

UNIVERSITÀ CATTOLICA DEL SACRO CUORE

Sede di Milano

Dottorato di ricerca in Management and Innovation

Ciclo XXXV

S.S.D. SECS-P/07



UNIVERSITÀ
CATTOLICA
del Sacro Cuore

Innovation in small firms: a qualitative analysis of triggers, barriers and processes

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Anno Accademico 2021/2022

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Introduction

The ability of firms to reshape their activities and innovate to adapt to new competitive scenarios is crucial for their survival. Since the pivotal studies of Schumpeter (1934) on innovation, and after gained new momentum in the early 2000s' (Foss & Saebi, 2017), the academic interest about this topic has grown steadily.

Although the importance of innovation is transversally acknowledged as a driver of competitive advantage for both large firms and small- and medium-sized enterprises (SMEs), the former have by far represented the preferential research setting (Li et al., 2018). Indeed, large businesses are gaining new competitiveness by more easily exploiting the advantages of digital innovation (Roper & Hewitt-Dundas, 2017). Thanks to their bigger size and the greater availability of resources and competences, large firms represent an ideal context to pursue innovation. However, the crucial role of innovation in the current competitive scenario is increasingly compelling for firms of all size and is actually raising interesting research avenues on the specific context of SMEs. Specifically, SMEs are particularly in need of exploiting innovation-related benefits to remain competitive, as they face barriers that make innovation difficult to pursue and manage (Giotopoulos et al., 2017). The comparatively fewer contributions on the specific research context of SMEs therefore makes this firms particularly interesting for further investigations. Furthermore, the research has provided mixed findings and is relatively fragmented, thus calling for additional studies on innovation drivers, outcomes and processes in small firms (e.g., Faherty & Stephens, 2016; Roper & Hewitt-Dundas, 2017).

It is also important to notice that at the beginning of the new century, a shift of paradigm was at the door: over the past twenty years, thanks to the arise of digital technologies, the whole world rapidly shifted from an analogue scenario to an interconnected, online, technology-driven context (Li et al., 2018). This dramatic change has deeply affected the whole society and revolutionized the way of doing business. Since responding to the challenges of digitalization is considered crucial to the

competitiveness of firms, the way in which digital innovation is managed is attracting increasing attention among scholars, business leaders, and policymakers (Henley & Song, 2020).

According to the 2003 EU recommendation 2003/361, SMEs are those firms employing from 0 to 249 employees and having revenues lower than 43 million €. Although normally treated as a unitary group, the category of SMEs is actually characterized by intra-group differences in terms of size, resources availability and innovation potential. The inherent heterogeneity of SMEs is associated with different needs and approaches to innovation. However, these differences are rarely investigated. Indeed, most contributions about innovation in SMEs focus on the group of larger firms (>100 employees), while smaller SMEs and especially micro-firms (i.e., those employing less than 10 employees), are widely neglected by both theory and practice (Henley & Song, 2020).

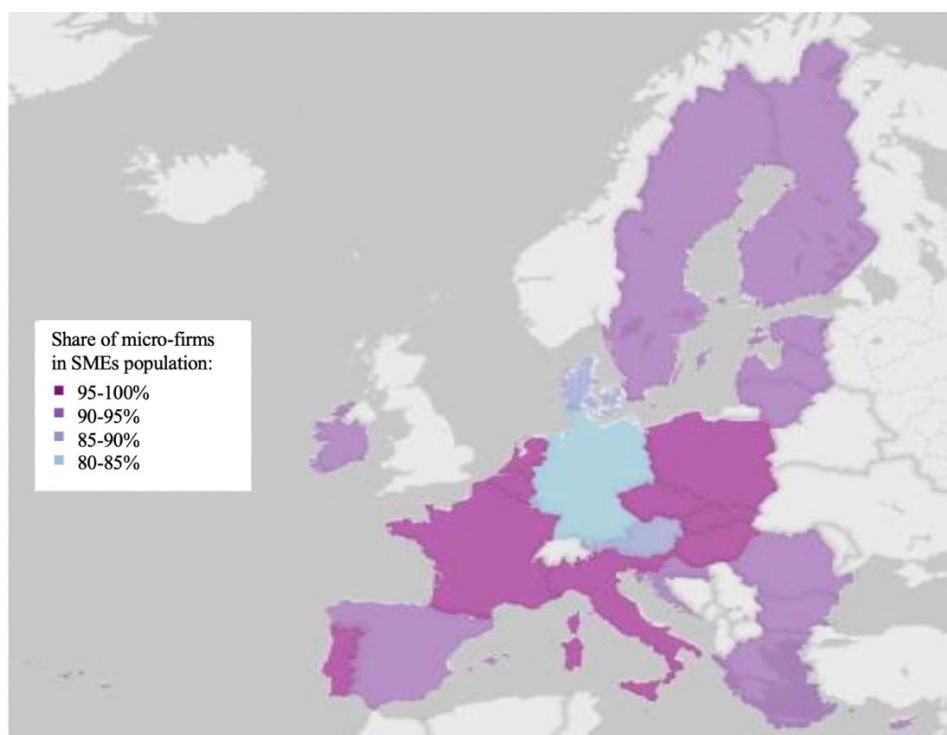
According to the Annual Report on European SMEs issued in 2021/2022, SMEs represent approximately 99.8% of total European firms in 2021, contributing to 64% of total employment and to 52% of value added. Out of these, micro-firms represent the majority (European Union, 2022), as shown in Table 1 and Figure 1.

Table 1: Share of different EU-27 SME size groups in the number of enterprises, employment and value added in 2020

	Micro SMEs	Small SMEs	Medium SMEs
Enterprises (thousands)	21,264 (93.2%)	1,340 (5.9%)	205 (0.9%)
Value Added (EUR billion)	1,284 (35.2%)	1,178 (32,3%)	1,186 (32.5%)
Employees (million)	36.9 (44.3%)	25.8 (31.0%)	20.5 (24.7%)

Source: Annual Report on European SMEs 2021/2022

Figure 1: Share of micro firms in the total number of SMEs in the EU-27 Member States in 2021



Source: Annual Report on European SMEs 2021/2022

Firms with less than 10 employees are around the 90% of all EU-SMEs and this relevance is also worldwide (OECD, 2019). Therefore, micro-firms greatly contribute to the European and global economic system and this tendency is also expected for the years to come (see Table 2). Hence, the lack of interest for the smaller side of SMEs represents a serious gap in the current literature, which hampers our understanding of how our economic system innovates (Roper & Hewitt-Dundas, 2017; Tu et al., 2014).

Table 2: Projected annual growth in 2022 of value added, employment and number of enterprises - SMEs and large enterprises

	Value added Δ 2022-2021	Employment Δ 2022-2021	Number of Enterprises Δ 2022/2021
Micro SMEs	7.2%	2.1%	1.7%
Small SMEs	6.6%	1.2%	0.8%
Medium SMEs	6.8%	1.1%	0.8%
Large enterprises	7.3%	1.7%	1.4%
All SMEs	6.9%	1.6%	1.6%
Total	7.1%	1.6%	1.6%

Source: Annual Report on European SMEs 2021/2022

Extant research tends to agree upon the fact that micro-firms face greater challenges in implementing innovation, due to their smaller size, their inherent difficulty to change and obtain new resources and competences. However, which could be the drivers and outcomes of innovation in these firms (Faherty & Stephens, 2016; Überbacher et al., 2020) and how innovation is pursued and managed (Henley & Song, 2019) are still largely untapped.

The lack of a comprehensive knowledge about innovation in SMEs is not only a size-related issue, but also links to the variety SMEs present in terms of activities and ownership: being so numerous, SMEs cover most sectors, from the more high-tech and easy-to-digitalize, to the low-tech traditional activities. Extant research often focuses on high-tech SMEs, overlooking those firms being active in traditional sectors, for which innovation – especially the digital one – can be particularly challenging (De Massis et al., 2016). Indeed, tradition (i.e., values, know-how, old and established work routines) plays a crucial role in the definition of the strategies of these firms, lowering their ability to change and to keep up with innovations (Ingram et al., 2016). This is particularly true in the specific context of family SMEs. These firms are characterized by an overlap between the family and the business systems, and hence struggle in their need to balance between the contrasting pressures of sticking to the past of the firm – and therefore their families and ancestors – and changing in order to survive and renovate their competitive advantage (Erdogan et al., 2020). As testified by figures at the European level, almost a half of European SMEs are active in low-tech sectors (European Commission, 2022) – and the majority of them are micro-firms owned by a family (Roffia et al., 2021). Accordingly, the context of family SMEs represents a particularly relevant research setting in light of its importance in the overall business environment and of the paucity of studies.

Therefore, this thesis joins the ongoing conversations on the topic of innovation by filling multiple gaps in research on SMEs. Specifically, the aim of this dissertation is to examine innovation in SMEs from a multi-lateral perspective that can help an in-depth investigation of such a complex issue. This objective will be achieved through three empirical qualitative papers focused on the analysis of innovation in micro-firms, traditional SMEs, and family SMEs. The order with which the

three papers are presented follow a ‘from the general to the specific’ approach. Indeed, it starts with a paper focused on the identification of the main drivers and barriers to innovation in SMEs, i.e., micro-firms, to initially frame the issue and understand the triggers of innovation. Then, the role of tradition in this context is analyzed as the second paper is an empirical study focused on the management of innovation in traditional and low-tech settings. Finally, the third paper is devoted to the investigation of one type of innovation, i.e., digitalization, in the specific context of family SMEs. The thesis is therefore organized as follows.

In Chapter 1, the first paper, titled “*How micro-firms innovate: a qualitative study on the role of networks*”, is presented. This study employs a qualitative approach based on 32 semi-structured interviews with micro-entrepreneurs and networks’ representatives to understand which network’s characteristics impact innovation in micro-firms. This paper outlines the existence of both a positive and negative network influence on innovation, outlining those network’s characteristics stimulating innovation and those inhibiting it. Moreover, it advances a framework linking the varying micro-entrepreneur’s sensing of the network’s role with the impact this can have on innovation.

Chapter 2 is dedicated to the second paper, titled “*Innovation in tradition: how entrepreneurs innovate in creative crafts micro-firms*”. The results of this study are based on 23 semi-structured interviews with micro-entrepreneurs active in the Italian creative crafts sector. Characterized by a high centrality of tradition, this sector is the ideal context in which to set a study aimed to understand the ability of SMEs to innovate while coping with their tradition and to clear out the role that tradition can have in fostering innovation instead of retaining it. This paper identifies three main approaches of micro-firms to manage tradition while pursuing innovation.

In Chapter 3, the last paper is presented. It is titled “*Digital transformation in family SMEs: a process perspective*”. Using a case-based methodology on 6 family SMEs, this study analyzes the digitalization of these peculiar firms following a process perspective. Specifically, it investigates the steps of digitalization, the role of family members, and identifies the main drivers and barriers to digitalization within family SMEs. The paper contributes to the current research by developing a

conceptualization of digitalization as a four-steps process, and by analyzing the different triggers and actors in each step.

Finally, some general conclusions on how the findings of the three empirical papers contribute to the broader research on innovation in SMEs are provided in the final section. A summary of the main avenues for future research is also presented in this concluding section.

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Chapter 1

HOW MICRO-FIRMS INNOVATE: A QUALITATIVE STUDY ON THE ROLE OF NETWORKS

Abstract. Despite an increasing scholarly attention on innovation in small- and medium-sized enterprises (SMEs), we still know little about the factors motivating and supporting innovation in such firms. This qualitative study joins this conversation by investigating the controversial role played by networks in fostering innovation in the specific context of micro-firms. Building on 32 semi-structured interviews conducted with micro-entrepreneurs and network managers, our results identify several influencing factors carrying both a positive and a negative effect on innovation and detect three main ways in which micro-entrepreneurs make sense of the network's influence on the overall innovation process. This study offers two primary contributions. First, we shed light on the varying effects of the network's characteristics on innovation in micro-firms. Second, we further our understanding of how micro-entrepreneurs frame the role of networks in driving innovation. Thus, we develop a framework on the joint effect of network-level characteristics and the micro-entrepreneur's sensing of the network's role as key drivers of the impact of networks on innovation in micro-firms.

1. Introduction

Innovation has been widely investigated in the context of both large and small to medium-sized firms, i.e., SMEs (Müller, 2019; Zhu et al., 2019). However, our knowledge about the mechanisms behind innovation in the smaller size group of SMEs, i.e., micro-firms, is still limited (Faherty & Stephens, 2016; Henley & Song, 2019). The tendency is to extend innovation knowledge about SMEs to micro-firms, but this approach may overlook the specificities of micro-firms (Roper & Hewitt-Dundas, 2017). Due to their very small size, micro-firms are more sensitive to the drivers and barriers typically experienced by SMEs, and particularly to those deriving from the

entrepreneur's characteristics and the context in which the firm is embedded. Thus, the specific elements that drive innovation in micro-firms are still under-investigated (Henley & Song, 2019).

Among other drivers of innovation, the role of networks as facilitators of innovation in SMEs is increasingly acknowledged. Indeed, being part of strategic networks – i.e., groups of firms that operates together to reach common goals – is considered a great fuel for innovation activities in SMEs, mainly because networks help SMEs to overcome their liability of smallness and to reach out to a broader set of resources (Milanesi et al., 2020). However, studies about the role of networks for innovation in micro-firms reported conflicting results and their potential for stimulating innovation in these firms is still unclear (Roper & Hewitt-Dundas, 2017).

Thus, the aim of this study is to address the following questions: how do networks stimulate innovation in micro-firms? Which network's characteristics mostly impact innovation in these firms and how do network mechanisms come into action?

To address these questions, a total of 23 micro-entrepreneurs who are active in the Italian creative crafts sector and involved in a strategic network were interviewed to collect data about the management of innovation in their firms, their perception of the main drivers of/barriers to innovation, and their perception about the role of networks for innovation. Moreover, the head of each network (9 in total) of which the firms are members were interviewed to triangulate entrepreneurs' interview data. This second source of data was useful to better understand the activities performed by the network and its characteristics. In addition, the perception of network representatives about the entrepreneurs' innovation approach was captured to reduce subjectivity and self-celebration. A total of 32 semi-structured interviews were therefore conducted.

The findings identify several network-level factors that influence innovation in micro-firms having both positive (i.e., stimulate innovation) or negative effects (i.e., inhibit innovation). Three different ways in which micro-entrepreneurs frame the role of networks (i.e., network as 'innovation channel', 'information provider' and 'sharing hub') emerge from our analysis. Our framework therefore examines how the network's characteristics and micro-entrepreneurs' framing of the

network's role affects the impact of the network on innovation in micro-firms. Our results offer multiple contributions to research on innovation in micro-firms and on the role of networks in this specific context.

2. Theoretical background

2.1. Innovation in micro-firms

SMEs are the 99,8% of European firms (OECD, 2019) and most of them are micro-firms. Indeed, in Europe only, most SMEs (the 98%) are micro-sized, employing less than ten employees.

While research has shown that SMEs play a central role as drivers of growth and innovation (Muller, 2019; Zhu et al., 2019), less is known about how innovation is managed in micro-firms. The definition of innovation itself in the specific context of micro-firms is still partially unexplored. Indeed, in micro-firms innovation is a very complex concept and cannot be merely considered as product innovation or adoption of a new technology, as the vast majority of are not high-tech organizations. Rather, innovation includes any novel approach to business organization, marketing strategy or product distribution that allows the enterprise to differentiate itself from its competitors (Baregheh et al., 2009). Also, many micro-firms, like those included in this study, are active in sector where tradition plays a strong role in defining their activities, thus affecting the way innovation is intended (De Massis et al., 2016). Therefore, micro-firms present a number of specificities.

However, research tends to generalize results on SMEs to micro-firms (Gherhes et al., 2016; Henley & Song, 2019). Specifically, when pursuing new product development, SMEs are considered to hold some advantages relative to large companies such as faster decision-making processes, greater functional integration, and a greater level of confidence in their flexibility (Voss et al., 1998; Nicholas et al., 2011). Research has also shown that that innovation in SMEs is relatively harder to implement in view of multiple barriers, in terms of a limited understanding of the potential benefits associated with innovation and of both managerial and financial resource constraints (Faherty & Stephens, 2016). Specifically, SMEs may lack a supportive organizational culture, and the specific digital skills

and ICT infrastructure needed to sustain the innovation process. These conditions, in turn, lead to a perception of higher risk, which acts as a barrier to innovation (Giotopoulos et al., 2017).

In the context of micro-firms, the innovation barriers faced by other SMEs are more intensely experienced due to their size. Indeed, while a small size fosters flexibility and rapid internal communication, micro-firms have limited financial resources and staff, and entrepreneurs tend to focus on day-to-day survival (Faherty & Stephens, 2016). The day-to-day management approach puts strong pressure on staff, and consequently there is little focus on long-term strategic objectives, including innovation (Amabile et al., 2002). The entrepreneur's management style can also inhibit risk-taking due to much emphasis on control, and this impacts on the ability to learn and on creativity (De Sousa, 2006). Indeed, being owner-managers less interested in innovation than those of larger organizations, they are less likely to recruit employees prone to innovation. Since in micro-firms the entrepreneur holds all the decision-making power (An et al., 2018), there is a clear relationship between the entrepreneur's personality and innovation level of a micro-firms (Laguir & Den Besten, 2016). Therefore, the entrepreneur's characteristics and personal traits should be always taken into consideration when analyzing innovation in these firms and different entrepreneurial profiles turn into varying propensities to innovation and into different ways in which innovation is framed (Olivari, 2016).

2.2. The role of networks for innovation in micro-firms

Alongside the environment in which the firm is embedded (Laforet, 2011; Volcheck et al., 2013) and the personality and characteristics of the entrepreneur (An et al., 2018), the strategic role that networks play in fostering innovation in SMEs is a widely explored research issue (e.g., Håkansson & Snehota, 1989; McAdam et al., 2014; Santoro et al., 2016). SMEs networks, defined as *“intentionally formed group of small and medium sized profit-oriented companies, in which the firms are geographically proximate, operate in the same industry, potentially sharing inputs and outputs and undertake direct interactions with each other for specific business outcomes”* (Human & Provan,

1997, p. 372), can help SMEs by accelerating their innovation processes (O'Regan et al., 2006), facilitating knowledge sharing (Håkansson & Snehota, 1989), and supporting growth by providing access to more information (Fang et al., 2016) and to a broader base of resources (Milanesi et al., 2020). Moreover, networks help SMEs to overcome their poor market visibility and low negotiating power. At the same time, belonging to a network may reduce transaction costs by both enhancing trust among member firms (Lin & Lin, 2015) and encouraging them to cooperate in order to improve, and potentially change, their business models (Velu, 2015). Networks may therefore generate benefits in terms of strategic orientation and foster the ability to leverage resources in an innovative way (Eggers et al., 2020).

Even as far as the role of network is concerned, findings about SMEs cannot always be extended to micro-firms. Cooperation can provide micro-firms with multiple benefits, including greater access to information and resources, the sharing of knowledge and experience and the development of new competences. However, networking can be challenging for these firms for two reasons: they should find partners that meet their expectations, and they should overcome the typically intrinsic fear of collaboration (Salavou et al., 2004; McAdam et al., 2004). The few studies that have focused on the relationship between networking and innovation in micro-firms have offered conflicting results (e.g., Roper & Hewitt-Dundas, 2017; Tu et al., 2014). Some demonstrate that cooperative behavior is highly beneficial for performance and innovation (e.g., Tu et al., 2014), while others show that the benefits of cooperation are constrained by a lack of time, limited financial resources, and entrepreneurs' skepticism (e.g., Faherty & Stephens, 2016). Moreover, some research offers contrasting findings in the same study. For example, Roper & Hewitt-Dundas (2017) found out the importance of collaborative relationships for market innovation in micro-firms, reducing the need for internal research and development (R&D). However, in line with Chesborough (2010) and Laursen and Salter (2014), they also found that collaborative innovation could be particularly difficult for smaller organizations because of their lack of capacity in seeking and absorbing external knowledge, as well as their limited ability to protect knowledge and appropriate its returns.

In summary, our knowledge of the innovation dynamics in micro-firms and of how they are affected by the participation in a network is limited. In particular, there is still a lack of understanding of how networks can drive micro-firms to engage in innovation activities and of the mechanisms through which networks can play such role.

3. Methodological approach

To address the research questions of this study, we followed a qualitative, grounded-theory research approach (Patvardhan et al., 2015). A qualitative approach was preferred for two reasons. First, most papers on the issues faced by this study are based on quantitative methods (e.g., Benhayoun et al., 2020; Henley & Song, 2019), however process related issues – as innovation – are better captured by a qualitative approach. Second, in SMEs and specifically in micro-firms, where the entrepreneur holds such a central role for innovation and any other decision-making process inside the firm, qualitative methods allows to explore the issue in a more comprehensive way.

A total of 32 semi-structured interviews were performed. Out of these, 23 were taken with entrepreneurs (or one of their closest collaborators) of as many low-tech, traditional micro-firms active in the Italian creative crafts performing activities such as violinmaking, wood, glass, coral and ceramic crafts, lava stone processing, watchmaking and goldsmithing (see Table 1). This industry is a suitable context in which observing the dynamics of innovation in micro-firms as most artisanal enterprises are micro-sized. Moreover, although a niche, creative crafts is significantly relevant not only in Italy but in very many countries (Aguirre & Lopez, 2017). The following areas were covered by the interviews: the conceptualization of innovation in the opinion of each entrepreneur, the identification of drivers of and barriers to innovation in their firms, the explanation of the most significant driver of all for innovation and the reason why that element is so significant for them, the investigation of the role of networks for innovation in the firm with the identification of their network's characteristics and activities that they perceived as facilitators of innovation.

Table 1: Main information about interviewed entrepreneurs and their micro-firms

Interviewee	Role	Activity	Firm's foundation	Network
L.O.	Long-time employee	Goldsmithing	1970	A
C.M.	Long-time employee	Goldsmithing	1977	A
D.G.	Entrepreneur	Ceramic crafts	1928	B
M.S.	Entrepreneur	Ceramic crafts	1950	B
E.S.	Long-time employee	Ceramic crafts	1967	B
Mi.M.	Entrepreneur	Ceramic crafts	1973	B
A.M.	Entrepreneur	Glass making	1930	C
M.M.	Entrepreneur	Glass making	1911	C
R.F.	Entrepreneur	Glass making	1991	C
S.B.	Entrepreneur	Glass making	1989	C
S.M.	Co-founder	Lava stone crafts	2014	D
G.B.	Entrepreneur	Lava stone crafts	1983	D
P.A.	Entrepreneur	Watchmaking	1969	E
A.B.	Entrepreneur	Watchmaking	1920	E
G.G.	Entrepreneur	Woodworking	1961	F
M.N.	Entrepreneur	Woodworking	1930	F
S.O.	Entrepreneur	Coral crafts	2013	G
R.V.	Co-founder	Coral crafts	2000	G
M.P.	Entrepreneur	Violinmaking	2006	H
P.S.	Entrepreneur	Violinmaking	2013	H
J.G.	Entrepreneur	Violinmaking	1990	H
P.C.	Co-founder	Goldsmithing	2008	I
L.S.	Entrepreneur	Goldsmithing	1989	I

All interviewees were entrepreneurs of micro-firms that belong to networks dedicated to the preservation of specific ancient craftsmanship. Others 9 semi-structured interviews were therefore conducted with the Presidents of each network or with an experienced, long-term network employee (see Table 2). Data derived from these second group of interviews were used to triangulate interviews with the entrepreneurs and useful to understand which activities were performed by the network. Also, the perception of the innovation approach of the entrepreneur was asked to network representatives to reduce the subjectivity of entrepreneurs' statements about innovation in their firms.

Regardless of their legal form – the study includes both consortia and associations – interviewed networks are similar in terms of objectives and internal structure. Indeed, all of them are institutionalized groups of firms that are highly sensitive to the importance of innovation and jointly

operate to improve the competitiveness of their members. Moreover, they all fall in the category of ‘structured’ and ‘horizontal’ network, as defined by Inkpen and Tsang (2005): they are ‘structured’ because institutionalized with a formal agreement which links the members together to work for a common purpose; they are ‘horizontal’ because includes firms with similar core business that join resources to achieve a common goal, facing similar challenges in the same competitive arenas. All networks are characterized by the presence of a president who is responsible for coordinating the network activities for a specific period (ranging from 5 to 10 years). The president in some cases is the entrepreneur of a member firm elected by their peers, in others an external manager selected by all network members on the basis of his/her experience and know how.

Table 2: Main information about interviewed networks’ representatives and their networks

Network	Promotion and preservation of	Foundation	Members	President type	Respondent role
A	Goldsmithing	2007	60	External manager	President
B	Traditional ceramic art	1977	40	External manager	Long-time employee
C	Traditional glassmaking	1985	50	Entrepreneur	Long-time employee
D	Traditional lava stone processing	2010	30	External manager	President
E	Traditional watchmaking	2018	70	External manager	President
F	Traditional woodworking	2011	60	External manager	President
G	Traditional coral crafts	1977	61	Entrepreneur	President
H	Violinmaking	1996	45	Entrepreneur	President
I	Goldsmithing	2012	150	External manager	President

All the interviews were recorded and transcribed verbatim. Moreover, although especially in the case of micro-firms secondary data are often scarce, triangulation was also carried out analyzing data sources such as websites, social media pages, catalogues and official reports (see Table 3). These were scrutinized in search of corroboration about interviewees’ statements on the introduction of specific innovations and, in general, to detect the entrepreneur’s approach to change. Similarly, secondary data related to networks were analyzed to detect and confirm the characteristics and activities emerged during the interviews.

Table 3: Data sources

Data sources	Data gathering	n.
Micro-entrepreneurs	Semi-structured interviews	23 interviews (31 recorded hours)
Networks	Semi-structured interviews	9 interviews (14 recorded hours)
Social Media profiles (Facebook, Instagram, LinkedIn)	Micro-firms and networks' profiles screening in search of innovation-related information	58 social media profiles
Websites	Micro-firms and network's website screening in search of innovation-related information	32 websites
Micro-firms catalogues	Analysis of micro-firms catalogues to detect change over time	6 catalogues
Official network reports about innovation activities	Analysis of official networks reports to understand their innovation-related activities	4 reports

Regarding the sampling technique, the involved networks were first identified searching for those dedicated to the preservation of ancient know-how through the tutelage of firms active in crafts. Then, through their websites - where a list of members is available - firms were selected using purposeful sampling (Patton, 1990) as they should be micro-firms (i.e., with less than 10 employees) and currently participating to the network activity. Snowball sampling (Lincoln & Guba, 1985) was also used in a second phase to identify other relevant informants (i.e., micro-entrepreneurs missing from the online lists, whose name would come up during interviews in relation to particularly innovative activities or a high level of networking-activities enthusiasm). Interviews lasted 60 minutes on average and the interview protocol was reviewed and updated after each interview (Glaser & Strauss, 1967) to “zoom-in” emerged concepts that held the potential for being theoretically relevant. We continued with sampling until we reached theoretical saturation and therefore until data coming from new informants became redundant and lacked new conceptual relevance and insightfulness (Patvardhan et al., 2015).

Data analysis was conducted using an open-coded approach (Strauss & Corbin, 2008; Gioia et al., 1994) that involves the selection, categorization and labeling of direct statements (i.e., first order codes) that authors then condensed into more broad theoretical perceptions (i.e., second order themes). These two steps were firstly conducted independently by two researchers, and then conclusions were compared to draw out recurring concepts and patterns by solving any shortfall by confrontation. Finally, emerging patterns were collapsed into aggregated, theoretical concepts (i.e., third-order dimensions) by matching and considering findings in light of the relevant theory.

Examples of first, second and third level of data analysis are shown in Table 4 and Table 5. Both tables are organized as follows: in the left row representative quotations (i.e., first order codes) are presented; in the central row the labels of the researcher-elaborated themes are listed alongside their baseline quotations and then; in the right row the theoretical, overarching concepts derived from the analysis are displayed.

4. Findings

Our findings are organized in two main areas. The first include what emerged about the network's characteristics that can positively and negatively impact on innovation, here labelled as "positive network influence" and "negative network influence" (see Table 4). The second area of results include findings about micro-entrepreneur's framing of the role of networks. Networks can be seen as "innovation channels", "information providers" and "sharing hubs" for entrepreneurs and these different views impact on the extent to which a firm is sensitive to positive and negative network influence on innovation. This section is therefore organized accordingly.

Table 4: ‘Network influence’ on innovation – Representative quotations, second-order concepts and overarching themes

Representative quotations	Influencing factors	Influence type	
<p>“What stimulates innovation are collaborations. They are the keys because they show you that something can work. To collaborate with some competent else, who has the same interest that you have in doing something is crucial because you can cut costs and experiment more. The consortium is crucial for this because it guarantees and facilitate trust in collaboration.” – S.B., glass artisan</p>	Diffused internal cooperation	Positive network influence	N E T W O R K I N F L U E N C E
<p>“(The Association) helps so much for innovation. I have learned so many things. Although I gave a lot to other members, trust me, I have taken so much more because you can learn a lot through confrontation. [...] There were so many occasions that would be impossible for me to reach if it wasn't for the Association. The experience of hundreds of people together is a precious resource.” – P.A., watchmaker</p>			
<p>“The Consortium always gives us the possibility of collaborating with many different artists from all over the world. It's not easy because every time they try to facilitate collaboration, for some of my colleagues this means that they are bringing here competitors but I disagree. Collaboration opportunities were always a great plus because they give the opportunity to compare yourself to others and in the comparison you can learn a lot: you don't only give but also take. [...] If I never confront myself to others, how can I grow?” – R.F., glass beads maker</p>	Collaboration with external professionals		
<p>“One of our biggest aim is to facilitate the collaboration of our members with other professionals, ceramists and non-ceramists, coming from other contexts. This is something much appreciated that enables change and innovation giving our members new point of view about their work and approach to work” - P.C., long-time employee in network B (ceramic art)</p>	Effective representativeness (at national & international level)		
<p>“You see, I am part of the Consortium because it allows me to overcome my small size, to make hear my voice with the Region and all other institutions. To innovate I need money, but alone I cannot obtain them. While all together we can” - G.B., lava stone artisan</p>			
<p>“Together we can achieve so much more than acting as a single firm. Sometimes I think about some very big projects we did in the past and I realize how much we can achieve working together as a whole in front of the institutions” - R.F., glass beads maker</p>			
<p>“We are too different. Sometimes I wish the network could do more for innovation, but then there is always that other firm that slows things down. To work everyone in one direction is the greatest challenge for innovation. My firm has the power to innovate itself without support and we do it anyway but I'm frustrated by the slowness of the network, we could do so much more for innovation together. But it is not its fault, it has to cope with everyone needs.” – D.S., ceramic artist</p>	Members' heterogeneity	Negative network influence	
<p>“You see, we could have made so much more, but we had to slow down. We tried to stimulate members a lot, and then someone was always saying “I'm not interested”, “I do not have time”, and so on. The best way to stimulate innovation among our members is to propose the possibility of very specific, differentiated projects over the year, with the aim of involving everyone one time or another”. – P.C., long-time employee in network B (ceramic art)</p>			
<p>“Before I became President, the Consortium's main purpose was to sell more jewels and to do so all members' firms went as one entity to fairs and exhibition around the world. This was useful to someone, sells were good if considered as a whole, but disparities rose among members and competition too. There was no space for other than economic and financial return, and innovation was not a priority. I wanted to change this, I wanted to create a community, I want to focus on innovation that is the number one priority nowadays to remain competitive. For this reason, I have stopped with network commercial activity” – B.R., president of goldsmithing consortium</p>	Strong sales orientation		
<p>“There was a time when we members sold our products together but – thank God! – they are over. It creates disparities, envy, competition: all of us wanted to sell more than the others and if your products are not sold the idea is that if another firm have sold more than yours the responsibility is of the Association because they promote them over me. When money are involved they are the center of everything: I definitely prefer how things are today, we stay together to promote ourselves and to do things that are precluded if we were alone, innovation included.” – D.S., ceramic artist</p>			
<p>“I am an engineer, a technician, I was called to be President of the network and I am very happy to have taken this role. However, I must say that the situation I saw when I first became President was an absolute disaster. You see, to foster innovation a shared view is needed and when you are an entrepreneur and you should be a representative for others, you cannot be impartial, you will always be on your side first.” – A.G., President of lava-stone consortium</p>	Conflict of interest		
<p>“I abandoned the Consortium for a few years and then joined it again two years ago. [...] I wasn't interested in a network in which one of us, an artisan, manage all. It triggers competition and personal interest too much. I'd rather be in a consortium that do less but involve every one of its member than one that does a lot but for a few”. – D.S., ceramic artist</p>			

4.1. Positive network influence: when and how networks help micro-firms to innovate

Networks that positively influence innovation in their member firms seem to share common characteristics.

The first is the ability to create effective collaboration opportunities within the “safe space” of the formal network. Indeed, the possibility to work with others (both competitors and other professionals) on specific projects proposed by the network is seen by interviewees as an innovation facilitator. Collaboration allows the entrepreneurs to experiment new approaches to their work and enables them to engage in innovative projects and initiatives that would not be possible to the single firm (e.g., R&D). In this regard, P.A., a watchmaker that is a long-time member of his network well summarized this diffused feeling stating that *“there were so many opportunities that would be impossible for me to reach if I were not a member of the association. The experience of dozens of people together is a precious resource”*.

Our data indicate that micro-entrepreneurs specifically value the ‘encouragement’ to commit that may come from the network, for example, by arranging meetings dedicated to brainstorming and facilitating the emergence of ideas about opportunities for collaboration. Most interviewees are particularly satisfied by the experimentation coming from networking. Indeed, as stated by S.B., a young glass artisan, *“collaborations are the keys to innovation because they show you that something new can work”*. The network therefore can collectively uncover the potential of change functioning as a guarantor and a risk minimizer for micro-entrepreneurs that, in many cases, are change-resistant by their own admission as in the case of A.B., a watchmaker that claimed: *“I wish to innovate marketing activities, but I’m scared, especially of social media. I feared them because I do not know them. [...] The Association courses are helping me understand them more”*. This is also the case of P.S. a violinmaker that, though dubious, is involved in his network’s project to discover new ways of

selling products: *“I have to admit that I am quite a traditionalist [...] but now I’m collaborating with the Consortium for the makeover of a website on which we will collectively sell online”*.

The creation of a strong community based on trust seems to be another relevant element for innovation-triggering networks, which promote dialogue and exchange of ideas and knowledge among firms. An interesting, recurring result is related to the dynamics of creation of this trust-based community. Indeed, informal events (i.e., organized dinners, coffee time, unplanned chit chat, etc.), facilitated by the existence of shared spaces created by the network and by the geographical proximity of all member firms, appear to be as important as formal events (i.e., assemblies, meetings, fairs, any other network’s events) for the stimulation of innovative ideas among members. The importance of informal occasions of gathering is reported to be particularly relevant by most entrepreneurs and is well summarized by D.G., a ceramic artist owner of a well-established shop that claims to be a member of his network not for competitive purposes but because of *“the community [...] that triggers new ideas very much and reinforces mutual understanding and trust”*. The importance of this point is very clear also to most of interviewed network managers that are investing in the creation of a trusted and informal community among members, as in the case of B.R., President of goldsmithing consortium: *“Something I’m trying to do to foster innovation is creating a community [...] What creates innovation is trust and that derives from personal knowledge, from networking in a very social sense”*.

Interview data also showed that, although being local firms, opportunities of international exchange provided by networks are among the most fueling for innovation. Interviewees perceive that all the network activities that facilitate collaborations with professionals and organizations at both national and international level help them to be more innovative. Specifically, they reported that these partnerships contribute to foster their open mindedness, because, as well synthesized by R.F., a glass beads maker: *“If I never confront myself to others, how can I grow? [...] If I never look outside my shop, my area, my region, how can I survive?”*.

A fundamental must-have for micro-firms' networks that wants to stimulate innovation is also the ability to help member firms to overcome their liability of smallness in the face of national and international institutions. Interviewees claimed that one of the most important activities of their networks is to help them to increase their visibility and obtain financial and institutional support that would be otherwise inhibited for the single micro-firm. G.B., a lava stone artisan that perceives the lack of funds as the bigger inhibitor of innovation in his firms claimed: "*I am part of the Consortium to make my voice heard with the Region and all other institutions: to innovate I need money, but alone I cannot obtain them while all together we can*". This need of representation is diffused among all interviewees, as the small size of the firms makes it difficult to gain visibility, and the collective activity allows them to do things and interact with entities that would be inhibited to the single firm: "*Sometimes I think about some very big projects we did in the past and I realize how much we can achieve working together as a whole in front of the institutions*" (R.F., glass beads maker).

4.2. Negative network influence: when and how networks inhibit micro-firms innovation

Our data showed that being part of a network sometimes can also inhibit innovation rather than foster it. As for the positive influence on innovation, this negative influence is highly dependent on the characteristics of the network itself and on the nature of the network's activity.

According to interviewees, a high heterogeneity among members of the network, especially in terms of beliefs and market scope, is a big barrier to collective initiatives because every member firm has specific needs and requirements. Specifically, some networks are characterized by a high level of heterogeneity between member firms in terms of product quality, price range, and organizational culture. This heterogeneity makes joint projects quite challenging because it is hard to balance such a diverse range of firm needs. The perception of this issue is diffused among interviewees as it emerged both in interviews with micro-entrepreneurs with a greater innovative orientation and in interviews with more conservative entrepreneurs. The former is the case of ceramic

artist D.G. who wish to pursue more innovation projects within the network but claimed: “*We are too different. [...] I’m frustrated by the slowness of the network [...] but it must cope with everyone needs*”. Similarly, many entrepreneurs in similar conditions to D.G. claimed that, under circumstances of great heterogeneity, going alone would be sometimes more efficient than within the network. However, the problem is equally perceived by more conservative entrepreneurs who are frustrated, in an opposite direction, by networks’ innovation initiatives that appear to be poorly suitable for less innovative firms, as G.G. wood artisan claimed: “*I am intimidated by some projects, and actually I do not understand them at all [...] the network does not consider the differences between us and the different possibilities we have*”.

Another factor that according to interviewees could constrain innovation is a network’s strong focus on sales objectives. Interviewees claimed that such a focus may lead the network to prioritize short-term financial objectives, rather than long-term strategic goals, including fostering innovation. Commercial myopia tends to make intangible, non-financial benefits that are frequently linked to innovation activities hard to perceive, as G.B., a lava stone micro-entrepreneur, outlined “*the problem is to understand that there is more than selling [...] there is a lot of advantages within a network that has nothing to do with money, but everything is less important than profit for the most of us*”. Indeed, when a network activity includes a joint sales activity, the impact on innovation seems to be negative and this is largely perceived even among the network representatives that were interviewed. For example, B.R., president of goldsmithing consortium stated that in the past the network main aim would be that of selling more and more jewels around the world and to do so members would go to fairs and exhibitions as one entity, and even if this was in some way beneficial for some members: “*There was no space for other than economic and financial returns, and innovation was not a priority*”. Similar experiences are shared by all network’s representatives except for two that still pursue joint commercial activity in their networks.

Most interviewees claimed that a network that pursues commercial activity stimulates competition among member firms, thus limiting the pursuit of collective strategic goals. This is also

reinforced by the fact that almost all members of each network are active in the same market niche, and this results in direct competition whenever sales activity takes place: *“There was a time when we members sold our products together but – thank God! – this time over. It creates disparities, envy, competition [...] When money is involved, it is the center of everything”* (D.G., ceramic artist).

Finally, networks that wish to stimulate innovation should reduce at the bare minimum the possibility of conflicts of interest within its borders. Specifically, the organization of the network should be as neutral as possible, starting from the top positions with decision-making power over network’s activities. Indeed, the analysis of the involved networks allowed us to identify two possible configurations of the network’s organization: one is headed by a manager with a relevant expertise in the activity the network is preserving, while the other is headed by a member entrepreneur that is appointed as network president by its peers. Most interviewees (20 out of 22 entrepreneurs and 7 out of 9 networks’ managers), claimed that for the representativeness of the network the former solution is the better. Such option would guarantee the ‘neutrality’ of the network relative to member firms and a more effective representativeness for all of them. This characteristic seems to be important also for the realization of the shared innovation activities: when the president in charge of the network is chosen among member entrepreneurs, the network’s activity for innovation is more likely to fail because of conflicts of interests and lack of time and commitment. As well summarized by A.G., President of lava-stone consortium: *“To foster innovation a shared view is needed and when you are an entrepreneur and you should be representative for others, you cannot be impartial, you will always be on your side first”*.

Most interviewees indeed claimed that trust is more difficult to build when the president is also a member entrepreneur because of the greater risk of individualism and unbalanced relationships. In many cases, the entrepreneurial management of the network reduced the interest in the networking. For instance, this is the case of D.S, a ceramic artist who abandoned the network for a few years before joining again because *“a network in which one of us, an artisan, manages it all triggers competition and personal interest too much. I’d rather be in an association that does less but involves every*

member than one that does a lot but for very few”. For this reason, a neutral, external management appears to be more appropriate and innovation-triggering in these contexts.

4.3. How micro-entrepreneurs make sense of the role of networks

Although the role of networks as drivers of innovation was acknowledged by every interviewed micro-entrepreneur, their impact on firm innovation deeply. Indeed, some interviews reported that the main push to innovate comes from the network itself, whereas others claimed that, although helpful, the network is not the main reason why they pursue innovation. According to our data, micro-entrepreneurs make sense of the roles of the network in three different ways (see Table 5): the network as an ‘innovation channel’ when it is considered the main driver of innovation, as an ‘information provider’ when it is mainly seen as a source of information about new market trends or industry changes, and as a ‘sharing hub’ when it works a place for brainstorming and contamination of ideas that are then frequently developed autonomously.

Table 5: Micro-entrepreneur’s framing of the role of networks – Representative quotations, second-order concepts and overarching themes

Representative quotations	Micro-entrepreneurs main expectations towards the network	Network's role
<i>"Innovation is difficult for small firms especially because we never enough time [...] if it weren't for the network I would do anything new just because I would not have the time to think about different things" - A.M., glass beads maker</i>	Innovation teamwork possibilities	INNOVATION CHANNEL
<i>"Network collaborations are crucial because to work with someone else, who has the same interest that you have in doing something, is crucial because you can cut costs and experiment more" - S.B., glass artisan</i>		
<i>"I had never thought of the possibility of doing something different than necklaces, it's what we have done for almost a century. Then the Consortium launched the challenge: I have created a lamp completely made of venetian glass beads. I never thought someone would buy it, but it is very appreciated by customers" - A.M. glass beads maker</i>	Safe space for experimentation	
<i>"I've always thought that to sell a violin a customer should come to my shop but thanks to the consortium, [...] (we are) creating an online shop with high-quality photos and the recorded audio of every single violin on sale. In this way, musicians can compare different violins and choose the most suitable for them"</i>		
<i>"I work with my parents that make ceramics for decades and I don't want to change [...] I don't often participate in the initiatives offered by the association [...] but I appreciate every opportunity to chat with my colleagues to understand where the world is going" - E.S., ceramic artist</i>	Knowledge source	INFORMATION PROVIDER
<i>"Ours is a product that must be touched, and this is a limit for e-commerce that is something I'm not a fan of, but I recognize its huge importance and thanks to the consortium I'm trying to working on it" - G.G., wood artisan</i>		
<i>"I like being part of the network because it helps us preserving our work that is traditional [...] Being a member is an opportunity to new people and things [...] I am old and this is a great opportunity to know new things" – A.B., watchmaker</i>	Preservation tool	
<i>"Our processes are absolutely unchanged for a hundred years [...] In the past, someone in the consortium tried to adopt a completely industrial process but failed miserably: our products are and should be made by hands [...] Now I like that the consortium is trying to preserve our know-how" - R.V., coral artisan</i>		
<i>"We understand each other, face similar problems every day and we could speak of our job forever. [...] Debate is where new ideas come from" - D.S., ceramic artist</i>	Provider of discussion for ideas development	SHARING HUB
<i>"In the consortium we have a lot of arguments about our job [...] but this is important to discover new things and perspectives [...] Networking often inspired me to do new things" - R.F., glass artisan</i>		
<i>"I'm not joining the consortium for its innovativeness, because I can innovate much more by myself, but I want to be part of it because it is trying hard to develop innovation among all of us and if the community becomes more innovative each one of us will grow" - S.M., lava stone artisan</i>	Community	
<i>"I am young, and I have a lot to learn from my older colleagues [...] But on innovation there is a lot to do and I wish this will become a collective aim, it should be! [...] For some of my colleagues using a social media means diminishing our job. Do you understand the difficulty to change? [...] But this community is important for the surviving of our job and I enjoy being part of it" - M.S., ceramic artist</i>		

For those entrepreneurs who make sense of the role of the network as an ‘**innovation channel**’, the collaborative experience of the formal network is the main driver of innovative activities in their firms. Specifically, they do not pursue innovation autonomously, but they are very responsive to all networking activities and projects aimed to foster change. These entrepreneurs do not exhibit an endogenous innovative orientation but are aware of the importance of being updated and ready to catch opportunities to innovate. The network offers possibilities of experimentation,

allowing the entrepreneurs to do it in the ‘safe space’ of the network community: *“Network collaborations are crucial because working with someone else, who has the same interest that you have in doing something, makes it possible to cut costs and experiment more.”* (S.B., glass artisan). In these firms, innovation mostly spurred from the firm’s experience as a network member, while it is rare that the opportunities provided by the network would not be pursued by the micro-firms alone for both financial and time-related issues, as A.M., glass beads maker stated: *“Innovation is difficult for small firms especially because we never enough time [...] if it weren’t for the network I would do anything new just because I would not have the time to think about different things”*.

Innovation is pursued through the network in a variety of areas. For example, member firms exploited opportunities to renovate their processes, as in the case of S.B., who claimed that, thanks to a project proposed by the network that made him start collaborating with a designer, he had the opportunity to *“try new machines and tools that I had never thought would be useful in a traditional glass shop [...] after this experience I’ve decided to buy a 3D printer: it was a big investment but worth every euros”*. New products are also developed as a results of networks’ initiatives and stimuli, as in the case of A.M. whose family has had for decades a shop dedicated to the creation of venetian glass beads mainly used to create traditional jewelry. Thanks to a challenge launched by his network a few years ago, he was able to experiment new ways to combine beads giving life to new products that entered the production line of his shop permanently: *“I had never thought of the possibility of doing something different than necklaces, it’s what we have done for almost a century. Then the Consortium launched the challenge: I have created a lamp completely made of venetian glass beads. I never thought someone would buy it, but it is very appreciated by customers”*.

Marketing and sales are also areas for which there are many network-level initiatives that have a long-term impact on the strategy of the firms. For some entrepreneurs, as M.M., the knowledge about social media diffused by the network was fundamental to determine a change of pace and perspective on the use of digital technologies for promotion: *“We started collaborating with an agency that manages our social media because having an effective social media presence is crucial.*

This is an awareness we have started to develop also after the Consortium offered us some courses about social media managing and online presence”.

Selling is another area of micro-firms that is also renovated starting from networks’ initiatives and often entrepreneurs are involved in collaborative projects to enhance online selling as in the case of M.P., a violinmaker that is deeply involved in a project of his network aimed to completely change the experience of selling music instruments online: *“I’ve always thought that to sell a violin a customer should come to my shop but thanks to the consortium, [...] (we are) creating an online shop with high-quality photos and the recorded audio of every single violin on sale. In this way, musicians can compare different violins and choose the most suitable for them”.*

For another group of interviewees, the role of network is framed as an **‘information provider’**: the network helps the entrepreneur to detect and understand new opportunities and trends that are almost invisible to the single firm. E.S., a ceramic artist and second-generation owner of a decades-old shop says about this issue: *“I work with my parents that make ceramics for decades and I don’t want to change [...] I don’t often participate in the initiatives offered by the association [...] but I appreciate every opportunity to chat with my colleagues to understand where the world is going”.* These firms’ innovation primarily stems from the growing demand for change coming from the market and from new competitive pressure (i.e., digitalization). However, these entrepreneurs are not innovation-enthusiasts or particularly engaged in networking activities for innovation. The watchmaker P.A. well synthesized this idea of innovation as a ‘need’ more than a ‘wish’: *“I do not like to change but we must adapt: if the market changes, we must follow it. I surely cannot bend the market to my will, I must adapt to what people want”.* This approach is quite diffused since it was observed in almost half of the entrepreneurs of our sample.

Entrepreneurs who perceive networks as an information provider exploit their participation in the network as a source of knowledge more than as a source of innovation. Indeed, they are generally quite conservative, and often keep their firm’s changes at the bare minimum while being pretty skeptical towards the initiatives of the network that they tend to consider too revolutionary. In many

cases, their skepticism is motivated by their intent to preserve ancient know-how that is particularly relevant in the crafts industry. Regarding this, R.V, a coral artisan specialized in cameos making stated: *“Our processes are absolutely unchanged for a hundred years [...] In the past, someone in the consortium tried to adopt a completely industrial process but failed miserably: our products are and should be made by hands”*.

However, these entrepreneurs choose to be part of a network because they perceive that networks can be a good source of information about new market trends and a good way to catch some interesting collective opportunities as long as they are coherent with their idea of innovation. In line with the growing pressures towards digitalization, most of these entrepreneurs exploit the benefits of networking especially to innovate in the marketing and sales area, as they are conscious of the growing need to hold a digital identity to expand their customer base and create greater value for customers. For example, G.G., a wood artisan who is in the sector for decades has approached digital channels, despite his skepticism about the adequateness of the internet to sell his products: *“Ours is a product that must be touched, and this is a limit for e-commerce that is something I’m not a fan of, but I recognize its huge importance and thanks to the consortium I’m trying to working on it”*.

A final group of interviewees mainly make sense of the network as a **‘sharing hub’**, i.e, as a place where they can have conversations about new ideas and trends with colleagues and potential partners. These entrepreneurs mostly reported that the network is the perfect place in which new ideas can be developed and assessed through the confrontation with peers that face similar problems and experience similar working routines. D.S. perfectly explained this by stating: *“In the network we are a community: we understand each other, face similar problems every day and we could speak of our job forever. [...] Confrontation is where new ideas come from”*. However, these entrepreneurs often feel the need to develop innovations autonomously. This happens because for them the main push to innovate does not come from competitive pressures nor from networking activities but from a personal attitude and motivation to change and renovate their firms. This is the example of R.F., a glass artisan who described how she started experimenting new processes in her work: *“At some point*

in working career, you become like a lobster that, to grow, must get rid of the carapace and become vulnerable. I've felt like this [...] and discovered the will to do something different by exiting my comfort zone. [...] If I would have stayed there, I would never discover the new technique I now use every day". Similarly, D.S. felt the need to create new products to differentiate the production of his century-old firm: *"Thirty years ago, I was bored of always doing traditional stuff and [...] I began working with contemporary artists. Today, this is the core business of our firm and made us create some important pieces that were exposed all over the world"*.

The open-mindedness and willingness to change of these entrepreneurs often determine a feeling of frustration towards collective projects pursued by the network as they are considered too slow to be developed and not enough innovative for their standards. This is the case of M.S., a young ceramic artist who recently took the lead of her family's 50-years old shop and believes that though useful for the creation of a community, the network is somehow slow on innovations: *"I am young, and I have a lot to learn from my older colleagues [...] But on innovation there is a lot to do and I wish this will become a collective aim, it should be! [...] For some of my colleagues using a social media means diminishing our job. Do you understand the difficulty to change?"*. This view of the network as a sharing hub is indeed typical of those entrepreneurs who have a positive view of innovation, are familiar with innovation initiatives in all organizational areas and thus are not scared to experiment in order to grow and remain competitive. This raises their difficulty to engage in collective projects and to collaborate with more conservative colleagues: *"Many tend to fossilize because "We have always done this way". Once I asked a colleague to collaborate on a project that would become an absolute novelty for our sector and he said no. I always ask myself why. [...] They say it does not worth it. They do not want to escape from the comfort zone"* (R.F., glass artisan).

However, these entrepreneurs often have the tendency to participate in collective activities for the sake of the community, even though they are conscious that they could move faster acting alone. This is something well explained by the experience of S.M. a lava stone artist that stated: *"I'm not joining the consortium for its innovativeness, because I can innovate much more by myself, but I want*

to be part of it because it is trying hard to develop innovation among all of us and if the community becomes more innovative each one of us will grow”.

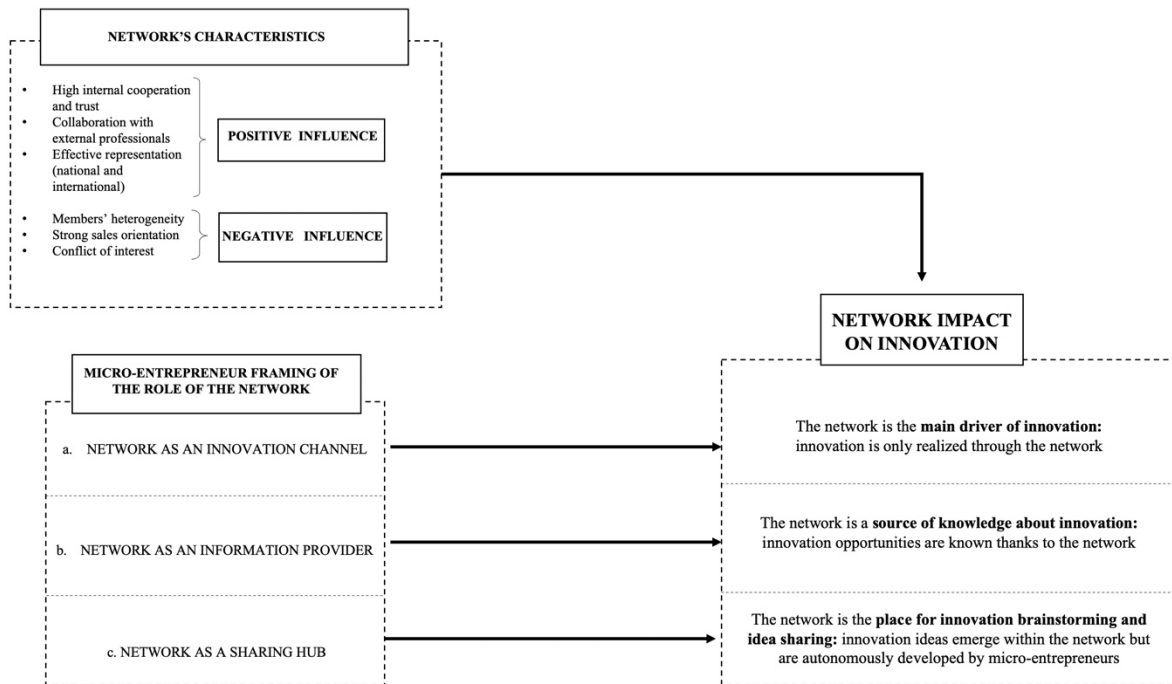
5. Discussion and implications

Our data reveal that, for a micro-firm, being part of a network is not a sufficient way to fuel innovation per se. Indeed, the impact of networks on micro-firms’ innovativeness deeply varies based on the networks’ characteristics and activities. These can impact on member firms’ innovativeness in both a positive and negative way, fueling or inhibiting innovation in micro-firms.

Our findings also confirm that micro-entrepreneurs can make sense of networks’ role differently and have different expectations and approaches to networking activities. These determine different ways to pursue innovation and variations in terms of impact that networks can have on the innovation in these firms. These findings highlight that the network’s characteristics and the micro-entrepreneur’s framing of the role of networks are both contributing factors to the success of networking activities aimed to the development of innovation in small firms.

Based on our findings, Figure 1 shows a framework linking the positive and negative influence on innovation in micro-firms that stems from the network’s characteristics with the micro-entrepreneur’s frame of the role of network. These, combined, determines the impact that networks can have for innovation in micro-firms. The framework shows that micro-entrepreneurs who make sense of the network as an ‘innovation channel’ are more sensitive to its influence on innovation as the network is the most important driver of change within their firms. On the contrary, those entrepreneurs who perceive the network as an ‘information provider’ or as a ‘sharing hub’ are less sensitive to network influences on innovation because their innovative behaviors stem from competitive pressures for the former and from an internal push to change for the latter. In these cases, although firms’ innovativeness is still influenced by the network’s activities, innovations are less affected by collective activities designed and implemented within the network.

Figure 1: Network’s characteristics, role and impact on innovation in micro-firms



6. Implications for theory and practice

The study makes contributions to the literatures on innovation in SMEs, and specifically in micro-firms, and on the role of networks for innovation.

First, our analysis of the effect that the network characteristics and the micro-entrepreneurs' framing of the role of networks offers unique insights on why and how micro-firms pursue innovation, thus responding to prior studies calling further attention to the analysis of innovative behavior in these firms (see Henley & Song, 2019; Roper & Hewitt-Dundas, 2017). This study also underscores how broad the concept of innovation is in the context of small firms, by examining how micro-entrepreneurs experience innovation in different ways. From this respect, our results contribute to enrich the findings of prior studies, like those from Baregheh et al. (2009) and Hilmersson et al. (2021), who offered extensive definitions of innovation and suggested to further investigate small firms' heterogeneity in terms of innovation (e.g., Rowley et al., 2011). Moreover, our findings related to the varying sensitivity of entrepreneurs to the network influence on innovation also extend prior

research on the crucial role of the entrepreneur's characteristics for innovation in SMEs (e.g., An et al., 2018). Specifically, studies on small firms have shown that innovation is not only determined by competitive pressures (Faherty & Stephens, 2016), but also by endogenous motives strongly related to the entrepreneur's values and personality (Olivari, 2016). Our analysis highlights that among those factors, the different sense-making of the role of networks made by micro-entrepreneurs and about the different modes through which they impact innovation play a crucial role.

Second, this study offers a more nuanced view of the role of networks for innovation in micro-firms. Specifically, most previous contributions underscore that participation in a network is a driver for innovation per se (see Milanesi et al., 2020; Eggers et al., 2020) and that network's 'failure' in fostering SMEs' innovation can be ascribed to entrepreneurs and their inner resistance to collaborate (see Faherty & Stephens, 2016). However, a partially different perspective emerges from our analysis. In line with previous studies, our study shows that the importance of collaboration is well perceived by all interviewees and that being part of a network can enable micro-entrepreneurs to overcome their resistance to collaborate. However, being part of a network cannot be considered as a driver of innovation by itself, but positive and negative impacts on innovation may derive from the specific network's profile. Specifically, the outcomes of network participation are contingent upon not only networks' characteristics, but also the varying ways in which micro-entrepreneurs make sense of the role of network. Thus, these findings complement previous studies (e.g., Jørgensen & Ulhøi, 2010) on the need of delving deeper into the contingencies that may alter the impact of networks on SMEs' innovation.

This paper also provides implications for practice. First, our finding about the varying roles and effects on networks on innovation will be likely of interest to micro-entrepreneurs aiming to better understand their innovation potential and, specifically, how to enhance it through network participation. Firms seeking to pursue innovation projects may benefit from a better understanding of the role of networks as a source of innovation input, or as a 'locus' of innovation itself where projects are jointly developed by network members, or both. Moreover, our findings offer

implications for network managers regarding how to increase the innovation outcome of inter-firm cooperation. Being aware of the different ways in which member entrepreneurs make sense of the network's role would encourage network managers to avoid the risk of overlooking the contingencies that may alter the effect of network collaboration on innovation. Thus, our analysis alerts network managers to the need of seeking a 'fit' between micro-entrepreneurs' framing of the network's role and network activities.

7. Limitations and future research avenues

The present study presents some limitations that we want to acknowledge. First, it only focuses on creative crafts micro-firms. Future studies could further extend the analyses to other settings to better explore industry-related differences. Second, this study does not capture how network influence may evolve over time and how the perceived role of network may vary depending on the entrepreneur's experience and the experience of the firm as a network member. A longitudinal study would be very promising to explore this intriguing issue. Finally, while this paper acknowledges the importance of context and network as a source of influencing factors on innovation, it would be interesting to enrich the levels of analysis and examine the sources of innovation within the comprehensive framework of "entrepreneurial ecosystem" (Theodoraki et al., 2022). This line of inquiry could offer new, unique insights into how small firms innovate and on interplay between internal and external factors in the innovation processes.

In conclusion, this study extends our knowledge about innovation dynamics in micro-firms, delving deeper into the role of networks for innovation. Our findings highlight key differences in the ways micro-entrepreneurs frame the role of networks and demonstrate that these differences contribute to explaining the varying impact that networks can have on the innovation activities of micro-firms.

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Chapter 2

INNOVATION IN TRADITION: HOW ENTREPRENEURS INNOVATE IN CREATIVE CRAFTS MICRO-FIRMS

Abstract. Innovation is crucial for firms' competitiveness, especially for small and medium-sized enterprises. Among them, micro-firms are in great need of engaging in innovation activities to enhance their competitive posture. However, though important for the global economy, we still know relatively little about how micro-firms innovate, which raises interesting research questions in light of their peculiarities vis-à-vis others small and medium-sized enterprises. Such peculiar characteristics derive not only from their very small size, but also from their strong relationship with tradition. In fact, many micro-firms are active in low-tech sectors where innovation is particularly challenging. This makes the analysis of tradition an important aspect of the innovation process, due to the difficulties in managing the controversial relationship between tradition and innovation. Building on innovation and organizational paradoxes literatures, this study contributes to this topic by analyzing micro-firms' innovation. In particular, we investigate how micro-entrepreneurs approach innovation and the role played by tradition in innovation dynamics. Through the analysis of qualitative data from 22 semi-structured interviews with Italian micro-entrepreneurs active in the creative crafts sector, we shed light on the different ways in which micro-entrepreneurs make sense of tradition in their business and how their views of tradition impact innovation. Furthermore, we identify three types of micro-entrepreneurs – defensive, swinging, and engaged innovators – based on how they pursue innovation in a tradition-oriented context. Finally, we develop an 'innovation in tradition' dynamic framework, highlighting how micro-entrepreneurs' approaches to innovation may evolve over time.

1. Introduction

Micro-enterprises, i.e., firms employing less than 10 employees and having a turnover of less than €2 million, represent the majority of firms in most OECD countries (OECD, 2019) and account for the 93% of all European SMEs (European Commission, 2019). However, although the relevance of small and medium-sized enterprises (SMEs) is acknowledged by management scholars, micro-firms are still overlooked (Gherhes et al., 2016; Henley & Song, 2019). In particular, while the analysis of the challenges posed by digitalization and technological innovation has received increasing scholarly attention in the last years (e.g., Muller, 2019; Nathan et al., 2019; Sousa & Wilks, 2018; Zhu et al., 2019), we know little about how innovation is managed in micro-enterprises (Henley & Song, 2019; Roper & Hewitt-Dundas, 2017). The limited interest in innovation in micro-enterprises contrasts with the unsuitability of the “one size fits all” approach in the analysis of SMEs. Compared to other SMEs, micro-firms have different needs and characteristics, and this diversity impacts on innovation. First, smaller firm size exacerbates limits and barriers that SMEs typically face when pursuing innovation – e.g., managerial and financial constraints, perception of higher risk, and a lack of adequate ICT infrastructure and digital skills (Faherty & Stephens, 2016). Second, micro-firms are usually less exposed to innovative stimuli than larger firms and less knowledgeable about innovation practices and models (Nicholas et al., 2011). Third, in micro-firms the entrepreneur plays a more prominent role in managing innovation compared to other firms (e.g., An et al., 2018; Baer, 2012; Laguir & Den Besten, 2016; Roper & Hewitt-Dundas, 2017). Fourth, in these firms, knowledge, organizational routines and working procedures are handed down to younger generations with peculiar tenacity and the past is often perceived as a secure path to success (Erdogan et al., 2020; Shreyogg & Sydow, 2011). Finally, many micro-firms are active in low-tech, mature settings, conducting activities that are almost unchanged over centuries (Überbacher et al., 2020). Accordingly, tradition should be taken in great consideration when observing the dynamics of innovation in these firms.

In the light of this coexistence of tradition and innovation, our theoretical framework lies at the intersection of two research streams: innovation in micro-firms and paradox management. Specifically, our framework is intertwined with two concepts drawn from family business literature and organization studies. The first is the tradition-innovation paradox (De Massis et al., 2016): the competing tension between the need to stick to the past of the organization and the concurrent need to adapt to the changing demands of the present (Suddaby & Jaskiewicz, 2020). The second is paradoxical thinking. A widely shared idea is that firms experiencing the tradition-innovation paradox tend to privilege continuity over change and may be deeply destabilized by this tension (Ingram et al., 2016). However, many studies outlined that the outcome of the paradox depends on how the individual approaches it (Miron-Spektor et al., 2018; Suddaby & Jaskiewicz, 2020). A paradoxical mindset embracing the competing demands of innovation and tradition could be crucial to nurture innovation in traditional settings (e.g., Ingram et al., 2016; Schuman et al., 2010; Smith & Lewis, 2011; Smith & Tushman, 2005). Therefore, sometimes, tradition can foster innovation rather than inhibit it (De Massis et al., 2016; Erdogan et al., 2020; Messeni Petruzzelli & Savino, 2014). Micro-enterprises are an ideal setting to observe these competing dynamics because tensions intensify under conditions of resource scarcity, these being a distinctive feature of micro-enterprises (Miron-Spektor et al., 2018).

This study contributes to filling the gap in our understanding about how and under which conditions micro-entrepreneurs innovate (Battisti et al., 2010; Roper & Hewitt-Dundas, 2017; Salavou et al., 2004; Tu et al., 2014). Specifically, we aim to profile micro-firms in terms of innovation approaches (Rowley et al., 2011), with a focus on traditional, low tech industry settings (Matarazzo et al., 2021) where the tension between innovation and tradition strongly emerges. In doing so, our study responds to the calls for more research on innovation in micro-firms (Battisti et al., 2010; Henley & Song, 2019; Tu et al., 2014).

To achieve this goal, we collected data from November 2020 to May 2021 on Italian micro-entrepreneurs in creative crafts industry. Creative crafts industry is a particularly interesting research

context to observe the interplay between tradition and innovation in micro-firms: most crafts enterprises are micro-sized and creative crafts is a strongly tradition-based activity that employs production methods and knowledge passed down through generations (Überbacher et al., 2020). Moreover, it is a niche, yet relevant industry and the European Union has paid growing attention to this sector over the past twenty years (Aguirre & Lopez, 2017; Innocrafts, 2015a; 2015b; 2015c; UNCTAD, 2010). Specifically, we carried out 22 semi-structured interviews with as many entrepreneurs active in different creative crafts activities including artistic glassmaking, high jewelry, artistic ceramic, lava stone processing, traditional woodworking, and violinmaking.

Our paper offers three primary contributions to the literature. First, we contribute to the research on the tradition-innovation paradox, by offering unique insights into how tradition can be used and leveraged on by micro-entrepreneurs in their innovation activities. We identify three profiles of micro-entrepreneurs on the basis of the varying approaches in balancing the competing needs of being sticking with tradition and simultaneously open to the market demands for innovation. Second, our findings further our understanding of innovation in the context of micro-firms in tradition-based industries, by highlighting the specificities of micro-firms within the broader set of SMEs and the distinctive way in which micro-entrepreneurs make sense of innovation. In doing so, we respond to the calls for more research considering the heterogeneity of SMEs in the analysis of innovation (Matarazzo et al., 2021). Finally, our study contributes to the analysis of the dynamics of innovation by advancing a dynamic framework of innovation in tradition, which reveals three evolutionary patterns that micro-entrepreneurs may follow to change their approach to innovation over time.

2. Theoretical background

2.1. Innovation in micro-enterprises: the centrality of the entrepreneur

Despite the growing interest in the analysis of how innovation is pursued and managed in SMEs, academic literature is far from giving a comprehensive analysis of the topic. Research rarely considers SMEs as a diverse and heterogeneous group of firms and fails to identify the specific

challenges faced by micro-enterprises (Gherhes et al., 2016). Indeed, while micro-enterprises represent most European firms (European Commission, 2019), their innovation dynamics have received limited attention (Faherty & Stephens, 2016; Henley & Song, 2019; Roper & Hewitt-Dundas, 2017).

Smaller firms are particularly sensitive to the limits and barriers typically faced by SMEs. Indeed, micro-enterprises suffer from the constraints due to limited financial resources and human capital. In addition, since entrepreneurs in micro-firms are strongly focused on day-to-day survival rather than on long-term initiatives (Faherty & Stephens, 2016), the capacity to innovate is generally inhibited (McAdam et al., 2014; Salavou et al., 2004). According to Faherty and Stephens (2016), three characteristics of the micro-firms make it difficult for them to innovate. First, micro-entrepreneurs tend to exhibit lower risk propensity. Second, the day-to-day strategic approach puts strong pressure on staff, and consequently there is a limited focus on long-term strategic objectives, including innovation. Third, as owner-managers in micro-firms are generally less interested in innovation than those of larger firms, they are also less likely to recruit employees who have the required levels of creativity and innovation skills and attitude. Therefore, overall, micro-firms tend to be not so open to innovative stimuli as larger SMEs.

In recent years, research has increasingly focused on investigating the entrepreneur's characteristics that make the firm more innovative. Among these, proactivity and risk-taking (Pérez-Luño et al., 2010), impatience (Robson et al., 2012), past work experience (Laguir & Den Besten, 2016), age (Heuer & Surlémond, 2008; Laguir & Den Besten, 2016), creativity and bricolage (Amabile, 1996; An et al., 2018; Baer, 2012) and education level (Lazear, 2005; Romero & Martínez-Román, 2011) have been found to have an impact on innovation. Therefore, to better understand what makes micro-firms go innovative, we need to focus on who is at the core of the decision-making process: the entrepreneur. Indeed, different entrepreneurial profiles turn into different innovation propensities (Olivari, 2016). The impact of the entrepreneur's personal traits on firm innovation is

particularly evident in micro-firms where the entrepreneur is deeply involved in day-to-day activities and controls most of the decision-making processes (Laguir & Den Besten, 2016).

These arguments suggest that understanding how and under what conditions micro-entrepreneurs innovate deserves further investigation. Specifically, more research is needed to identify innovation approaches (Rowley et al., 2011) and delve deeper into the innovation processes in the context of micro-firms (Battisti et al., 2010; Henley & Song, 2019; Tu et al., 2014).

2.2. *Tradition in micro-firms: tradition-innovation paradox and paradoxical thinking*

Although in some cases micro-firms are highly innovative and active in high-tech sectors (e.g., innovative start-ups), most of them are deeply rooted in tradition, being businesses in which the past highly influences present strategic choices (Della Corte et al., 2013). The traditional nature of micro-firms is explained by four main elements. First, in micro-firms the past tends to be perceived as a secure path to success and path dependence plays a major role: past decisions made limit the options available for current and future strategic choices (Shreyogg & Sydow, 2011). Second, the central role of the entrepreneur in micro-firms makes changes and innovation strongly dependent on the entrepreneur's mindset, personal experience and imprinting to work (Atkinson & Hurstfield, 2004; Ferneley & Bell, 2006; Laguir & Den Besten, 2016;). Third, micro-firms are generally managed by family members (Della Corte et al., 2013). Fourth, most micro-firms operate in traditional settings, in which activities remain almost unchanged over time (Überbacher et al., 2020). For these reasons, tradition should be taken in great consideration when analyzing innovation in micro-firms.

Traditions are those beliefs, customs, and symbolic practices passed down through generations (Shils, 1981) and, by definition, they seem to be at the opposite of innovation. The relation between innovation and tradition has been receiving growing attention, particularly in the context of family firms (e.g., Erdogan et al., 2020; De Massis et al. 2016; Ingram et al., 2016). As Voyatzaki (2013, p. 231) notes, "*the normal intellectual development of culture is a highly convergent activity based upon a settled consensus. However, the ultimate effect of this tradition-bound work has*

invariably been to change tradition. There is a kind of tension between tradition and innovation which constitutes a key mechanism in the development of the intellectual environment of cultural production". Schuman et al. (2010) recognized the paradoxical tension between tradition and change as naturally embedded in family firms because they can struggle to adapt to a dynamic environment while maintaining their intrinsic values (Ingram et al., 2016; Poza, 2007; Zellweger, et al., 2011). Indeed, as Erdogan et al. (2020, pp. 2-3) explain, *"the invariant core of tradition shapes the family firm's identity and its modus operandi, paving the way for continuity, and spurring next generations to accept and enact it [...] Nevertheless, family firms need to change and innovate to remain competitive. Innovation requires breaking with continuity to develop new competences and skills"*.

Research on family business (e.g., Schuman et al., 2010; Ingram et. al., 2016) and organizational paradox (e.g., Smith & Lewis, 2011; Smith & Tushman, 2005) has also outlined the potential of paradoxical thinking for fueling innovation. Firms that engage in paradoxical thinking can exploit the positive side of divergent paradoxes, while those that either ignore or try to resolve paradoxical tensions by emphasizing only one of them may intensify demands on the other, hindering change and innovative efforts (Ingram et al., 2016; Lewis, 2000; Smith & Lewis, 2011). Following this cue, scholars have recently recognized the benefits of searching the past to develop innovation (e.g., Erdogan et al., 2020; Messeni Petruzzelli & Savino, 2014). De Massis et al. (2016) outlined how interiorized codified or tacit knowledge from the past can elicit innovation in family firms, giving new functionalities or meanings to their products. Therefore, the way individuals manage the tradition-innovation paradox is at the core of its positive or negative impact on the business (Miron-Spektor et al., 2018) and managing tradition may thus turn into a critical capability for success (Erdogan et al., 2020; Suddaby & Jaskiewicz, 2020).

Given the tradition-based nature of micro-firms, tradition-innovation paradox and paradoxical thinking are important constructs to approach the study of innovation in this context. Indeed, tradition helps micro-firms to shape and preserve their organizational identity (e.g., Ravasi & Schultz, 2006). Furthermore, knowledge and working procedures are passed down by the entrepreneur to his/her

successor (with or without a family connection) creating a knowledge base that may influence the younger generation and inhibit change and innovation. Therefore, analyzing how the micro-entrepreneur approaches this paradox may contribute to fill the gap about how innovation is pursued and managed in micro-firms. Since these firms mostly operate in traditional, low-tech industries, they represent an ideal setting to observe the competing innovation versus tradition tensions (Miron-Spektor et al., 2018).

How micro-entrepreneurs perceive the role of tradition and how this impact on innovation, is also related to the concept of ‘entrepreneurial passion’ developed by Cardon and colleagues (2009; 2017), while trying to answer to the dilemma of why some entrepreneurs seem to persist in some actions despite significant obstacles and impediment. Entrepreneurial passion, intended as an intense positive feeling derived from the engagement in activities with identity meaning to the entrepreneur, could therefore be of help in analyzing the innovation-related choices of micro-entrepreneurs, especially those active in in traditional sectors. Indeed, the resistance that micro-entrepreneurs often show toward innovation and their attachment to tradition could be, sometimes, counterproductive in terms of competitiveness and therefore must be stimulated by other than strategic goals.

3. Methodology

3.1. Research setting

The research setting of this study is Italian creative crafts, which is a particularly appropriate context in which to observe the dynamics of innovation and tradition in micro-firms. Indeed, most artisanal enterprises are micro-sized and creative crafts is a strong tradition-based activity that employs traditional methods and knowledge passed down through generations. Moreover, although a niche, creative crafts is a relevant sector in Italy and elsewhere (Aguirre & Lopez, 2017; Innocrafts, 2015a; 2015b; 2015c; UNCTAD, 2010; UNESCO, 2003). It is one of the main pillars of the popular “Made in Italy” brand, which is typically associated with connotations of tradition, beauty and

authenticity and is highly appreciated internationally (Cerrato & Piva, 2012; Lees-Maffei & Fallan, 2014; Matarazzo et al., 2021).

Because of the nature of their production, most creative crafts firms employ less than 10 workers, thus falling into the category of micro-enterprises (Italian Chamber of Commerce, Industry, Crafts and Agriculture, 2019). In addition, in crafts businesses the entrepreneur typically holds the productive knowledge and is directly involved in the productive process (Italian Law on Craftsmanship - L. 8/8/1985, 443). The firm activity is carried out with a low level of technology and the products are distributed in limited quantity or, most frequently, as unique pieces (Aguirre & Lopez, 2017).

UNESCO (1997) defined artisanal products as those created by artisans completely by hand or with very a low technological input. In creative crafts industry the artisan's manual labor represents the most important part of the finished product because it gives the product its uniqueness and helps to pass onto future generations old competences and secular traditions. Deeply rooted in tradition, creative crafts is an important sector also from a cultural and social perspective (Della Corte et al., 2013; Innocrafts, 2015a). Notably, creative craftsmanship is characterized by artistic or highly esthetic value products inspired by shapes, patterns, styles, and techniques that are typical of the cultural and historical heritage of the places in which they are created (Italian Law on Craftsmanship - L. 8/8/1985, 443). Thus, creative crafts contribute to *“create the identity of a community, intended distinctive marks that make them recognizable and unique. [...] Objects of artistic and traditional craftsmanship must be considered as a people's artworks, bearing a spiritual and cultural message, as well as being witness to traditions and creativity to be passed on to future generations”* (International Charter of Artistic Craftsmanship, 2011).

3.2. *Research design and data collection*

This study employs a qualitative, grounded-theory research approach based on semi-structured interviews (Patvardhan et al., 2015), which are a useful tool to conduct exploratory empirical research needed to uncover patterns and relevant constructs in under-researched areas. We conducted interviews with Italian micro-entrepreneurs selected using purposeful sampling to obtain rich and insightful information about our research topics (Patton, 2001). Sampling continued until we reached theoretical saturation and therefore until data coming from new informants became redundant and lacked new conceptual relevance and insightfulness (Patvardhan et al., 2015). To be selected, entrepreneurs should have run firms with less than 10 workers operating in the creative crafts sector. We did not discriminate the firms based on the external perception of their level of innovation because we wanted to incorporate as much variety as possible in terms of innovation. From November 2020 to May 2021, we carried out 22 interviews both in person and online. The main features of the interviewees and their firms are presented in Table 1.

Table 1: Profiles of the interviewees and their firms

Interviewee	Interviewee's role	Years in the firm	Innovation in tradition approach	Firm's activity	Year of foundation	# of employees	Family Business	Data sources
Paolo A.	2nd generation entrepreneur	36	Defensive innovator	Watchmaking	1969	0	Yes	Interview (90 min); Website
Paola C.	Founder	14	Swinging innovator	Jewelry	2008	2	No	Interview (70 min); Website; Social Media pages (Facebook, Instagram)
Adriano B.	3rd generation entrepreneur	35	Defensive innovator	Watchmaking	1920	0	Yes	Interview (100 min); Website
Davide G.	3rd generation entrepreneur	35	Engaged innovator	Artistic ceramic	1928	7	Yes	Interview (120 min); Website; Catalogues; Social media pages (Facebook, Instagram)
Martina S.	3rd generation entrepreneur	1	Swinging innovator	Artistic ceramic	1950	0	Yes	Interview (70 min); Website; Social Media pages (Facebook, Instagram)
Alessandro M.	3rd generation entrepreneur	21	Swinging innovator	Glass crafts	1930	1	Yes	Interview (60 min); Website; Social Media pages (Facebook; Instagram)
Marcello M.	3rd generation entrepreneur	20	Swinging innovator	Glass crafts	1911	6	Yes	Interview (50 min); Website; Social Media pages (Facebook, Instagram)
Gianfranco G.	2nd generation entrepreneur	22	Defensive innovator	Traditional Woodworking	1961	2	Yes	Interview (120 min); Website
Salvo M.	Co-founder	7	Swinging innovator	Lava stone crafts	2014	4	No	Interview (90 min); Website; Catalogues; Social Media pages (Facebook, Instagram)
Renata F.	Founder	31	Engaged innovator	Glass crafts	1991	5	No	Interview (120 min); Website; Catalogues; Social media pages (Facebook, Instagram)
Elisa S.	2nd generation entrepreneur	7	Defensive innovator	Artistic ceramic	1967	4	Yes	Interview (60 min); Website
Laomi S.	Founder	33	Engaged innovator	Jewelry	1989	0	No	Interview (80 min); Website; Social Media pages (Facebook, Instagram)
Giuseppe B.	Founder	39	Defensive innovator	Lava stone crafts	1983	3	No	Interview (120 min); Website; Social media pages (Facebook, Instagram)
Sandro O.	13th generation entrepreneur	8	Swinging innovator	Coral crafts	2013	5	Yes	Interview (80 min); Website; Social Media pages (Facebook, Instagram)
Mirta M.	Founder	49	Defensive innovator	Artistic ceramic	1973	4	No	Interview (120 min); Website; Social media pages (Facebook, Instagram)
Laura O.	3rd generation entrepreneur	10	Swinging innovator	Jewelry	1970	8	Yes	Interview (60 min); Website; Social Media pages (Facebook; Instagram)
Marco P.	Founder	16	Swinging innovator	Violinmaking	2006	0	No	Interview (60 min); Website; Social Media pages (Facebook; Instagram)
Cinzia M.	2nd generation entrepreneur	10	Swinging innovator	Jewelry	1977	7	Yes	Interview (60 min); Website; Social Media pages (Facebook; Instagram)
Pasquale S.	Founder	8	Swinging innovator	Violinmaking	2013	0	No	Interview (80 min); Website
Marco N.	3rd generation entrepreneur	4	Swinging innovator	Fabrics crafts	1930	4	Yes	Interview (90 min); Website; Catalogues; Social Media pages (Facebook, Instagram)
Stefano B.	2nd generation entrepreneur	8	Swinging innovator	Glass crafts	1984	0	Yes	Interview (60 min); Website; Catalogue; Social Media pages (Facebook; Instagram)
Raffaele V.	Co-founder	21	Engaged innovator	Cameos	2000	0	No	Interview (70 min); Website; Social Media pages (Facebook, Instagram)

A single investigator conducted interviews with internal respondents of micro-firms, usually the entrepreneur or co-founder, who were able to provide real-time and retrospective views on the evolution of innovation-related topics and their relationship with tradition. The interviews followed a semi-structured questionnaire with open-ended questions covering five main areas: the firm's profile and history; the role of tradition in the firm; the entrepreneur's approach to innovation; the entrepreneur's behavior in managing the tension between tradition and innovation; the factors that inhibit or promote innovation in the firm. After the first interviews, we reviewed and updated the interview protocol (Glaser & Strauss, 1967). Protocol reviews were important for further exploring critical topics that were marginal at the initial stage of research. Interviews lasted from 60 minutes to 2 hours (80 minutes on average) and were recorded and transcribed. In addition, during the interviews, extensive notes were taken about the interviewee's reactions that could not be captured by a recorder.

We also sought data triangulation (Eisenhardt, 1989) analyzing websites and social media pages of involved firms and, whenever possible, observing useful documents and additional materials. However, in micro-firms there is a paucity of documental files and reports; therefore rich sources of triangulation were rare. In addition, since most micro-firms do not have any employees involved in strategic and innovation-related activities, we did not carry out interviews with different people within the same company but decided to interview only the entrepreneur. Indeed, she/he is the largest source of information about her/his "creature" and every decision or change is highly centralized. Data were also enriched by observations of the interviewee's shop whenever the interview was realized in person: this gave the researcher the opportunity to immerse into the everyday work of interviewees and to see tools, storehouses and work-procedures.

During data analysis, conducted using an open-coded approach (Strauss & Corbin, 2008; Gioia et al., 1994), transcripts were subject to coding, and this was helpful in drawing out recurring concepts and patterns. Specifically, interviews' statements were selected, categorized and labeled (i.e., first order codes) and then condensed by the authors independently into broader theoretical

concepts (i.e., second order themes). Finally, emerging patterns were collapsed into aggregated etiquettes derived from literature (i.e., third-order dimensions). This process, developed independently by the two authors, was then followed by a phase of comparison and discussion to draw out recurring concepts and patterns. An example of data analysis is provided in Table 3 (in the Appendix), where quotations, second-order themes and overarching third-order dimensions used to define the different types of innovation in interviewed firms are presented.

Whenever possible, results emerged from open-coded analysis were then double-checked by confrontation with data coming from other data sources such as social media profile, field-notes and firm's official documents.

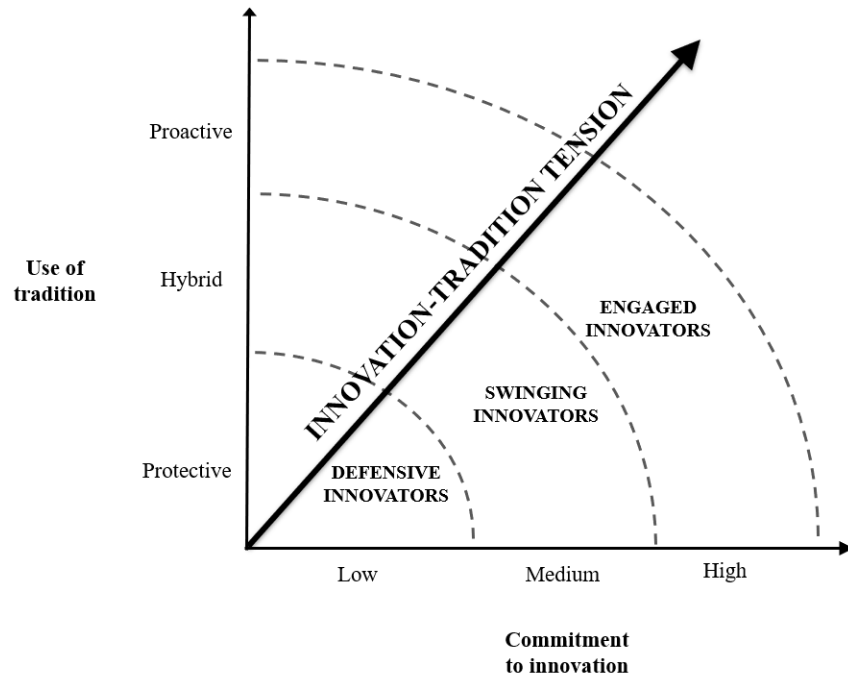
4. Findings

Our results confirm the impact of tradition on firm activity. Indeed, our first evidence is that tradition has a vigorous influence on how interviewed micro-entrepreneurs manage their firms. Specifically, the way tradition is experienced by entrepreneurs determines how they choose to innovate, playing an important role in affecting how micro-firms evolve over time. Tradition and innovation emerged to be strongly linked to one another and their conventional separation as just a matter of perspective. Specifically, what is considered innovative today may be traditional tomorrow, while tradition periodically undergoes a regeneration process that slowly changes its features turning into innovation, and this process is iterative. As Adriano B., an interviewed watchmaker, stated: *“To innovate is impossible without tradition; it really doesn't make any sense. What do you renovate if there is nothing old?”*.

While all interviewees claimed tradition as a key element for their firms, they do differ in the way they leverage on it. Specifically, three approaches emerged from our data, namely 'protective', 'proactive' and 'hybrid', based on how micro-entrepreneurs make sense of and use tradition. Similarly, the commitment to innovation varies, too, across interviewed micro-entrepreneurs, as they can show a low, medium or high commitment to innovation.

Data analysis shows that each way of using tradition tends to be associated with a specific level of commitment to innovation (see Figure 1).

Figure 1: Approaches to ‘innovation in tradition’: types of micro-entrepreneurs



Three different approaches to manage innovation emerge, corresponding to three profiles of entrepreneurs that we label as ‘defensive’ innovators, ‘swinging’ innovators, and ‘engaged’ innovators (see Table 2).

Table 2: ‘Innovation in tradition’ approaches: comparative analysis

<i>Features</i>	<i>DEFENSIVE INNOVATORS</i>	<i>SWINGING INNOVATORS</i>	<i>ENGAGED INNOVATORS</i>
<i>Use of tradition</i>	Protective	Hybrid	Proactive
<i>Commitment to innovation</i>	Low	Medium	High
<i>Tradition-Innovation tension</i>	Absent	Weak	Strong
<i>Process innovation</i>	Improvement of existing technologies	Introduction of new technologies	Improvement of existing technologies
<i>Product innovation</i>	Aesthetic renewal	New product development co-existent with old production	New product development in replacement of old production
<i>Marketing innovation</i>	Social media as a mandatory but unpleasant need	Social media as a strategic tool (often internally managed)	Social media as a strategic tool (often externally managed)
<i>Sales innovation</i>	Non-exploited digital sales channel	Showcase websites	Active e-commerce platform
<i>Entrepreneur's recurring features</i>	Long-time established entrepreneur without generational turnover opportunity	Two co-existing generations of entrepreneurs	Entrepreneur with a long experience in the sector (in co-existence with the previous generation)

Every approach encompasses a group of interviewed entrepreneurs based on how they use tradition and on their commitment to innovation. Moreover, we noted that entrepreneurs who shared a specific approach to manage the ‘tradition-innovation’ relationship, frequently develop innovation in their firms in a similar way, in terms of product, process, marketing and sales innovation (see Table 3). Finally, every approach to the management of innovation is characterized by its own level of tension between tradition and innovation. Specifically, it seems that the tension between tradition and innovation is lower when entrepreneurs use tradition in a protective way and their commitment to innovation is low, but the pressure to balance the competing needs of being faithful to their tradition and simultaneously open to the market demands for innovation increases when micro-entrepreneurs have a proactive use of tradition and show a high commitment to innovation.

A more in-depth description of the three approaches follows in the next pages.

Table 3: Different types of innovation detected among Defensive, Engaged and Swinging innovators

Innovated area	<p style="text-align: center;">Innovation type <i>Representative quotations</i></p>	Typical of
Process innovation	Improvement of existing technologies	Defensive innovators
	<p><i>“Our processes are absolutely unchanged for a hundred years but of course we adopted some technologies to remove the shell crust that is nothing artistic, just a roughing phase that took us time. [...] Once roughed down, the shell is processed with chisels of different measures that help us going into the smaller details of cameos. In the past, someone tried to adopt a completely industrial process but failed miserably because when people want a cameo and appreciate the object, they expect to have a product that respects the standards of traditional craftsmanship.”</i></p>	
	<p><i>“We automatized just one phase of our productive process: design. It is an upstream stage deeply intertwined with production because technology substitutes the sketch and the model that in the past were made by hand by the goldsmith. Today, we design the product with the computer and then we have the possibility to create a wax model with the 3D printer.”</i></p>	
	Introduction of new technologies	Engaged and Swinging innovators
<p><i>“I am not against introducing new machine and trying to do new things, I have done it many times, but these machines should have a purpose. I always think twice before buying something new, but with the change of tastes and times it is inevitable to invest some money to try new things.”</i></p>		
<p><i>“To me, innovation is not to facilitate some production or to recreate something we can do by hand with a specific tool. Innovation is to do something different. If I buy a water cutting machine, I do not use it to cut things I would cut by hand because it is better for the product, I would use the machine to cut different products”.</i></p>		
Product innovation	Aesthetic renewal	Defensive innovators
	<p><i>“If you want to, I can explain innovation with one verb: to improve. My work is a work of tradition, it has been the same as itself for centuries. Four hundred years ago Stradivari brought violins to a level that it is difficult to emulate still today: reach that level and improve it is a great result for us. There are a lot of innovations that can be added in the art of lutherie, but it’s up to us to decide if they improve the final product or not.”</i></p>	
	<p><i>“When people said to me “But you don’t do Faenza’s ceramic!”, if I was in the mood, I explained them that in the past one century had at least four different styles. This means that who came before me was never lazy and always adapted to fashion, culture and changes. [...] I have always wondered: do we have the same houses of five hundred years ago? Do we dress like five hundred years ago? No! Then why the ceramic should be the same? Whether you like it or not you must speak a contemporary language.”</i></p>	
	Alternative new product development (New and old products co-exist)	Swinging innovators
	<p><i>“In the firm I am the one of lateral thinking. I always think about how we can differentiate and find new parallel application for our products. [...] For example, now we are working with guys who are personalizing a supercar and want a gold and precious stone plaque to decorate the wheel. [...] This uprising theme of the jewel not only as something to be worn, but also as part of a precious tool of daily use is very promising, especially in the eastern markets.”</i></p>	
	<p><i>[About the meaning of innovation] “Ten years ago I understood that we were always proposing the same old things. I decided then that was time to renew the business image and to start proposing something new. We therefore made a design innovation, we started collaborating with a Japanese designer who lives and work in Milan and with other designers with which we have developed a collection that was exposed all over the world. We still collaborate with some of these designers, and we continue developing new products. [...] Above all, it helped to get us pumped, to relate with other entities and to look at the problems in a different way. Of course, our approach to work deeply changed, though the most sell product is always the classic, that necklace we do since our opening in 1911. However, to innovate was a must to be more connected with the rest of the world.”</i></p>	
Complete new product development (New products replace old products)	Engaged innovators	
<p><i>“Over time, I got older and history started boring me, I wanted something new. For this reason, I experimented with glass until in 2017 I discovered a new way of doing glass beads. Previously, I followed museum’s rules and I created new pearls but with ancient patterns, to build a copy of ancient beads. Now I have chosen to pass to a tactile experience: I have mixed the glass with other lagoon materials [...] and it may seem a little invention but, trust me, to combine the glass with ropes, wood, and others high quality materials is something that requires a great mental effort to create something unique. To me, this is the real innovation.”</i></p>		
<p><i>“Thirty years ago, I was bored of always doing traditional stuff and [...] I began working with contemporary artists. Today, this is the core business of our firm and made us create some important pieces that were exposed all over the world. Now we are a reference point for artists that come from every part of the world to realize here their ceramic dreams. We still have a double production: the artists activity and our own collection. The latter is divided in some classics products that we try to keep updated as much as possible and some products we create as corporate items for other firms. [...] We innovated our own collection by employing a designer that is helping us innovate ourselves.”</i></p>		
	Social media as a strategic tool	
	<p><i>“In the last few years, we started collaborating with an agency that manage our social media because to have an effective social media presence is crucial. We had started managing them internally, though it was difficult: after six months I finished the ideas and I didn’t know what to post anymore. Externalize this activity was a great choice because they narrate us better than what we would do ourselves. Also, they know what they are doing and if they promise you three post a week, they will surely post those three times.”</i></p>	
	<p><i>“Luca is responsible for online communication through the website and social media. He works to communicate an understandable, clear and simple image to the public. Concretely, he organizes an editorial calendar, he thinks</i></p>	

Marketing innovation	<p>about what to post, when posting it and decides the right keywords to reach our customers. Also, he is responsible for managing the website, updating its content, and managing e-commerce.”</p>	Engaged and Swinging innovators	
	<p>“Marketing innovation is crucial because we need a strong and recognizable digital identity while holding on all our productive values, those artisanal values that are the very heart of our firm. [...] For this reason, we are on social media for many years.”</p>		
	<p>“Innovation is also marketing innovation. Until today, I have always sold my firm, but now I feel the need to outline that I, Renata, glass beads maker, am my firm. I have understood that today, especially in other Countries, the artist is more important than the firm. Once, we had the brand centrality, now we are focused on a name, on a person. That’s the same on social media. I always speak as my firm and not as Renata and that’s a mistake! I want to change. [...] My firm is made of people, of names, faces, hands [...] my goal is to create a recognizable firm with recognizable signatures.”</p>		
	<p align="center">Social media as a mandatory but unpleasant need</p>	Defensive innovators	
	<p>“I wish to innovate marketing activities, but I’m scared, especially of social media. I feared them because I do not know them. I have an Instagram and Facebook profile created by my daughter, but she does not have the time to manage them. This idea that I am not able to use them on my own consumes me. I have a post-it with the phone number of a girl who could manage them for me but it is still there, uncalled. It is a complete failure from this point of view!</p>		
	<p>“We use social media instinctively, we do not follow all those rules that should be followed to make them work, we do not have a clear idea of what we want to communicate. In this sense we are very instinctive and artisanal, we do not have a plan and we manage them on our own.”</p>		
Sales innovation	<p align="center">Active e-commerce platform</p>	Engaged and Swinging innovators	
	<p>“To work on and sell a product face-to-face with a customer is always desirable, but I can see how things are going and I understand that we are going into a direction that will bring us to choose things more and more while sitting on a chair. I must move in this direction and be ready to survive. [...] Usually, I make customized products, so someone comes in my shop, gives me some measures and I make the project and realize it. Well, now I am working to do this remotely. I am building a catalogue that is more standardized as possible to make clearly understandable how products, finishings and colors could be and ease online selling. This is the first effort to make a customized product suitable for digital selling: you choose, you call me or e-mail me, we talk about your need and then I send you the final product at home.”</p>		
	<p>“We are trying to transform the purchase moment. The jewel is something that brings joy, the purchase moment is extremely emotional. Usually, the jeweler is there with the mirror, a lady is trying the jewel and if something clicks, then she buys it. This ritual is changing with new technologies because to see a jewel online, even if is worn by a model, is not the same: trying it yourself is always different. Even if you have a vivid imagination, the impact a jewel has on a model is not the same that it has when worn by the average woman, the rendering is totally different. Also, it is difficult to understand the color and the quality of the jewel online. For this reason, we are trying to improve the digital purchase moment, recreating the emotional impact and doing high-quality photos. To improve this moment is crucial for us.”</p>		
	<p>“We have started a collaboration with a lutherie studio that deals with restoration of ancient violins but not with the production of new instruments. This studio has selected a few violinmakers and created an online shop with high-quality photos. The website is very well kept and contains the recorded audio of every single violin on sale. In this way, musicians can compare different violins and choose the most suitable for them. It is not as playing the violin in person, but we try to give more information as possible to our customers, also because our products are quite expensive.”</p>		
		<p align="center">Showcase website</p>	Defensive innovators
		<p>“The relationship with the customer was always our greatest plus because our product is a very peculiar one, nonstandard, customizable according to the customer’s taste. Also, it is a product that must be touched, and this is a limit for e-commerce that is something I’m not a fan of, even though I recognize its huge importance. This is a product that must be seen, touched, explained while e-commerce works very well for standard products that someone can immediately understand and recognize [...] To me, all innovations must bring the customer to our physical shop.”</p>	
	<p>“We do not have the classic e-commerce platform because every product is highly customizable and we’d rather spending half an hour on the phone with a customer and working together on their jewel than selling standardized products. We are so glad when the customer asks for customization: he is expressing himself, finally! This is the reason why we have a showcase website. We sell a lot through social media or WhatsApp Business, we conclude the payment there, but the relation remains. [...] The interesting thing is that the more online presence you have, the more human contact you achieve.”</p>		
	<p>“I’m collaborating with the Consortium for the makeover of a website on which we collectively sell online [...] But on this point I am a bit traditionalist. I prefer to be present in person when I’m selling something, I like going to exhibition and organizing events [...] I am a very physical person, I want to bargain and shake hands. This is the reason I find difficult to sell online. Maybe it’s because I do not create a lot of pieces, I sell few violins and I prefer to sell them to the customer in person. [...] We violinmakers, sell luxury products, like Ferrari and if you sell a Ferrari you must be there at the time of the purchase.”</p>		

Defensive innovators – Defensive innovators are those entrepreneurs who make a protective use of tradition, considering it as an untouchable ensemble of values, beliefs and work procedures that must be preserved as much as possible to protect the quality of their job and the competitive

advantage originating from it. In this sense, they tend to passively exploit the benefits associated with tradition (i.e., in terms of know-how or reputation) preserving it exactly as they received it. According to them, tradition is the secret for their success and the very heart of their work and for this reason they could become melancholic about the past as Gianfranco, a wood artisan at the head of a sixty years-old wood crafts shop, stated: *“We should go back to be Renaissance workshops where people come in and understand that you are doing a manual, highly-creative job. This craftsmanship [...] is our greatest plus. [...] today anyone is interested in this”*.

Indeed, these entrepreneurs often demonstrate a ‘low commitment’ to innovation, considering it just as something they are forced to because it is crucial to remain competitive. Low-committed entrepreneurs pursue innovation as far as they perceive they have to; however, they are not fascinated or curious about innovation dynamics. As the watchmaker Paolo A. said: *“We must adapt: if the market changes, we must follow it. I surely cannot bend the market to my will, I must adapt to what people want”*.

Concretely, innovation means a utilitarian change in one or more of these four areas: productive processes, products, marketing, and sales channels. However, these entrepreneurs pursue innovation in each of these areas at different extents.

Sales seems to be the harder area to be innovated as defensive innovators often perceive them as something that must be pursued in a traditional manner to effectively communicate the value of their products. For example, Pasquale S., a violinmaker, explained his doubts about tradition as it follows: *“(On sales) I’m quite a traditionalist. I prefer to be present in person when I’m selling something, [...] I want to bargain and shake hands. [...] We violinmakers, sell luxury products, like Ferraris and if you sell a Ferrari you must be there at the time of the purchase”*.

Consequently, e-commerce activities are often either absent or present but almost neglected. The same happens for social media presence, which is poorly considered as a suitable channel of marketing. As Elisa S., a ceramic artist, stated, the rapidness of social media communication is not always suitable for the inherited slowness of crafts that should be well understood by the customer:

“We live in crazy, rapid times today [...] People don’t understand that for doing something by hands, a month is often needed. [...] How can I pass this idea through a post?”. But the problematic relationship with social media also stems from other issues. Specifically, the fact that to be used in an effective way, social media require adequate investment of time and money makes their use highly struggling for defensive innovators. Indeed, these entrepreneurs lack of resources (as any other small entrepreneur) and simultaneously are highly sensitive to investments in innovation – especially those needed for communication and sales innovation – that are perceived as an unnecessary waste of money. Indeed, as Gianfranco G. claimed: *“The problem is not necessarily that we cannot pay, but while we are used to buy a productive machine, we are not used to buy skills”*.

Conversely, defensive innovators pursue both process and product innovation more frequently, though cautiously. Process innovation is tolerable as far as it includes the introduction of technology to facilitate and speed up their usual manual work. Indeed, they rarely decide to introduce technology to differentiate or change their production, but they need to reduce their production time to remain competitive: *“Our processes are absolutely unchanged for a hundred years but of course we adopted some technologies to remove the shell crust that is nothing artistic, just a roughing phase that took us time”* (Salvo O., coral artist).

Similarly, product innovation is pursued within the strict area of aesthetic renewal, motivated by the changing of times and tastes. However, as they have such a strong relationship with tradition, these entrepreneurs hardly ever create new products because, according to them, to innovate a product means *“to try to diverge from classic aesthetical clichés while maintaining our typicality clear for our customers”* (Gianfranco G., wood artisan).

Data analysis also provided the possibility to detect some recurring features of defensive entrepreneurs in terms of personal and work-experience characteristics. Specifically, these entrepreneurs frequently are long-established head of their firms (for 15 years and more) lacking the possibility of an either family or non-family generational turnover. However, defensive innovators could also be long-established entrepreneurs of family firms where a younger generation is also

involved. However, this has very little decision-making power and does not feel free to experiment while feeling the burden of sticking to the leadership style of the older generation, that is often the funding one.

Swinging innovators – Swinging innovators are those entrepreneurs who see tradition as a resource to leverage on in order to expand their firm activities. Specifically, they exhibit a hybrid use of tradition: maintaining their traditional activities intact and unchanged, while experimenting new innovative possibilities as they claim that “*innovation does not mean to facilitate some production or to recreate something we can do by hand with a specific tool. Innovation is to do something different*” (Stefano B., glass artisan).

These entrepreneurs seem to have a ‘medium commitment’ to innovation since they have both a strong utilitarian perception of it, but also feel some kind of responsibility and internal need to change. Market pressure is often the initial driver of innovation for these entrepreneurs to innovate but then they deeply engage in pursuing change. Indeed, these entrepreneurs consider innovation not only as an industry or market requirement or ‘something that must be done’, but also a potential source of opportunities to explore new markets niches, target new customers and experiment new ways to perform their activities.

Specifically, swinging innovators believe that the market experienced a deep change in terms of customer preferences and tastes that brought back the appreciation for handmade, artisanal products. Interviewees are convinced that such change created new market opportunities for firms with a strongly tradition-based know-how and expertise because “*as the world is increasingly going toward mass production there will be more and more market gaps created by those clients who want something peculiar and customized that is not obtainable with mass jewelry. Italian SMEs can answer to this need, creating something with a high value of design and craftsmanship*” (Cinzia M., goldsmith)

In these firms, innovation and tradition remain weakly connected tracks: swinging innovators wish to maintain their classic production while experimenting new applications of their work as they feel like *“the tension between tradition and innovation lies in being responsive to market pressures without corrupting tradition. [...] You should always be able to do both, if needed”* (Stefano B., glass artisan).

Products and processes are the areas where innovations are primarily pursued. Entrepreneurs innovate processes to speed up and facilitate manual work used for their classic production, while also adopting technology to have new productive options. They are less likely to seek aesthetic renewal of their classic products since they consider them unchangeable given their strong tradition-based nature. Rather they commit to innovate creating brand new products. Alessandro M., a venetian glass beads maker well synthesized this feeling stating that: *“I don’t want to distort my production line: we make beads, and we will make beads in the future. But if with technologies or designers we can do products made with beads that are different from the classic necklace, I believe it is crucial to try”*.

Innovation is also pursued in marketing and sales. Swinging innovators are generally very open to online communication that they want to manage with an ad hoc developed strategy. E-commerce activities are pursued by these entrepreneurs, though they frequently struggle to find the right way to overcome the importance of personal contact with customers as they claimed as ‘difficult’ to *“describe all that stands behind our product online [...] (because) yes, we have a lot of material for storytelling and for Instagram’s stories but to pass the important messages to the customers through a post is not so easy.”* - Paola C., jeweler. For the above reason, many of them have never committed too much on digital sales before COVID-19 pandemic that acted as an accelerator as they were forced to try digital communication to survive: *“Last Christmas, due to COVID we made a digital version of our Christmas market. [...] It was a great success thanks to a newsletter we sent to a thousand addresses we collected over the years. [...]we realized the*

importance of this only because of COVID restrictions, otherwise we would have never noticed the real potential of newsletters and e-commerce” (Marcello M., glass beads maker).

As far as the potential of digital communication and e-sales was understood, many ‘swinging’ innovators chose to manage them internally because they believed that a narrative developed inside the firm is much more effective to communicate the firm’s history and values compared to one developed externally. Indeed, they believe that *“to narrate a crafts firm from the outside is not the same of doing it from the inside. Something cannot be grasped from outside”* (Laura O., entrepreneur in the jewelry sector)

As happened for defensive innovators, swinging innovators also share some distinctive personal and professional characteristics. These entrepreneurs frequently operate in firms where an older and younger generation co-exist. However, in these firms, the younger generation – who could have a previous professional experience outside the firm – holds a part of decision-making power and is free to bring change and novelty into the firm. However, innovation is always the result of a confrontation with the older generation. The latter is rarely against innovation but sets boundaries for it and holds the responsibility of preserving tradition.

Engaged innovators – Engaged innovators are those entrepreneurs for which tradition is a resource they can proactively leverage on to exploit new opportunities. Those who proactively use tradition, still place it at the core of their job, though they do not consider it as untouchable. These entrepreneurs have a sort of ‘utilitarian’ perception of their past. They feel like tradition could be innovatively used to answer to emerging market needs. Specifically, they are open to integrate past knowledge with incoming approaches and, doing so, to contribute expanding and enriching tradition for future generations. Thus, rather than preserved, tradition should be reinterpreted and adapted to current times. In this view, tradition is always an inspiration and never a constriction.

Engaged entrepreneurs are also characterized by the perception of innovation as a change that occurs not only in the firm but first and foremost in their own mentality. Indeed, they considered

innovation as a mission to fulfil the responsibility they feel they have towards past and future generations. These entrepreneurs see innovation as a tool to revitalize and perpetuate their traditional work avoiding its disappearance. Therefore, they exhibit a ‘high commitment’ to innovation viewing it – paradoxically - as a tool necessary to maintain tradition. Indeed, their commitment to innovate is rooted in their belief that every generation has the responsibility to enhance and personalize an ancient activity like crafts to make it survive. The ceramic artist Davide S. whose shop is placed in Faenza, a city with an old tradition in ceramic-making, clearly explained this feeling stating that *“Faenza didn’t stop to be the most important ceramic city in 1500s, but continuously evolved and stayed on the edge in 1600s, 1700s, and so forth. Today it is my turn to evolve”*.

Engaged innovators therefore share the awareness that new approaches and tools do not alter their traditional know-how. Since these entrepreneurs perceive tradition as the base on which innovation is developed, tradition and innovation can feed and nourish each other. Indeed, the importance of tradition remains intact and for this reason they feel the need to preserve the essence of their activity while changing. Tradition becomes the very source of change. For this reason, they often delve into tradition to discover old uses or techniques that they can adapt and use for modern purposes. This often happens for their new products as they are developed looking in their tradition. This is, for example, the case of Salvo M., a lava stone artisan, whose firm leverages on traditional Sicilian products to create something new modifying classic purposes of use, as in the case of using prickly pear wood to create lava stone jewels: *“The idea came to my mind once I was in the Atrano Castle with a former colleague who is a restorer. We have noticed that there were some furnishings veneered with prickly pear and it all clicked. We didn’t invent anything, we caught an input from the past, worked on it and then patented and launched it”*.

In contrast with what happens for swinging innovators, engaged innovators do not tend to make both classic and modern products co-exist. Rather, they are much more prone to develop new lines of production that mostly or completely substitute their older ones. Tradition is therefore a steppingstone to build something new. This dynamic is clearly explained by Davide S., who told us

about the significant change of his production over the years: *“Thirty years ago, I came to a point where I didn’t like anymore to recreate traditional products [...] I have then started what today is the core business of our firm: the collaboration with non-ceramic artist who wants to work with the material to create contemporary pieces with old techniques.”* – Davide S., ceramic artist

Surprisingly, entrepreneurs who follow this approach do not strongly focus on process innovation. Although they are open to the adoption of technology that may facilitate the work, engaged innovators are less interested in changing their productive processes since they do not want to pursue something that is considerable as demeaning for the value of their production. For this reason, they prefer to exploit the maximum of their innovation potential in other areas while limiting changes in the way products are made. This is a deliberate choice they often make after a period of great experimentation; it is not something determined by conservatism or immobility. This diffused tendency is well explained by the words of Renata F., a glass beads maker from Venice, that states: *“To innovate processes means to have more safety and comfort [...] (but) I cannot change my work method because I would pass to a modern production [...] to create beautiful beads, but they would have different characteristics from those I produce. [...] The challenge is to create, with the 1800s processing, beads and jewels that are innovative”*.

Concerning marketing and sales innovation, engaged innovators are highly aware of their importance. Considered as necessary and stimulating changes, social media, websites and e-commerce platforms are actively used by these entrepreneurs. The elaboration of a specific strategy for these channels is crucial for them. They frequently outsource digital marketing to specialized professionals because they recognize the importance of managing it adequately. Alternatively, they employ a person who has the competences to properly manage them. This is the case of Salvo M.’s firm, that after a long period with an external agency devoted to the managing of social media, hired Luca a young employee who *“is responsible for online communication through the website and social media [...] he organizes an editorial calendar, he thinks about what to post, when posting it and*

decides the right keywords to reach our customers. Also, he is responsible for managing the e-commerce”.

For many of these entrepreneurs, social media are also a tool to communicate in new, more personal ways as in the case of Renata F., who claimed that thanks to online communication she discovered the potential of the personal narration as a competitive leverage: *“In the past, we had the brand centrality, now we are focused on a name, on a person. That’s the same on social media. I always speak as my firm and not as Renata and that’s a mistake! I want to change. [...] My firm is made of people, of names, faces, hands [...] my goal is to create a recognizable firm with recognizable signatures”.*

As for the other two approaches, engaged innovators also share some frequent personal and professional characteristics. Specifically, they often run firms with a long history in which they had the possibility of gaining experience both externally – through an experience in another firm - and internally - during a period of co-existence with the previous generation of entrepreneurs. Such experience enables them to value the potential of innovation while also treasuring tradition and long-time expertise.

5. Discussion and contribution

The aim of our study was to investigate the role played by tradition when micro-entrepreneurs active in a mature and low-tech sector – like creative crafts – pursue innovation. Three different ways of leveraging on tradition emerge from our study, namely protective, hybrid or proactive approaches, which are associated with different levels of commitment to innovation. We thus identify three profiles of micro-entrepreneurs: defensive, swinging and engaged innovators. Each profile does vary in terms of approach to ‘innovation in tradition’ and exhibits specificities in terms of drivers of and barriers to innovation. In the discussion below, we present the ‘dynamic framework emerging from our analysis (see Figure 2) and detail how our research contributes to two main lines of inquiry: innovation in

micro-firms and tradition-innovation paradox. Finally, we discuss the contribution our study offers to practice.

5.1. A dynamic framework of 'innovation in tradition'

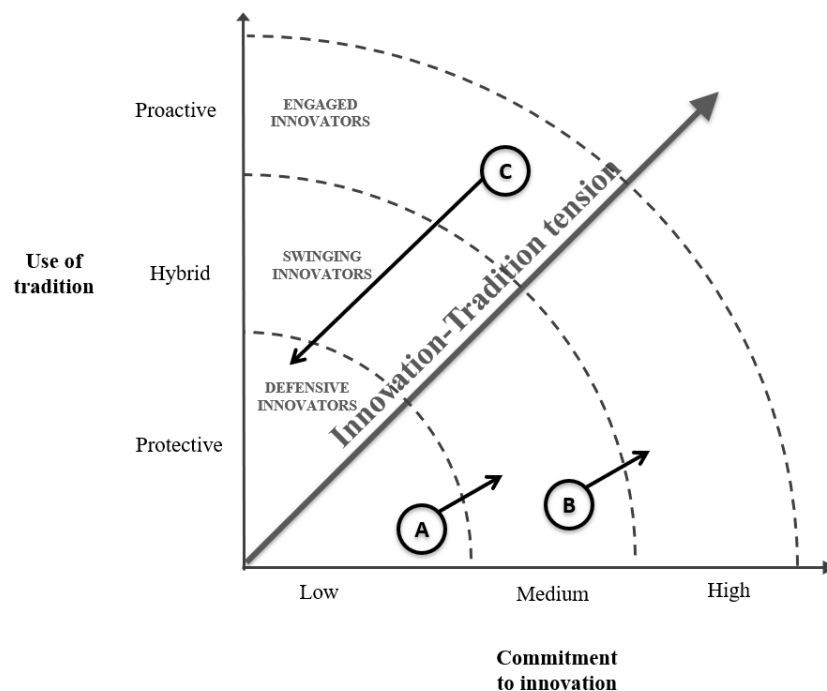
Our study confirmed that innovation in a micro-firm is deeply connected with the entrepreneur's experience, characteristics, and approach to work (e.g., An et al., 2018; Baer, 2012; Laguir & Den Besten, 2016; Roper & Hewitt-Dundas, 2017). Specifically, we have noticed that defensive innovators, i.e., those entrepreneurs who are less prone to innovation and stickier to tradition, frequently are long-established entrepreneurs without the possibility of an either family or non-family generational turnover. However, we also observed this approach in a few family firms where a long-established entrepreneur co-exists with the future generation, though the latter still has very little decision-making power. In this context, the younger generation does not feel free to experiment and innovate: rather the succeeding entrepreneur deeply feels the burden of sticking to the leadership style of the previous generation, which is often the founding one. This evidence seems to be consistent with the work of Laguir & Den Besten (2016) on the importance of age in affecting the firm approach to innovation and with the one of Olivari (2016) about the relevance of personality. Swinging innovators, i.e., those entrepreneurs who try to exploit innovation opportunities while remaining faithful to tradition, also show a recurring experience. Indeed, they frequently operate in firms where an older and younger generation of entrepreneurs co-exist. In these firms, the younger generation – who often has a significant professional experience outside the micro-firm - has gained enough decisional power to bring change and novelty into the firm, although innovation is always the result of a confrontation with the older generation. Generally, older entrepreneurs are not against innovation, but they set boundaries for it and feel the responsibility of preserving tradition, while the younger is more prone to experiment and change. For this reason, swinging innovators tend to clearly separate innovative products and projects from traditional ones. This second approach confirms the

relevance of the entrepreneur's prior work and personal experience for innovation (Laguir & Den Besten, 2016; Robson et al., 2012).

Finally, engaged innovators, i.e., those entrepreneurs who systematically pursue innovation, also present some recurring features. They frequently run firms with a long history in which they have had the possibility of gaining experience both externally and internally - during a period of co-existence with the previous generation of entrepreneurs. Such experience enables them to pursue innovation while also treasuring tradition and long-time expertise. Our findings on engaged innovator's approach underscore the critical role of personality traits like proactivity and risk-taking (Pérez-Luño et al., 2010).

In the light of our empirical evidence, we argue that three recurring paths in terms of evolution of the three approaches exist. We thus propose a dynamic framework of innovation in tradition, as shown in Figure 2.

Figure 2: Innovation in tradition: a dynamic framework



Given their distinctive features, we argue that over time defensive innovators may exhibit two different evolutionary paths. On the one hand, the commitment of these micro-firms to innovation may increase over time: rather than being driven uniquely by survival needs, innovation may increasingly become a deliberate strategic choice. These firms therefore may evolve toward the swinging innovators approach (see pattern A). On the other hand, the opposite could also happen. Indeed, innovation may become more and more challenging for defensive innovators, and they may increasingly feel unable to pursue it. In this scenario, the increasing market pressure on innovation and change (European Union, 2019; PricewaterhouseCoopers, 2018) may even push these firms out of the market. Therefore, we propose the following:

Proposition 1: Over time, ‘defensive innovators’ may either evolve toward the ‘swinging innovator’ approach or exit the market.

As regards swinging innovators, over time they could progressively move toward an engaged innovators approach (see pattern B). Indeed, swinging innovators often are amid an experimentation phase in which they balance innovation and tradition, keeping them separate. Innovation is driven by the market, but the entrepreneurs’ satisfaction with the outcome of their innovative projects may push to increasingly integrate the focus on innovation in their activities and leverage on it to reinvent their traditional know-how. Thus, we propose:

Proposition 2: Over time, swinging innovators may evolve toward the ‘engaged innovator’ approach.

Finally, engaged innovators, i.e., those who build their activities on the virtuous merging of innovation and tradition, do not live in a crystalized status as well. Indeed, as discussed above, the separation between innovation and tradition is just a matter of perspective: entrepreneurs following an ‘engaged innovator’ approach tend to continuously reconsider their firm activity. Alternatively, they may evolve toward the ‘defensive innovator’ approach (see pattern C). State formally:

Proposition 3: Over time, ‘engaged innovators’ may evolve moving back to a ‘defensive innovator’ approach.

5.2. Contribution to research on innovation and tradition-innovation paradox

In line with prior research on innovation and tradition, as well as the paradoxical relationship between the two (see De Massis et al., 2016; Erdogan et al., 2020; Matarazzo et al., 2021; Miron-Spektor et al., 2018), our analysis shows that tradition greatly affects firm strategic choices and activities, including innovation. Our empirical evidence on how microentrepreneurs perceive tradition is in line with Dacin et al.'s (2019) definition of tradition as a group of beliefs and practices that are consciously transmitted to express identification with a shared past. Also, in line with previous contribution on the topic (see Ravasi & Shulz, 2006; Simsek et al., 2015), our results confirm the role of tradition as a tool that helps micro-firms maintaining and shaping micro-entrepreneur's strategic activities as past choices inspire and guide present strategic decisions.

Our findings also extend prior research on the innovation-tradition paradox beyond the context of family firms (Erdogan et al., 2020) , analyzing a sample including both family and non-family firms, thus responding to the call for more studies on the role of tradition in non-family firms (Matarazzo et al., 2020). Specifically, our analysis shows that tradition is not only a family matter but can also be inherited from non-familiar relations. Moreover, our findings reveal variation in how micro-entrepreneurs frame the role of tradition, and such view has an impact on the way tradition is leveraged on in innovation: a *protective* view, for those who see tradition as an heirloom that must be protected and preserved; a *proactive* view, consisting in using it to successfully exploit emerging market possibilities and as a base to evolve traditional crafts activity; an *hybrid* view, when tradition co-exist with innovative aspects but is kept well separated from them.

Our study also contributes to enrich our knowledge about the innovation processes in the context of micro-firms (following Battisti et al., 2014; Henley & Song, 2019; Tu et al., 2014). We find out that micro-entrepreneurs exhibit different perceptions of innovation, leading to varying levels of commitment to innovate. In line with prior studies (e.g., Faherty & Stephens, 2016; Nathan et al., 2019), some of them have a low commitment to innovation, which is seen just as a competitive tool. However, our data expand previous knowledge on the matter outlining how some entrepreneurs are

strongly committed to pursue innovative projects since they consider innovation as almost a mission, as a key value that drives their firm's activity. They therefore see change with a deep sense of responsibility. Through innovation, they wish to preserve and perpetuate their ancient know-how. Innovation is something that is needed to preserve tradition. Finally, it also emerged that some entrepreneurs show an intermediate level of commitment to innovation, experiencing it cautiously, without giving up their traditional activity completely but developing both traditional and innovative products.

This paper also contributes to further our understanding of the relation between tradition and innovation. Consistent with previous studies (De Massis et al., 2016; Erdogan et al., 2020; Suddaby & Jaskiewicz, 2020), these two concepts emerged as deeply intertwined more than clearly separated. Tradition and innovation seem to feed and nourish more than inhibit and contrast each other. We therefore contributed to uncover individual variations and approaches to tensions as proposed by Ingram et al. (2016). Specifically, we identified three different approaches to managing innovation in tradition-based industry context: *defensive*, *swinging* and *engaged innovators*, each sharing a distinctive use of tradition and a recurrent level of commitment to innovation. From the analysis of these approaches, it emerged that some traditional micro-firms may struggle to adapt to a dynamic environment while maintaining intrinsic values, as it happens in family firms (Poza, 2007; Zellweger, et al., 2011). Instead, others are convinced of the positive effects of a constant dialogue between innovation and tradition and, in line with the temporal symbiosis construct proposed by Erdogan et al. (2020), they recognize the benefits of searching the past to develop innovation. Our findings thus extend previous results about the non-excludability of innovation and tradition.

It also emerged that every approach has its own level of tension between tradition and innovation. Specifically, when the use of tradition is protective and the commitment to innovation is low, micro-entrepreneurs do not feel any tension because they strongly separate the two concepts and do not try to integrate the two aspects. This corroborates those studies which claim that firms that

either ignore or try to resolve paradoxical tensions by emphasizing only one side of them may hinder change and innovative efforts (Ingram et al., 2016; Lewis, 2000; Smith & Lewis, 2011).

Finally, our results seem to be in line with the work of Cardon and colleagues (see 2009; 2017) about entrepreneurial behavior motivated not only by wealth creation and maximization but also by an intrinsic motivation stemming from the validation of the entrepreneur's conception of true self. This is crystal clear in all the detected approaches where, although massive innovation could be of great help for the maximization of profit, innovative choices were always – though at different degrees – a result of the trade-off between the entrepreneur's lenses on the world and on his/her job and the market requests for innovation.

5.3. Contributions to practice

This study also provides implications for practice. By exploring the way entrepreneurs innovate in their tradition-oriented industry, our findings may help them to better identify organizational needs and areas of intervention when pursuing innovation. Specifically, the three approaches to innovation, based on the varying role of tradition, offer useful suggestions on how innovation activity can be organized and managed in traditional micro-firms. This study also alerts entrepreneurs to the risk of a simplistic 'tradition versus innovation' dichotomy, suggesting that tradition is not necessarily a barrier, but can be a source of innovation opportunities. Moreover, the more nuanced perspective on the relationship between tradition and innovation emerging from our findings could also offer valuable insights for policy makers that are interested in designing policies for fostering innovation in traditional sectors and therefore need to be aware of the distinctive ways in which micro-firms active in tradition-oriented industries frame innovation.

6. Limitations and future research directions

Our study is not without limitations. Although creative crafts industry is a suitable context for the analysis of innovation, tradition and the relationship between the two, its peculiarity suggests caution in the generalizability of results. Future studies could focus on other settings to extend our findings and explore the interplay between tradition and innovation under varying industry conditions. In addition, the 22 interviewed micro-entrepreneurs run firms that are based in Italy. A multi-country study would be interesting to grasp the differences between the approach to innovation of micro-firms located in different countries. It is also worth noting that the interviewed entrepreneurs' firms are all part of networks dedicated to the preservation of ancient craftsmanship. It would be interesting to understand if and how collaborative networks play a role in the management of the relationship between tradition and innovation in traditional micro-firms.

Furthermore, we found out that, regardless of their openness towards innovation, every entrepreneur has at least one anchor that sticks to tradition: it may be product and process (defensive innovators), product but not process (swinging innovators), or process but not product (engaged innovators). This is an interesting finding on which future studies could further elaborate. Also, future contributions could develop analyses that better outline the differences between family and non-family micro-firms when approaching innovation in a traditional setting and uncover if tradition is differently exploited in the pursuit of innovation in these two contexts. Furthermore, we encourage future research to deepen our knowledge about defensive, swinging and engaged innovators. Specifically, future studies could focus on causal relationships in order to further investigate drivers and performance outcomes of the different profiles, and how each profile may change over time as a result of external and internal factors. Finally, we encourage future studies to offer more theoretical and empirical research to delve deeper into the non-excludability of innovation and tradition.

7. Conclusions

This research extends our understanding of the approaches to innovation in micro-firms. Using a qualitative methodology based on semi-structured interviews, we shed light on the link between tradition and innovation by investigating the varying role of tradition and identifying three different profiles of micro-entrepreneurs, in terms of management of innovation in traditional micro-firms. Moreover, we propose a dynamic framework of ‘innovation in tradition’, by highlighting three evolutionary paths across these approaches. We thus offer contributions to the research on both innovation in micro-firms and the tradition-innovation paradox. We hope that our study encourages scholars to engage in further investigation of the innovation processes and the interplay between innovation and tradition in the context of micro-firms.

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Chapter 3

DIGITAL TRANSFORMATION IN FAMILY SMEs: A PROCESS PERSPECTIVE

Abstract. Family small- and medium-sized enterprises (SMEs) represent a peculiar context where to investigate digitalization since the strong link between the family and the business turns into distinctive approaches to innovation, relative to non-family firms. Although extant literature acknowledges that all firms are increasingly required to respond to the challenges of the digital economy, the current knowledge about how family SMEs pursue digital innovation and how it impacts the organization is still limited. Through a qualitative study of six Italian family SMEs currently amid their digitalization journey, we develop a framework of digitalization as an iterative process comprising four phases – awakening, grounding, settling and evaluation – where the family involvement displays its effects. The findings highlight the factors that can stimulate firms to pursue a digitalization strategy. The process perspective offered by this study also reveals how family members can affect the firm digitalization process. Contributions to research on digital innovation in family SMEs are discussed.

1. Introduction

Since its inception in the early 2000s, the research interest about digitalization has grown exponentially and a variety of new lines of inquiry have emerged. Digitalization – i.e., the adaptation of the world to the existence of digital and smart technologies – is indeed a critical factor for firm innovation, growth and competitiveness and plays a strategic role for both small and medium-sized enterprises (SMEs) and large firms (Li et al., 2018). However, the approach to digitalization deeply varies based on the size of the firm: large firms can more easily exploit the advantages of digital economy, while SMEs face recurring barriers that slow down digitalization and change (Giotopoulos et al., 2017; Nicholas, 2011). Given these peculiarities, SMEs represent a particularly interesting

research context, deserving further investigation (Henley & Song, 2020), as large firms have been the traditionally privileged research setting (Roper & Hewitt-Dundas, 2017). Furthermore, the existing studies on digitalization in SMEs have mostly explored the main outcomes, for instance in terms of business model innovation (Verhoef et al., 2019), internationalization (Cassetta et al., 2020), corporate entrepreneurship (Ben Arfi & Hikkerova, 2021), and performance in a broad perspective (Neirotti & Pesce, 2019). In this scenario, the mechanisms through which digitalization occurs in the specific research context of SMEs, along with its characteristics and the peculiar stimuli fostering its initiation, are largely untapped.

Within the context of SMEs, family firms deserve particular attention in the light of their specificities, including the link between the family and the firm (Sciascia et al., 2013) and by the role that tradition holds in such organizations (Erdogan et al., 2020). However, family SMEs need digitalization to sustain their competitiveness and, although they may face more difficulties when pursuing innovation, because of potential intergenerational conflicts and the emotional ties between the family and the business (König et al., 2013), they must adapt to the new digital scenario as any other firm (De Massis et al., 2016). Moreover, some aspects of digitalization phenomena in family SMEs remain particularly unclear (Überbacher et al., 2020), such as which factors influence the adoption of digital technologies, the advantages associated with digitalization and the different dynamics taking place during the process, as well as the identification of similarities and differences across family SMEs. Based on the above, how family firms innovate and digitalize leaves room for further investigation (Überbacher et al., 2020; Erdogan et al., 2020).

To address the research gap in terms of developing a process perspective to digitalization in family SMEs, this study adopts a qualitative approach, as it represents the most suitable empirical method given the aim to contribute to our understanding of how family SMEs manage digitalization. Using the case-study methodology, this paper analyses six case studies of Italian family-owned SMEs and develops a process perspective to digitalization in this context. In particular, the analysis delves into the steps of the digitalization process in family SMEs, highlighting the role of the entrepreneur

and the family and investigating the impact of digitalization on the firm in terms of competitiveness and organization. The adoption of such a comprehensive approach that simultaneously considers the antecedents, the process and the outcome of digitalization is highly compelling.

The study offers a comprehensive framework by identifying four main steps through which digitalization is realized, namely ‘awakening’, ‘grounding’, ‘settling’, ‘evaluation’. The findings also indicate the existence of recurring characteristics of digitalization in family SMEs, this being characterized as a systematically disruptive, iterative, multi-layered, and family-supervised process. These results offer significant contributions to the research about digitalization in the context of family firms and useful insights to the wider literature on innovation in SMEs.

The remainder of the paper is organized as follows. After a review of the literature about digitalization in the field of SMEs and the peculiarities that digital innovation presents in family firms, the presentation of the case-based methodology as used in this study shortly follows. Then, the findings of this paper are displayed and then a discussion around the main takeovers offered by the study is presented supporting theory elaboration. Finally, the main contributions of the paper are exposed, as well as its main limitations and the avenues it paves for future research.

2. Theoretical background

2.1. Digitalization of Small and Medium-Sized Enterprises

Digitalization is a paradigm shift that has been globally changing societies and business environments with heterogeneous speed and scope (Rindfleisch et al., 2017; Schwab, 2017). In its broad conceptualization, it comprises the adoption of digital technologies, a subset of technological innovations (Nambisan et al., 2017), which impacts processes, products and business models in all sectors and firm’s types, including SMEs (Teece & Linden, 2017).

According to the Annual Report on European SMEs (European Commission, 2022), in 2021 SMEs were over 23 million in the EU-27, globally holding a great potential for growth while playing an important role for EU innovation degree. Indeed, according to Nicholas et al. (2011), SMEs hold

significant advantages over large companies when approaching new product development, including faster decision-making processes (because they have fewer layers of management), greater functional integration, and a greater capability to make changes (Voss et al., 1998). However, innovation is not only the invention of new products, rather it involves the entire business model of the firm (Baregheh et al., 2009). Therefore, to better understand how European SMEs innovate is increasingly important. Digitalization is a crucial driver of innovation, growth, and competitiveness for both SMEs and large firms, because it affects business processes, operational routines, and organizational capabilities (Li et al., 2018). Digitalization has modified traditional interactions between consumers and businesses (Taiminen & Karjaluoto, 2015) by developing new business models that enable firms to create and appropriate more value (Verhoef et al., 2019). Given the importance of the topic, digitalization in SMEs has gained increasing attention among scholars in the field of innovation especially in the last decades. Research has shown that SMEs face several obstacles when approaching digital innovation due to their limited size and resources, both financial and human, and their relatively moderate digital skills (Faherty & Stephens, 2016).

Many studies have explored the impact of digitalization on business model innovation, i.e., the process that deliberately changes the core elements of a firm and its business logic (Bucherer et al., 2012) in the search for new ways to define value propositions for customers, suppliers, and partners (Casadesus-Masanell & Zhu, 2013). Most of this research (Cenamor et al., 2019; Müller et al., 2018; Coreynen et al., 2017; Kim et al., 2013) focuses on the revolutionary impact that the adoption of ICT and digital technologies has on SME business models, the architecture of value creation, delivery, and capture mechanisms (Teece, 2010). Other researchers have examined the effect of digitalization on the overall competitiveness of the going-digital firm. In particular, they have investigated the beneficial effects (e.g., in terms of cost efficiency) of using e-channels to sell products to a wider customer base (Nathan et al., 2019; Waheed & Yang, 2018; Soto-Acosta et al., 2016), the impact of digital technology adoption on performance (Neirotti & Pesce, 2019; Scuotto et al., 2017), and the role of digital transformation on customer value creation (Matarazzo et al., 2021).

Some studies focus on the digital readiness of SMEs, trying to map all the skills needed to successfully adopt digital technologies and to be ready to engage in the digitalized business world (Pirola et al., 2019; Bolek et al., 2018; Koski et al., 2019). The use of social media is another widely explored issue, as they impact on SMEs' competitiveness (Bocconcelli et al., 2017), innovative orientation (Scuotto et al., 2019), and overall performance (Scuotto et al., 2017). In addition, several studies have investigated the role of digital technologies as tools for acquiring, storing, and managing knowledge in SMEs (Zhu et al., 2019) and have explained the positive relationship between improved knowledge management and innovation (Taura & Radicic, 2019).

Finally, other research has delved deeper into whether and how digitalization may affect corporate expansion at multiple levels, including the positive relationship between digital technologies and internationalization (Cassetta et al., 2020;), digital technologies and corporate entrepreneurship (Del Giudice et al., 2019), and firms' ability to seize chances to innovate and thereby grow (Ben Arfi & Hikkerova, 2021). Therefore, while exploiting the opportunities of going digital is largely acknowledged as a key factor to support the firm's competitiveness, the mechanisms through which it is implemented in the specific context of SMEs remain to some extent still unknown.

2.2. Peculiarities of digitalization in family SMEs

Family SMEs are small businesses characterized by a unique pool of characteristics that make them a peculiar research context (Kotlar et al., 2020). First, they are controlled by one family or a group of families, which makes it difficult to distinguish the family system from the business system: this overlap makes the firm hard to manage and change (Sciascia et al., 2013). Second, because of this blurred line between the family and the organization, family SMEs' strategies are long-term oriented and driven by both financial and non-financial aims (Chrisman et al., 2010). Indeed, one of the main goals of a family SME is often to ensure the generational turnover and the survival of the firm over time, passing down know-how, values and expertise through generations (Kotlar & De Massis, 2013; Erdogan et al., 2020). Third, these firms are often defined as risk-adverse (Duran et al.,

2016) and characterized by limited resources (De Massis et al., 2018a). These characteristics collectively determine the existence of a peculiar approach to innovation in family SMEs. This research field is still characterized by inconsistency and under-investigation (De Massis et al., 2013; Migliori et al., 2020). Indeed, the role of family SMEs as innovator is still unclear.

Family SMEs are considered as highly innovative by some studies (see Urbinati et al., 2017; Muñoz-Bullon et al., 2019) because of their flexibility and rapid decision-making, and for their strong local embeddedness that foster innovation activities (Classen et al., 2014) as well as the centrality of the family that can help to efficiently manage technological innovation (De Massis et al., 2016). However, they typically have a lower willingness to engage in innovation activities (Chrisman et al., 2015) and generally show lower innovation inputs (Miroshnychenko et al., 2019), and consequently lower innovation outputs (Calabrò et al., 2018). Their liability of smallness (Freeman et al., 1983) and the lack of adequate resources (De Massis et al., 2018a) make it even more challenging to cope with the emerging digital economy (Schwab, 2017).

Innovation processes in family firms are also strongly influenced by tradition (Erdogan et al., 2020). Indeed, the contrasting needs to pursue tradition and, at the same time, embracing change are naturally embedded in family firms (Schuman et al., 2010; De Massis et al., 2016). Tradition is that group of beliefs, customs, and symbolic practices that are passed down through generations (Shils, 1981). In family firms, tradition shapes the firm's identity and is inherited to maintain the firm internally coherent over the years (Erdogan et al., 2020). However, the will to maintain the *status quo* struggles to adapt to a modern, dynamic environment (Ingram et al., 2016). Indeed, innovation – today's key to competitiveness – requires braking with continuity to develop new approaches to business. In this scenario, some studies (e.g., Schuman et al., 2010; Ingram et al., 2016) demonstrated that tradition can support innovation thanks to the potential of paradoxical thinking. Therefore, some scholars have recently recognized tradition as a source to develop innovation (e.g., Erdogan et al., 2020; Petruzzelli & Savino, 2014), outlining how interiorized codified or tacit knowledge from the

firm's past can elicit innovation in family firms, thus giving new functionalities or meaning to its products.

In this context, many aspects of digitalization in family SMEs remain unclear (Überbacher et al., 2020), and there is still much to uncover about factors that influence the use of digital technologies, the advantages coming from digitalization and the different approaches to digitalization adopted by these firms. Also, a need to further explore the role of tradition in digitalization and the role of family and other actors involved in the process in family firms does exist. Furthermore, prior research offers interesting room for additional investigation aimed at detecting the possible different declinations of digitalization in family SMEs.

3. Methodology

This study is built on an empirical qualitative approach based on multiple cases (Eisenhardt, 1989). Qualitative methods are particularly suitable when the aim of a study is to answer to “how” questions (Yin, 2003) and to discover underlying, unquantifiable connections between elements of study. Moreover, case studies are frequently used in family firm research (e.g., Erdogan et al., 2020), as they are “*a valuable method for family business scholars to describe complex phenomena, develop new theory or refine and extend existing theories*” (De Massis & Kotlar, 2014; p. 16). In this study, the multiple case study approach enables to unveil the underlying processes and practices that family firms enact in pursuing digitalization.

Following the suggestion by Eisenhardt (1989) that at least four to ten cases where the phenomenon of interest is clearly observable should be selected, six family SMEs based in Italy were selected for this study. These firms were identified starting from a larger sample of 130 SMEs involved in a previously conducted survey-based study about digitalization dynamics in SMEs. Three sampling criteria that allowed to reach the most comprehensive and relevant results (Draucker et al., 2007) were used to select the firms analyzed in the present study. First, the firms should be owned by

a family that is also actively involved in the management of the company (Chrisman et al., 2012). Second, we only selected long-established firms that have managed to change and survive over multiple generations (at least two). Third, only firms that reported in the previous survey to be involved in some kind of internal digitalization process were considered to be eligible for this study. Over 30 family SMEs were initially assessed for the purposes of this research, out of which six were finally selected based on the availability of data about digitalization and on the potential richness of data and information as a result of the willingness of the entrepreneurs to share their family SME digitalization journey.

To ensure that the theoretical sampling criteria were satisfied, up-to-date information from company websites were gathered and answers to the previous survey were analyzed. After selection, representatives of the firms were contacted and asked if they would be willing to be interviewed and provide access to other sources of information. Our final sample includes six family SMEs operating in different sectors (i.e., hardware and carpentry, manufacturing for metal galvanic and pallet sector, joinery, printing). Table 1 provides detailed information on our sample.

Table 1: Analyzed firms - Main characteristics and data sources

Firm	Firm type Firm sector	Year of foundation	Digital 'awakening' year	Digitalization purpose	Main digitalization areas	Family member in charge of digitalization	Family trust in digitalization	Data source
<i>Ullman</i>	Commercial Hardware sector	1931	2014	Lifesaver digitalization	Logistic Management and administration Sales	3rd generation owner	Low	Interview with third-generation owner (4.5 hrs) Field visit Business reports Website Social media profiles Financial records
<i>AGF</i>	Manufacturing Printing sector	1938	2004	Lifesaver digitalization	Production Marketing Management and administration Sales	3rd generation owner	Low	Interview with third-generation owner (3 hrs) Field visit Business reports Website Social media profiles Financial records
<i>Meschini & Grassi</i>	Manufacturing Wood sector	1907	2015	Evolutionary digitalization	Production Management and administration Marketing	4th generation owners (two cousins)	High	Interviews with fourth-generation owners (2+2 hrs) Field visit Business reports Website Social media profiles Financial records
<i>Chiari Bruno</i>	Manufacturing Joinery sector	1975	2000	Lifesaver digitalization	Management and administration Production	2nd generation owner	Low	Interviews with second-generation owner and her husband (1.5+1.5hrs) Field visit Business reports Website Social media profiles Financial records
<i>Progalvano</i>	Manufacturing Galvanic sector	1967	2018	Evolutionary digitalization	Production Management and administration	3rd generation owner	High	Interviews with second-generation owner (1.45 hrs) Field visit Business reports Website Social media profiles Financial records
<i>Impea</i>	Manufacturing Mechanic sector	1963	2008	Evolutionary digitalization	Logistic and production Management and administration	3rd generation owner	High	Interviews with second-generation owner (1.30 hrs) Field visit Business reports Website Social media profiles Financial records

Our study combines both primary (interviews and observations) and secondary (archives) data sources (see Table 2). The interview protocol consisted of a set of semi-structured questions organized in three macro-sections. The first includes questions to gain general demographic information on the interviewee and the SME. The second set of questions aims to introduce the concept of digitalization asking to the interviewee when and why they started feeling the need to digitalize, what they mean by digitalization and the importance of digitalization in their firm. The third section of the interview describes the digitalization process, helping the interviewee narrating the steps and elaborating on relevant elements such as antecedents (i.e., drivers and barriers), actors involved (i.e., family and non-family; internal and external to the firm), changes in business management, business structure and organizational climate (e.g., new resources and competences, new approach to work, variations of

staff attitude), outcomes of the process and future digitalization objectives. The interview protocol was iteratively reviewed during data collection. From March to June 2022, two researchers conducted 6 semi-structured in-depth interviews with family members of selected SMEs, lasting between 1.5 hr and 4.5 hr. A follow-up interview with a family member was conducted in two cases, yielding a total 8 interviews. Interviews were conducted in Italian, recorded and transcribed verbatim by the first author immediately after. Interviews were then triangulated with observations. These included field visits, observations of production sites, warehouses, informal conversations with family and nonfamily employees, and interactions of family members with each other.

Secondary data was also available and were gathered from company webpages and social media profiles, newspaper articles about the firm, and firm's reports and official documents reporting interesting information about digitalization.

An abductive approach (Locke et al., 2008) guided data analysis. Two researchers started reviewing the primary and secondary data independently, identifying general concept related to digitalization. Then, they went back to data to detect the digitalization process steps and the elements that are connected to the digitalization journey of the firm. The within-case analysis was followed by a cross-case analysis to compare the findings of each case and revise the emerging themes accordingly, moving from data to theory (Eisenhardt, 1989). At this point, the researchers identified bigger themes and aggregated issues that recurred in results, then comparing and solving the potential inconsistencies.

Table 2: Primary and secondary data – Sources and use

Data source	Data (n.)	Use of data
Semi-structured interviews	8 interviews (17.45 recorded hrs; 200+ pages transcriptions)	Main source of data. Recorded, transcribed and analyzed identifying first, second and third orders relevant to our analysis on the digitalization process of the firm.
Field visits	6 (1 hrs on average; 100 pages of field notes)	Secondary source of data. Field notes were taken during the visits and reorganized immediately after in search for relevant details about: a. intra- and extra- family reactions to conversations about digitalization emerged during the visits; b. the digital level of the firm; c. spontaneous conversations about digitalization unable to be recorded.
Financial statements	60	Secondary source of data. The financial statements of the last 10 years were downloaded for each firm and analyzed in search of the economic impact of specific digital changes reported by the interviewees to be happened during this time span.
Websites, articles and social media profiles	18	Secondary source of data. Websites, journal articles and at least one social media profile were analyzed for each firm and each page or post involving the 'digitalization' word was carefully observed in search of relevant additional

4. Findings

From the analysis of the six digitalization journeys of the involved firms, the digitalization of family SMEs emerged as a process comprising four main phases, here labelled as ‘awakening’, ‘grounding’, ‘settling’ and ‘evaluation’. In order to build a fluent narrative about these four phases and due to space constraints, representative quotes supporting the identification of these four cases are not only embedded in the text, but also provided in Table 3.

Table 3: Digitalization phases: main evidence

Representative quotations	Digitalization steps	Digitalization phase
<p><i>“I knew that the firm was old, managed with an outdated approach but you know, we were keeping going. Once the flood invaded the warehouse in 2014 and we experienced such a terrible financial loss I realized: that was the moment in which we had to change everything. That was the moment where I knew that although difficult, I had to push for digitalization”</i> (En., third generation owner at Ullman)</p> <p><i>“In 2000 my father suddenly died, and this sped up the generational change, my husband, my brother and I entered the business. My father was a total genius and the very pillar of this firm, but we were different for experience and education. Our fear was to lose the leadership my father held so well. That was when I realized that we should differ from my father completely, we should not follow a shadow but create our own style to protect and continue what has been done in the past. That was the time when I wanted to begin with our digitalization journey”</i>. (R., second generation owner at ChiariBruno)</p> <p><i>“The will to digitalize the firm was born from an intuition of my cousin. He entered the business a few years before me, and he saw that we were technologically and digitally behind some of our competitor. We have a very good relationship with our competitors with whom we try to create a constant conversation to learn from each other. My cousin noted that and began to work to realign our work to those of others”</i>. (E., fourth generation owner at Meschini)</p> <p><i>“Everything started with me. I was writing my master thesis in supply chain management and during a conversation with my supervisor the issue of digital tracking came up. I was shocked: that was something that my family firm needed. Shortly after my graduation I entered the firm and tried to move in that direction”</i>. (Fr., second generation owner at Impea)</p>	Initial stimulus	Awakening

<p>“My father and uncle are from a different generation. When my cousin started to talk about digitalization, they were really skeptical. However, they gave trust to my cousin and now he and I are in charge of manage everything about going digital. My father, who is still in the firm, is not always convinced but supportive and ready to try new things” (E., fourth generation owner at Meschini)</p>	Family discussion	
<p>“With my father is an absolute disaster. He does not understand the importance of going digital, he is convinced that we can go on anyway like we did twenty or thirty years ago. When I started questioning his belief, he was furious and, in the end he was convinced to try just because he didn't want my mother to suffer because of our behavior”. (En., third generation owner at Ullman)</p>		
<p>“My family gave me a lot of economic support, trusting me from the beginning [...] the opportunity the State gave us to have a fiscal relief if digital technologies were bought helped us immensely and really fasten the whole process” – (F., third generation owner at Progalvano)</p>	Fund raising	
<p>“Without funding I would have done nothing, tenders were crucial to our digitalization, especially because my father gave me very little compared to the list of things I wanted to do” (En., third generation owner at Ullman)</p>		
<p>“The first thing I did was to change the productive machines, we needed new technologies to cut costs and we are now transforming all in Industry 4.0 technologies. Then we introduced a collaborative corporate management system [...]. Finally, we worked on our digital identity and change the way we pursued marketing e promotional activities through social media, and we opened an e-commerce”. (L., third generation owner at AGF)</p>	Technology adoption	
<p>“We started digitalizing the warehouse, it was 'easy': everything was destroyed so during the renovations I made some big changes and introduced the digital localizations of products. Then everything changed: management software that became collaborative, communication with the use of social media, sales with the launch of a B2B sales app”. (En., third generation owner at Ullman)</p>		
<p>“We have three big areas in the firm: administration and sales, design and production. We realized that each of them used a different management software, so they had three different ways of thinking about work. We started there: the management software became the same, it was on the cloud and highly collaborative and tailored for us from our partner and started our digital revolution. Then, we started to introduce Industry 4.0 machinery and that was another big change.” (F., third generation owner at Progalvano)</p>	Changes in operational routines	Grounding
<p>“Then we introduced a collaborative corporate management system and that had an enormous impact on how things were done.” (L., third generation owner at AGF)</p>		
<p>“We immediately needed new people whoe understand how I wanted to do things. I immediately tried to engage younger people because they have a different pace with technology”. R., second generation owner at ChiariBruno)</p>	Integration of new competences	
<p>“One thing I realized immediately was that without help coming from new people I would never be able to realize my digital project: in our firm most people still hardly use a cellphone, you get it? [...] Federico came first to help with marketing, then Polyana arrived and she just had a strong impact on the development of digitalization”. (En., third generation owner at Ullman)</p>		
<p>“One could think that the hardest part is when you have to pay for these changes, but it is not! That's easy if compared to manage people. I faced a lot of resistance. It was a cultural thing and I do not mean only a low level of education, but a way of thinking that derived from decades of working in one way”. (L., third generation owner at AGF)</p>	Management of organizational change	Settling
<p>“Manage change among employees was hard. There were main problems. The first was that the average level of education among employees was low. The second was that often in family firms, in our for sure, autonomy and trust toward employees are high and they were not happy to be controlled and scanned in every moment to be sure they followed the new rules. [...] In the end we made it making them work in simple projects, with few other people and making them highly involved in every passage” (Fr., second generation owner at Impea)</p>		
<p>“The biggest challenge was to manage people. In our firm we have employees that work here for 30, 20, 10 years. They are no more employees, they are family member. This makes also difficult to say unpleasant things and to manage change. For many of them to accept that younger people would explain them how to do their work was outrageous. However, we managed that by create a win-win environment where we allocated to one workstation a young digital-born resource with an older employee and while the first one helps the second learn how to use modern technologies, the older one help them understand the pillars of the job” (F., third generation owner at Progalvano)</p>		
<p>“I am happy with what I have accomplished: digitalization really sustained a 360-degree growth [...] but I would be a fool if I'd think that it is over. We really are in a shift of paradigm that is still not concluded. [...]”. (En., third generation owner at Ullman)</p>		
<p>“We accomplished so much. After every digital evolution we bring in the business we try to bring the family together to elaborate on the results. They are good.</p>	Results assessment	
<p>However, we are already thinking about the future, we want to implement Industry 4.0 far more: that is the future of manufacturing.” (E., fourth generation owner at Meschini)</p>		
<p>For the future, I want to explore the power of data. We have a huge amount of data that right now we cannot elaborate properly, I already shared this with my family and I am trying to make them understand the role of business intelligence and data mining. That is the direction in which I want to go</p>	Future goals setting	Evaluation

Digitalization emerged to start with the ‘awakening’ phase, a pivotal moment in which digital change is acknowledged as an urgent matter that needs to be tackled in the near future for sustaining the firm’s competitive posture. It is significant to note that digitalization, that then becomes a collective issue (involving both the family and the rest of the firm), seems to start with a personal

epiphany. Indeed, in each of the analyzed cases, one member of the six families started to understand at a certain point in their professional lives over the last twenty years that there was the need to concretely develop digitalization in his or her firm. Indeed, although all of them were aware of the importance of digital technologies way before the ‘awakening’ phase, at some point they experience a triggering stimulus that started the digitalization journey turning digital change from a general competitive trend to a personal, firm-specific matter. The nature of this stimulus varied across the six cases. Indeed, it could differ for its source (i.e., from inside or outside the firm) and for its baseline motivation (i.e., the will to fix a problematic business situation or the will to be more competitive).

Specifically, for half of the involved firms the ‘awakening’ phase was triggered by the perception of a change in the business environment related to the adoption of digital technologies. This perception brought the person who experienced this to reflect on the importance of digitalization within the SME and stimulated the willingness to align the business model of the firm to the most recent competitive dynamics. This perception could derive from various sources such as the comparison of the firm’s business model to those of competitors’, an impromptu size growth that was becoming hard to manage without changing approach and from an educational experience that allowed the person to see the firm’s activity with new eyes. This is the case of Fr., the second-generation owner of a firm active in the mechanic sector who claimed that during the writing of his master thesis in supply chain management he was talking with his supervisor when the realization came: *“(We were talking about) the issue of digital tracking. I was shocked: that was something that my family firm needed. Shortly after my graduation I entered the firm and tried to move in that direction”*.

For other interviewees however, the triggering stimulus can be defined as unexpected and traumatic, and accordingly it was experienced as an urgent situation to be solved or changed. Digitalization was perceived as a suitable solution for their problems and therefore adopted within the firm. Indeed, in three cases an upsetting situation was experienced by the firm before the digitalization journey. For one of these firms, digitalization was seen as an inevitable solution to avoid

the risk of closure that quickly came after a series of daring entrepreneurial decision: “*we were on the brink of the abyss, I went to the lawyer to begin the procedures to close the business and in that moment I thought: I have to do something right now.*”. (L., third generation owner at AGF).

Another firm, active in the logistic sector, faced the consequences of a natural disaster that drastically affected the business site impacting on the firm’s competitiveness. Indeed, the whole storehouse was floated in 2014 by a great flood that affected the whole city of Genova and made E., the third-generation owner, realized that digitalization was a must to recover: “*We experienced such a terrible financial loss (that) I realized: that was the moment in which we had to change everything. That was the moment where I knew that although difficult, I had to push for digitalization*”.

This is also the case of ChiariBruno, where the death of her father and the impromptu family and leadership loss made R. realized that things had to change in order to survive. Indeed, although it is common that the death of the founder has an impact on the whole firm, in this case strongly determined the start of the digitalization journey of the SME. R. explained that because his father was the “pillar” on which the firm was built and functioning, she feared “*to lose the leadership he held so well*”. In that moment, in the search for a leadership that would be respected and followed by the employees as much as his father was, she decided to take a risky choice: to completely change the firm’s management style to avoid comparison. In this moment the will to digitalize began. About this she stated: “*(I realized) we should not follow a shadow but create our own style to protect and continue what has been done in the past. That was the time when I wanted to begin with our digitalization journey*”.

The awakening phase does not only consist of the initial stimulus. Indeed, after it was experienced, the person who first understood the importance of digitalization feel the need to start a conversation within the family about the possible development of the digital change within the firm because “*it is impossible to change something without involving everybody, it would be treason!*” (L., third generation owner at AGF).

Interview data show that the role of the family in digitalization is complex. In all the six cases, the family was involved in the initial discussion that brought the firm to the decision of a greater commitment to digitalization. However, following this opportunity for dialogue the family can take on the role of facilitator or damper for the development of digital change. This seems to be mainly determined by the internal relationships that exist inside the firms and their level of internal trust. Indeed, in all cases, some family members – usually, but not always, part of the older generation – seem to have some concerns about digitalization development. This happens for many reasons, such as the financial effort required, the unperceived benefits and the fear of changing the way of doing things. However, the way the family reacts to these concerns is crucial to pursue the digitalization initiative. Indeed, in some cases the level of support within the family is high and the person who brought up the discussion is not only enabled to operate freely in the going-digital direction but is supported by the family as a whole throughout the all process. Thanks to the high levels of trust, this can happen even when the reluctant family members still cannot fully grasp the potential of digitalization after the discussion. This is the case of E. and his cousin (Meschini), who started a difficult conversation within the family that however ended up in diffused support: *“When my cousin started to talk about digitalization, my father and uncle were really skeptical. However, they trusted us and now he and I are in charge of manage everything about going digital. My father [...] is not always convinced but supportive and ready to try new things”*.

For other firms, however, this is not the case. Decision-making is highly centralized in the older, conservative generation hands and the person who manage digitalization is continually questioned by one or more members of the family about the progress and potential outcomes of the initiative. Due to the overlapping of the family and the business levels, this lack of trust inside the firm reverberates on family relationships, which are often deteriorated by these dynamics. This is the situation En. (Ullman) experienced when he tried to begin the digitalization journey of his family firm: *“With my father is a disaster. He does not understand the importance of going digital, he is convinced that we can go on anyway like we did twenty or thirty years ago. When I started questioning*

his belief, he was furious and, in the end he was convinced to try just because he didn't want my mother to suffer because of our behavior" (En., third generation owner at Ullman). When this is the case, the family offers low support to digitalization, not only in the initial phases, but also during the rest of the process acting as a damper to its implementation.

In each analyzed firms the family discussion ended with a given mandate to a member of the family (usually the “awoken”, i.e., the initiator of the digitalization conversation) to take on the responsibility of managing the firm digitalization process and to periodically report advancements and changes to the other family members. This happened despite the high or low support shown by the family as this mandate can derive from a collective decision of pursuing digitalization or from a disruption of power relationships inside the firm. Indeed, when the family did not support the decision of going digital, the person in charge of managing digitalization forced the mandate by ‘challenging’ the contrasting members. Specifically, in all cases in which the family support is lacking, the ‘awoken’ was determined to show the importance of digitalization with facts and therefore offers to autonomously develop digitalization in the firm.

At this point, the person who received the mandate starts collecting funds to be able to plan the further steps and define a digitalization strategy within the firm. Indeed, digitalization is considered as extremely fund-consuming by all interviewees as it often implies the purchase of new machinery to support production or process innovation. Similarly, new software could be necessary to improve the digitalization of the firm management. Accordingly, new skills, needed to manage these novelties, should be developed internally, or bought outside the firm. For this reason, initial research for funds is mandatory for every initiator of digitalization. In this scenario, sources of funds may be different (i.e., internal and external) and the extent to which the family firm’s financial resources are allocated to the digitalization process is strongly dependent on the level of family support given to the person in charge of executing the digitalization process. Specifically, while all those who were highly supported by the family mostly relied on internal financial resources, those receiving a low supported mainly relied on external sources. In this context, public tenders were

fundamental to help firms realizing digitalization, as it happened in the case on En., that lacking an adequate financial support from his father, especially relied on the participation to public funding opportunities: *“Without them I’d have done nothing. Tenders were crucial to our digitalization, especially because my father gave me very little compared to the list of things I wanted to do”*.

The second step of the digitalization process is the ‘grounding’. This phase, finalized to concretely begin the implementation of digitalization within the firm, usually involves *new technology adoption* that determines *changes in operational routines*. This is a phase that present little differences between those firms who have strong family support and those that do not. Indeed, the ‘grounding’ starts with concretely implementing digital change in one of the following areas: process, production and supply chain, business administration, marketing and sales. Indeed, all firms, following a significant investment, decided - based on the digitalization strategy defined by the ‘awoken’ - to start digital changes from a specific area. Example of such changes are the adoption of new technologies to speed up the process, the change of corporate management system to simplify business administration operations, the creation of an online identity for marketing purposes, and the development of an e-commerce. The decision of starting from a precise area is also determined by the business model of the firm and its specificities, such as F., the third-generation owner of a manufactory firm active in the galvanic sector claimed when explaining that she decided to begin the digitalization from the management software: *“We have three big areas in the firm: administration and sales, design and production. We realized that each of them used a different management software, so they had three different ways of thinking about work. We started there: the management software became the same [...] Then, we started to introduce Industry 4.0 machinery and that was another big change”*.

As a direct consequence to the adoption of new technologies, the approach to work also completely changes determining the need of modifying operational routines.

In this context, the third phase of the digitalization, namely the ‘settling’, process begins. In this stage, the firm needs to adjust to the digital innovation. This happens at two different levels: organization

design and the people. Indeed, after the digitalization process starts, the challenge of *managing the organizational change* typically arises. Digitalization brings a great need for *new competences*. In the six involved firms, the need to both employ new people with the right competences to manage digitalization (or collaborate with external professionals to do so) and to develop new competences among older employees emerged. Consequently, all interviewees claimed that “*managing change among employees was the hardest part*” of the digitalization process.

Also, the peculiar overlapping system of family and business must be observed not only among family members but also between the family owner and the firm employees. Most of the analyzed firms have many employees that have been working for the family firm for decades, and many interviewees declared that their employees are considered like family, treating them accordingly. While this dynamic could be beneficial in terms of creating positive working environment, mutual trust, and an emotional tie to the firm, it may also create potential obstacles in terms of making the employees more reluctant to accept the interference of new and more digitally educated colleagues. This was clearly explained by F., who struggled managing digital change consequences among her long-time employees: “*We have employees that worked here for decades. They are no more employees; they are family members. This makes difficult to say unpleasant things and to manage change. For many of them to accept that younger people would explain them how to do their work was outrageous*”. The solution in this case, as in most other firms, was to actively involve employees in the changing process while making them perceive that it was not imposed from the above but obtained as a shared result. Specifically, F. “*created a win-win environment where we allocated to one workstation a young digital-born resource with an older employee and while the first one helps the second learning how to use modern technologies, the older one help them understanding the pillars of the job*”.

The family support on digitalization returns to be fundamental in the ‘settling’ phase as family dynamics are often repeated in the business. Hence, employees usually perceive one member of the owning family as the head of the ‘business family’ and tend to be more loyal to his or her decisions

and will than those of other family members. Consequently, when the person in charge of managing digitalization lacks the support of this person the involvement of employees in the digital process can be even harder. This also implies that employees may erect barriers towards the adoption of new working procedures and the development of new skills and competences, which are required in order to reach the full potential of the investment in digitalization. This happened to L., the third generation owner at AGF, who strived to engage employees in digital change because they saw the leadership holder in the person of L.'s uncle who was resistant and doubtful towards L.'s digital initiatives: *“One could think that the hardest part is when you have to pay for these changes, but it is not! That’s easy if compared to managing people. I faced a lot of resistance. It was a cultural thing and I do not mean only a low level of education, but a way of thinking that derived from decades of working in one way and ‘obeying’ to one person”*.

In all the analyzed SMEs, the ‘grounding’ and the ‘settling’ phase emerged to be deeply intertwined. Indeed, after the ‘awakening’ phase has taken place, all SMEs entered a long-term digitalization journey that includes different sub-processes strongly linked to one another (i.e., the adoption of new productive technologies, modifications in the supply chain management approach, the change of corporate management systems, the digital marketing approach, etc.). Indeed, the first digitalization usually starts from a business area and then spreads among the firm: *“The first thing I did was to change the productive machines, we needed new technologies to cut costs [...] Then we introduced a collaborative corporate management system. [...] Finally, we worked on our digital identity and change the way we pursued marketing e promotional activities through social media, and we opened an e-commerce”* (L., third generation owner at AGF).

The ‘grounding’ and ‘settling’ phases are not only intertwined, but also iterative as when a new technology or digital process is grounded in the business, a settling phase follows. Indeed, every new digitalization choices implies new ways of doing things and, as a consequence, the need of managing new technologies, approach to work and new operational routines. This is well synthesized by En., who stated: *“You know, every time I have introduced a digitalization related change within*

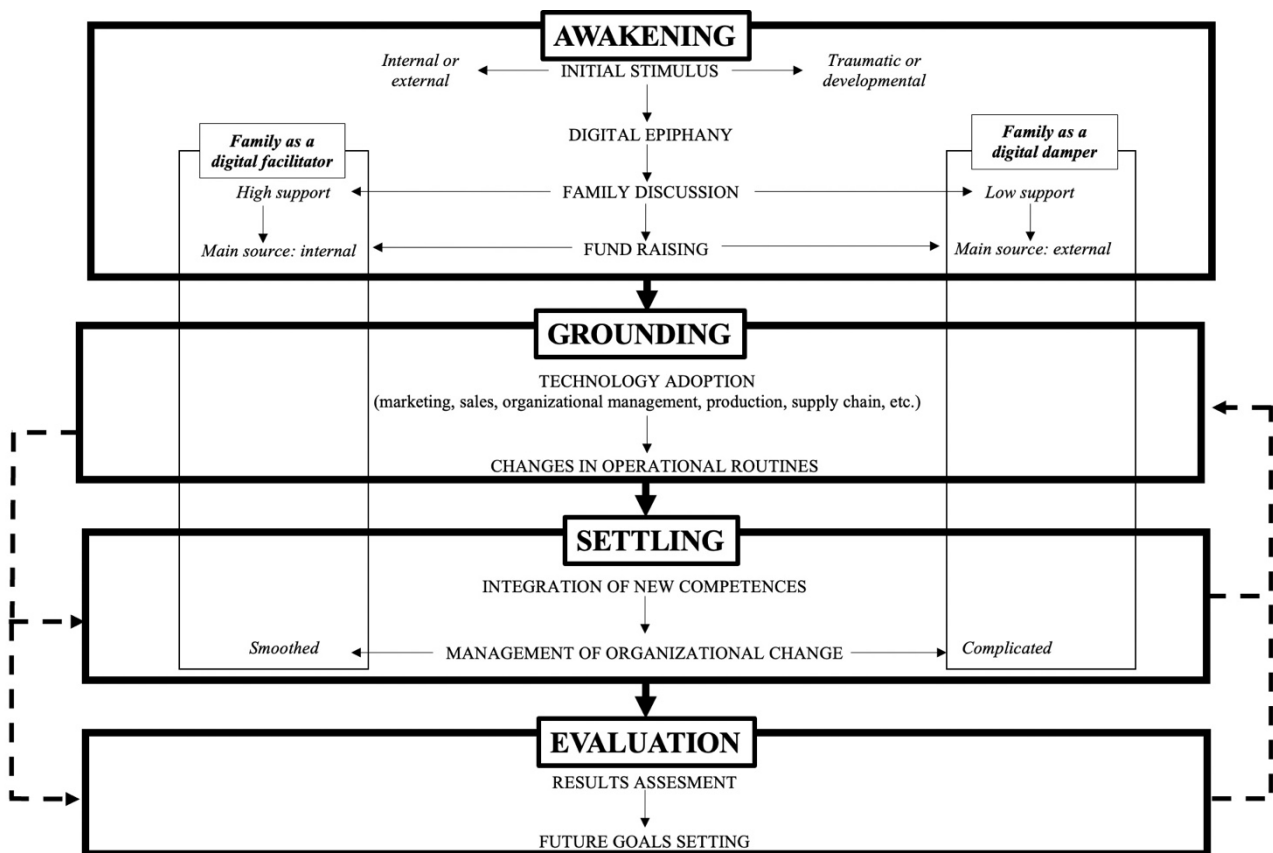
the business I thought “I am done!” but then something else showed up and everything started over: me trying to make changes and people in this firm trying to resist”.

The final phase of the digitalization process can be labelled as ‘evaluation’. After being grounded and settled, all digital developments are analyzed to draw conclusions about their efficacy as single activities and as useful parts to the broader digitalization strategy. The evaluation comprises a digitalization’s *results assessment* to understand the impact on the firm’s competitiveness (e.g., revenues, productivity, reactivity, and reputation) and work environment (e.g., employees’ well-being, family cohesion). In this final phase, the *setting of new digitalization goals* (e.g., data mining, Industry 4.0) takes place and they are defined in terms of needs and investments, to allow the firm to go back to the ‘grounding’ phase for their implementation. In this phase, the family is always involved in a final discussion about what has been implemented. When its support was high during the implementation, family could also be a source of inspiration for future development, as in the case of E. who stated: *“After every digital evolution we bring in the business we tried to bring the family together to elaborate on the results. [...] It seemed impossible the first time but my father was the most enthusiast and asked us about our perception of the potential of Industry 4.0 in our firm”.* Although the same conversation happens in firms where this support lacks, our results show that the lack of family support hardly ever stops the digitalization development of the firm after the ‘awakening’. Similarly, families who decided to not support digitalization, hardly change idea over time: *“I am happy with what I have accomplished: digitalization really sustained a 360-degree growth [...] but I would be a fool if I’d think that it is over [...]I already shared this with my family and I am trying to make them understand the role of business intelligence and data mining: this is always the biggest change I did not accomplished yet!”.*

5. Discussion and contributions

Despite their differences in terms of activities and experience, all the six analyzed firms offered a coherent narration of digitalization as a complex succession of events that can be modelled as a four-steps process (see Fig. 1).

Figure 1: Digitalization as a four-step process



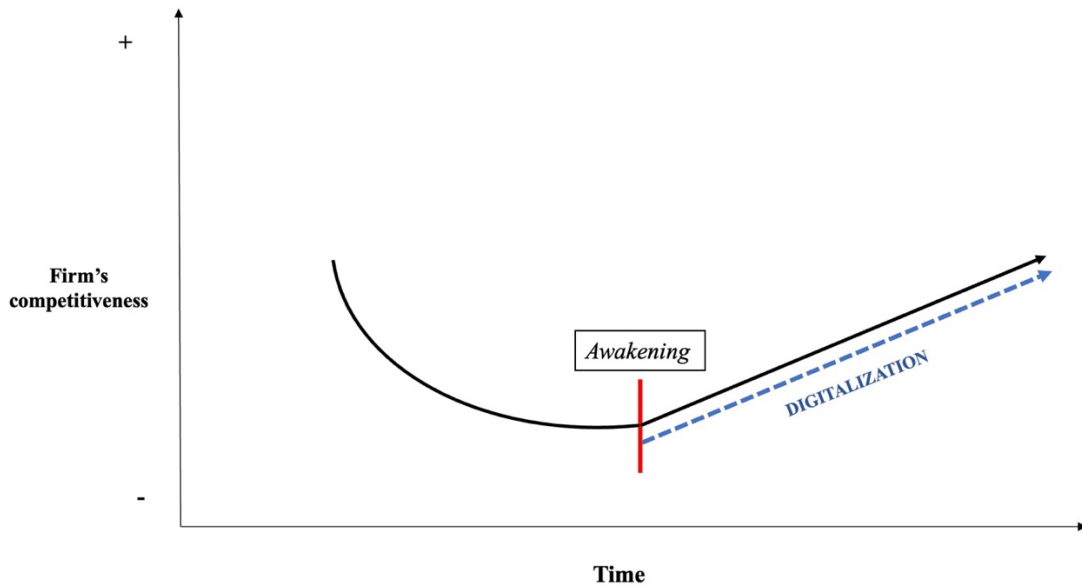
The findings of our analysis suggest that this process may be defined by four main characteristics.

First, in all cases, digitalization is carried out and inspired by a single person within the firm, who takes on the full development of the digitalization project. Digitalization emerged as a multi-layered and partially iterative process: as soon as the person in charge of digitalization starts managing the process, this person tends to subdivide digitalization in sub-processes, i.e., specific initiatives in different organizational areas, which have a sequential nature.

Second, digitalization is a systematically disruptive process as it dramatically impacts the family and the employees of the firm by changing the way they work and interact with each other. Indeed, although digitalization has an extensive and broad impact on the firm's entire business model, operations management and marketing and sales represent the most affected areas. This is due to the fact that the digitalization process in these firms involved the adoption of technologies to fasten the production process, the implementation of integrated and connected corporate management systems and the adoption of digital tools to support sales and the development of an online identity through social media. These changes strongly affect both family members and firm employees, as the family and firm borders are blurred in both directions: family members also hold a professional position within the firm but, many times, employees also have a strong emotional tie to the family. This strong overlap makes digitalization hard to manage not only on a professional level, but also on a personal level.

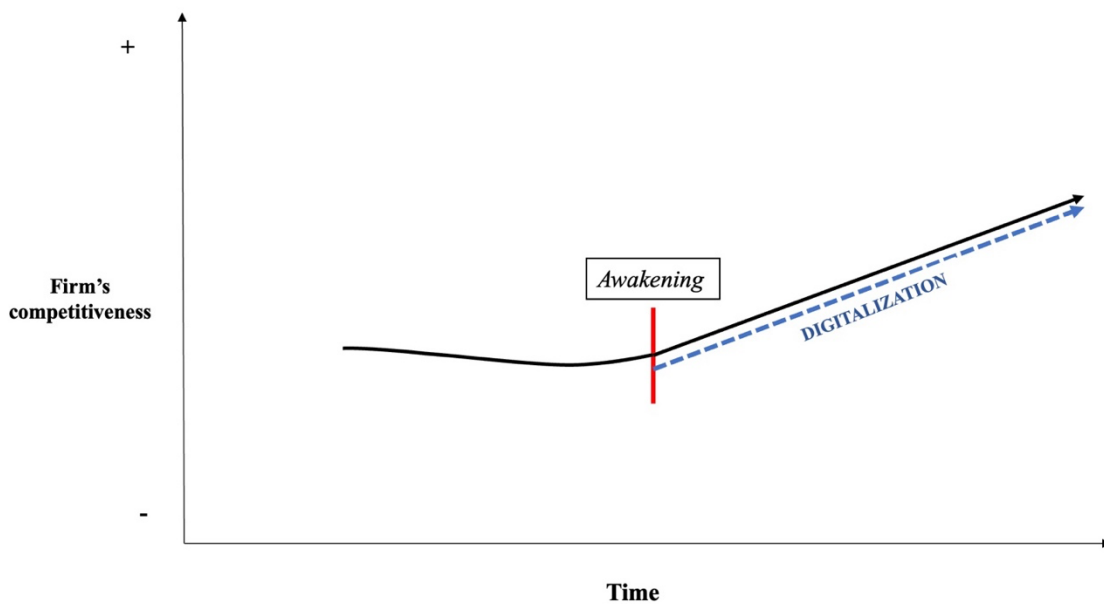
Third, digitalization may be substantially different depending on the nature of the stimuli eliciting its adoption. In some cases, digitalization is required by a severe situation that demands immediate actions. In this case, digitalization represents a disruptive and radical response to a problematic situation, where it is used as a tool to solve an urgent problem and invert the downward competitive trend that the firm is experiencing. This approach is here labelled as the 'lifesaver digitalization' (see Fig. 2) and occurs when digitalization becomes the priority of a firm struggling for survival and is regarded as the only tool to gain back competitiveness.

Figure 2: Lifesaver digitalization



For other companies, digitalization emerges in a more gradual way and is perceived as an opportunity to improve an already secure competitive posture. In this case, therefore, it does not imply a breakpoint with the past of the firm (Fig. 3). This approach to digital innovation is labelled 'evolutionary digitalization', as for these firms digitalization is a natural evolution of their businesses, consistent with their long-term strategy, and is generally smoothly developed, although requiring diffused effort.

Figure 3: Evolutionary digitalization



Fourth, digitalization is always a highly family-supervised process. Indeed, the family is constantly updated about the digitalization development, regardless of the level of trust and enthusiasm that the family has toward the digital journey of the firm. The level of support the family shows toward digitalization is however fundamental in shaping the pursuit of digitalization within the firm. Indeed, this support strongly impacts on the way financial resources are gained, as if it lacks the 'awoken' strongly relies on external resources, and on how change is managed making it easier if the support is present and harder if it is not.

The findings of this study contribute to the literature on digitalization of SMEs and, more specifically, of family SMEs. As outlined by many studies (Foss & Saebi, 2017), while there is extensive research on the drivers and outcomes of digital innovation, the analysis of the digitalization process is still in its infancy. Therefore, this study tackles this gap at least in three main ways. First, it develops a process perspective by conceptualizing the four main steps underlying digitalization. Second, it outlines the main characteristics of this process. Third, this study also uncovers the nature of the stimuli eliciting digitalization, namely the 'lifesaver digitalization' pursued to restore competitiveness and to ensure the survival of the firm, and the 'evolutionary digitalization' when digitalization is pursued as a natural pattern of growth and evolution of the firm over time.

This study particularly contributes to further our understanding of the role of the family in the digitalization of family SMEs, extending previous analyses on this topic in many ways (e.g., Überbacher et al., 2020). Consistent with prior research demonstrating the existence of blurred borders between the family system and the business system (Sciascia et al., 2013), this research examines such overlap in the specific context of the implementation of digitalization projects. Specifically, the study findings indicate that not only the family members play a role, but also many long-time employees as they are perceived as part of the family. This has an impact on the management of the organizational changes associated with digitalization, as the roles in decision making are often confused and lead to a resistance to change.

This paper also allows to understand that innovation is not a family-related process in its totality, indeed in these firms digitalization starts with a single person that initiates the process and only after it becomes a diffused family-process. The results particularly outline the role of the family member who experienced the ‘awakening’ as the fundamental actor who primarily contributes to exploit the potential of digital innovation in family firms. Once involved, the family can show a high or low support to the whole process of going digital. This contributes to existing literature in two main ways. First, although some studies stated that the centrality of the families in family firms can help managing innovation - and particularly technological innovation - in an efficient way (see De Massis et al., 2016), our results claim that it depends on the level of support toward digitalization they exhibit. Specifically, the family can indeed be a facilitator of the digitalization process when showing high support, especially because it allows to increase trust among employees easing the acceptance of change within the organization. However, the family can also act as a brake towards digital acceptance if the head of the family and perceived leader shows a low support toward digital change. Second, literature states that one of the main goals of a family firm is the survival of the firm over time and the passing of know-how for generations (Schuman et al., 2010; Erdogan et al., 2020). This is confirmed by our results, but a difference emerged in how this surviving happens. Indeed, for those families who show a high support to digitalization the surviving of the firms is ensured by embracing change and, specifically, digital change. While for those families showing a low support toward digitalization the will to preserve the family firm is answered being change-resistant and trying to crystalize the present situation of the firm. This result corroborates those studies claiming that the contrasting needs to pursue tradition and embracing change are naturally embedded in family firms (De Massis et al., 2016).

The paper also allows to expand the knowledge about the baseline motivation that drive SMEs strategies. Indeed, research claims that SMEs strategies are driven by both financial and non-financial aims (see Chrisman et al., 2010). This is confirmed by our investigation, as the digitalization process tends to be long-term and guided both by competitive and non-competitive pressures. However, the

nature of these latter pressures is peculiar. In many cases, digitalization is pursued not only as a response to the need to recover from a problematic competitive situation or to increase the firm's competitiveness, but also as the outcome of retaliation moves of the 'awoken' family members towards the rest of the family. Indeed, the lack of support that may arrive from the family can deeply impacts on family relations and could reinforce rather than weaken the digitalization intentions of the person who first started the digitalization conversation within the family. This dynamic definitely corroborates the strong overlap between the family and business systems (Kotlar et al., 2020).

The present study also contributes to the literature concerning the impact of digitalization on the business model of the firm. Although our findings confirm previous studies (see Teece, 2010; Matarazzo et al., 2021) in showing an overall impact on the way the SME works and how the value for customers and stakeholders is created, operations management and marketing and sales appeared as the most digitalized areas. Indeed, digitalization comprised – especially in the beginning – the adoption of technologies to streamline production, improve management systems and support digital sales and the development of an online identity through social media. Finally, in line with those studies that emphasized the still unknown speed and scope of the digital transformation (e.g., Schwab, 2017), this research indicates that in all the analyzed firms the digitalization is an ongoing process, continuously open to new initiatives. In line with Nambisan and colleagues (2017), digitalization emerged from our findings as a subset of technological innovation with an overall impact on the business model of the firm.

6. Limitations, future research avenues, and concluding remarks

This paper also presents some limitations, which also suggest directions for future inquiry. First, digitalization is a long, slow-paced process that is difficult to comprehensively analyze without a longitudinal approach. This paper lacks this approach as it does not analyze digitalization development over the years. Thus, a longitudinal multi-year case-based study would offer an

invaluable contribution to the research on digitalization process. Second, this paper interviews were made with only one member of the family. More interviews within with different family members could be of great help to delve deeper in the role of the family in the digital transformation of the firm. Third, although the SMEs included in this study are all different in terms of activities, the differences that the sector can determine in digitalization are not investigated. Future research could focus more on how firms active in different sectors pursue digitalization, in order to link approaches to digitalization to diverse industry environments. Four, firms included in the study were all at least 30 years old. Analyses conducted in research settings including greater diversity in terms of firm age would have been of help in detecting similarities and differences between family SMEs characterized by different experiences. Finally, future studies could further develop the process perspective used in this paper to shed light on the dynamics underlying digitalization in family SMEs, by extending the analysis of the four steps of ‘awakening’, ‘grounding’, ‘settling’ and ‘evaluation’ to other types of firms. Further studies could also elaborate more on the initial stimuli that determine the ‘awakening’ and on how the firm manages the different phases of the digitalization processes in order to develop a taxonomy of digital transformation in family SMEs.

In conclusion, family SMEs are a peculiar context to study digitalization, as they are characterized by an overlap between the family and the business systems, which often hampers change. This research extends our understanding of digitalization in this context by using a qualitative, case-based methodology. Results of the analysis of six Italian family SMEs are used to develop a conceptualization of the digitalization as a four-step process that also takes into account how the blurred relationship between the firm and the family roles may impact the management of digital innovation. Furthermore, the nature of the stimuli eliciting digitalization and the characteristics of the digitalization process are also uncovered. This study offers multiple contributions to the research on both the broader literature on innovation in SMEs and the specific research domain of digital innovation in family SMEs.

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Final remarks

The academic interest about how innovation is managed by firms, as well as the role that digitalization has in changing the way of doing business, steadily flourished over the last few decades (e.g., Müller, 2019; Li et al., 2018; Zhu et al., 2019). Despite the existence of a substantial corpus of literature on this topic, the understanding of the dynamics underlying innovation is still characterized by a high fragmentation, a general inconsistency of results, and an unbalanced attention toward large firms relative to SMEs. These characteristics make innovation and digitalization particularly interesting and demanding further academic investigation.

In this context, our knowledge about innovation dynamics in SMEs and, specifically, about how innovation is managed within specific sub-categories of SMEs is relatively limited. Indeed, innovation in micro-firms, traditional SMEs and family-owned SMEs is to some extent poorly investigated if compared to other research contexts although these firms are numerous in the European and global scenario and in great need of innovation to remain competitive.

This thesis contributes to filling these gaps through three qualitative papers that explore innovation in the specific context of SMEs.

The results of the first paper help to shed light on the controversial role played by networks in fostering innovation in micro-firms. Indeed, emerged as a compelling issue to be tackled by previous research (Faherty & Stephens, 2016; Roper & Hewitt-Dundas, 2017), this qualitative study investigates if and how networking has an impact on micro-firms' innovation and what is the nature of this impact. Results included the identification of several influencing factors that carry both a positive and a negative effect on innovation and the development of a framework on the joint effect of network-level characteristics and the micro-entrepreneur's sensing of the network's role as key drivers of the impact of networks on innovation in micro-firms. These findings contribute to the extant literature in two main ways. First, by deepening our understanding of how innovation is pursued in micro-firms through the identification of the elements that mostly impact on firm innovativeness.

Second, by outlining the positive role that specific networking activities can have for innovation in the smaller side of SMEs.

The second paper contributes to the stream of research that explores the paradoxical relationship between innovation and tradition in SMEs (De Massis et al., 2016), by analyzing data derived from interviews conducted with creative crafts micro-entrepreneurs. Building on innovation and organizational paradoxes literatures (Ingram et al., 2016), this study enlarges the conversation about the peculiarities of innovation in traditional, low-tech contexts (Erdogan et al., 2020), underlying the crucial role of the entrepreneur in innovation-related processes (Olivari, 2016). Findings help to shed light on the different ways with which micro-entrepreneurs make sense of tradition and how they perceive its impacts on innovation. This study identifies three profiles of micro-entrepreneurs (i.e., defensive, swinging and engaged innovators), based on how they pursue innovation in traditional contexts. Finally, the paper offers the ‘Innovation in tradition dynamic framework’, that shows how the different approaches of micro-entrepreneurs to the management of the relationship between tradition and innovation can change over time.

The third study is focused on digitalization in family-owned SMEs. Being characterized by a strong overlap between the family and business level, family firms can be more resistant to change than non-family firms (Chrisman et al., 2015). In family SMEs, this difficulty to engage in innovation activities – especially those related to digitalization – is even more observable due to the inherent difficulties related to the small size (Überbacher et al., 2020). This case-based study offers a bunch of significant contributions to the literature about digital innovation in family SMEs. First, as the literature on digitalization in SMEs rarely study the issue with a process, comprehensive perspective (Foss & Saebi, 2017), this paper use it to analyze the issue of digitalization in six firms. This brings to the identification of a four-steps, iterative process of digital innovation (i.e., awakening, grounding, settling and evaluation). Second, it offers new perspectives on the role of digitalization in family SMEs stating that, based on the nature of the first ‘awakening’ step, the purpose of digitalization within family SMEs may change, this being aimed to secure the urgent survival of the

firm (i.e. lifesaver digitalization) or to its natural competitive development (i.e. evolutionary digitalization). Third, results offer interesting elaborations on the role of family members in the digitalization process, which is a topic that, according to extant research, is worthy of further investigations (Kotlar et al., 2020).

The three papers included in this thesis also provide some contributions to practice. Indeed, micro-firms are the most numerous European firms and most of them are active in low-tech sectors (European Commission, 2022) and characterized by a family ownership (Roffia et al., 2021). For this reason, the findings presented in this thesis offer insights to managers and, more often, entrepreneurs that are in charge to manage innovation processes in SMEs. This study could also be useful for policy-makers and organizations (e.g., collaborative networks) keen to help SMEs reaching their utmost potential through the exploitation of innovation taking into consideration the peculiarities and specific needs of small businesses. Therefore, multiple theoretical contributions along with both managerial and policy-making implications have been outlined in this dissertation.

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