of know-how and the sharing of resources; (9) corporate reorganization and best use of personnel; (10) the common use of telematic and IT platforms; (11) the possible sharing of marketing processes, especially at the level of communication and web marketing; (12) the possible sharing of innovation and research processes; (13) the possible sharing of procurement processes through purchasing groups, to have greater bargaining power towards suppliers.

The network contract, introduced in Italy by a specific law, is a formal agreement that allows activities and resources to be pooled with the aim of improving company functioning, strengthening competitiveness and innovation. This represents a valid tool for relaunching the competitiveness of smaller businesses, seeking the advantages of larger dimensions without losing entrepreneurial, strategic and organizational autonomy. The main managerial challenge to improve the performances achieved so far by the

aggregations through network contracts concerns the strengthening of the governance processes, in particular those of coordination of the partners, making the cooperative vocation of the allies prevail over the potential risks of conflict. Finally, it is important that the networks take on strategic perspectives capable of dealing with international business, starting from a context of strong territorial roots, typical of network contracts created by Italian SME'S: this implies that the networks know how to deal with relationships with even strong ties with international partners, as long networks, capable of connecting to global purchasing, intermediation and consumption circuits making use of the strength of the local and Italian territorial brand (Aureli et al., 2015).

SMEs can develop agreements to avoid size growth. Nevertheless, here we would like to distance ourselves from a view of the role of networking that simplistically – like the better-known “small is beautiful” – tends to regard it as a pure substitute for growth. On the contrary, growth (organic or external) and networking are closely interdependent processes. On the one hand, through the acquisition of the target company, the acquirer may also and sometimes especially be interested in the relationships that the acquiree brings with it (Furlan and Grandinetti, 2011). On the other hand, external growth processes present various criticalities – think, for instance, of the delicate post-acquisition phase (Tunisini and Bocconcelli, 2013) – to deal with which the firm is generally supported by external consultants, who fall fully into the category of knowledge-intensive business services, KIBS (Miles, 2005).⁵ Finally, the boundaries between growth and networking are rather blurred: in particular, strategic alliances can take either the equity form (external size growth) or the non-equity form (formal or informal inter-firm collaboration), but both may be suitable for pursuing a given strategic objective. Not surprisingly, strategic alliances in both forms are included, like M&As, in the broad concept of external growth (Gomes, 2020).

In conclusion, growth cannot be a strategic imperative tout court for SMEs but must be conceived as a targeted and tailor-made path for the firm, which develops and updates over time, and is always linked to the development of internal capabilities and external relations. For SMEs that want to take up the challenges posed by the current phase of technological discontinuity, and the consequent extension of the exploratory breadth, the true strategic imperative is to identify the knowledge domain within which to design size growth, the strengthening of internal capabilities and the development of relations with other actors in the ecosystem in which the firm lives (Simone et al., 2021). In any case, the growth processes of SMEs (small

⁵The involvement of other KIBS has proved to be essential in the exploratory phase of radical innovation processes, for instance, in digital transformation projects (Rapaccini et al., 2023): in this respect, ambidexterity always has a network dimension (Park et al., 2020).

becoming medium, medium becoming large) in its various forms, motivations, and implications, should receive great attention in the current phase, revitalizing the strand of studies on medium-sized enterprises started in Italy some fifteen years ago (Coltorti, 2007; Varaldo et al., 2009).

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