Digital transformation: Is Covid-19 a catalyst for micro and small enterprises first steps toward innovation?

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Abstract

The recent Covid-19 pandemic has deeply affected the financial health of companies all over the globe. Small and micro enterprises are more vulnerable due to their limited financial resources and lack of specialized knowledge. This article explores the impact of the pandemic on the early stage of small companies' Digital Transformation (DT), and its effect on the barriers to DT. The authors adopted an inductive qualitative approach and engaged in purposeful sampling to investigate micro and small enterprises operating in Piedmont, Italy, that were at the earliest stage of their DT journey. The final sample included 11 unique cases, involving a total of 49 interviews. The results show that the Covid-19 pandemic did not act as a catalyst to the DT of small and micro enterprises, instead sharpening the barriers to DT. The paper provides owners, managers, investors, politicians, and territorial institutions with a better understanding of the tools and initiatives that must be implemented to foster small and micro enterprises' DT. The research, due to the selected sample, is limited to small companies' personnel and to their owners' experiences

Keywords: Digital transformation, Micro business, SME, Covid-19, Innovation.

1. Introduction

The current Covid-19 pandemic has dramatically affected many economies all around the world. Multiple different countries have utilised lockdowns to reduce the spread of Covid-19. Those lockdowns are now causing a global recession which is affecting all types of companies (Klein, Todesco,

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2021). Despite them playing a major role in several world's economies (Truant *et al.*, 2021), small and micro enterprises are believed to be in a more vulnerable position due to their lack of resources and necessary know-how to endure times of distress such as the current pandemic (Klein, Todesco, 2021). The size of companies has been previously seen as a liability when it comes to the management of external and internal events that threatens the business (Broccardo *et al.*, 2017).

On the other hand, the pandemic has caused changes in customers behaviour, supply chain and markets (Ceylan *et al.*, 2020). The Covid-19 pandemic has highlighted the differences between companies which have embraced digital transformation and those who have not (DT) (Truant *et al.*, 2021; Giannetti *et al.*, 2021). The ability to adapt to an ever-changing competitive scenario is essential to long term survival (Bertei *et al.*, 2015; Del Gobbo, 2013). While multiple definitions of DT exist, the general consensus defines it as the use of information and communication technologies (ICT) to change business processes and models, in order to gain a competitive advantage (Bharadwaj *et al.*, 2013). However, while Covid-19 pandemic has accelerated the adoption of digital technologies (Baig *et al.*, 2020), the current literature on DT adoption fails to address multiple research gaps in relations to its implication for SMEs.

In fact, further research should be conducted to assess the impact Covid-19 has had on the DT of small and micro enterprises operating in different geographical areas to promote the collection of empirical evidence (Li, 2021). In fact, as suggested by Li (2021), the effects of DT differ from country to country and, as such, empirical research is necessary to get a better understanding of this complex phenomenon. Similar sentiments are echoed in several other publications as well (Marcysiak, Pleskacz, 2021; Truant *et al.*, 2021).

Consequently, the goal of this research is to investigate the effect Covid-19 has had on micro and small enterprises by focusing on how the pandemic impacted the very first steps towards their digital transformation journey. Furthermore, the research explores the barriers that are preventing small and micro businesses 'digitalisation. Drawing on Truant *et al.* (2021), we have identified micro and small companies that can be considered at their earliest possible stage of DT. In other words, we purposefully looked for companies with a limited degree of digitalisation. Therefore, our research strives to find an answer to the following research question:

RQ: How is the Covid-19 pandemic impacting the digital transformation of Italian micro and small companies at the earliest stage of DT?

To achieve our research goal, we adopted an inductive qualitative approach while engaging in purposeful sampling, in-depth interviews and a multi staged coding process. We focused on a selected sample of micro and small enterprises at a very early stage of DT (Truant *et al.,* 2021). Our qualitative approach, grounded in coding techniques and aided with secondary data triangulation, deeply explores the very nature of said barriers, as we shed light on the impact Covid-19 had on DT in small and micro enterprises with a limited degree of digitalisation.

From a theoretical perspective, this research adds insights to the discussion of how the pandemic has impacted the barriers to SMEs implementation of DT. We build upon a literature review which focuses on SMEs' DT and its related concepts such as the barriers to DT and the impact that the Covid-19 pandemic has on SMEs' digitalization. Meanwhile, from a more practical perspective, we gather empirical evidence to investigate the impact Covid-19 has had on the DT journey of a selected sample of micro and small enterprises. Moreover, we identify and present the four main barriers that micro and small enterprises face when starting their DT journey during the pandemic. By doing so, practitioners and policy makers should have a better understanding of the necessary tools which need to be implemented to promote DT within small and medium sized businesses.

The paper is structured as follows. First, we present a review of the available literature on DT, its implications for Covid-19, as well as an overview of the barriers to DT encountered by micro and small companies. Then in section 3, we highlight the methodology applied in our research, with a strong focus on sampling techniques and interviews protocol. Subsequently, section 4 shows the results obtained through the coding process and it illustrates the key quotes gathered from the qualitative interviews. Finally, section 5 discusses the findings in relation to the available literature. The paper culminates with one section devoted to implications, limitations, and avenues for further research.

2. Literature review

2.1. The Advent of Digital Transformation in small and micro enterprises

The Covid-19 pandemic has forced SMEs, corporations, and public institutions to change the way in which they operate (Paoloni *et al.*, 2021). The different policies utilised by governments all over the globe to respond to the

pandemic have impacted the volatility, complexity, and uncertainty of many businesses (Fletcher, Griffiths, 2020). Companies which are digitally mature have been able to quickly adapt, reducing disruptions caused by the Covid-19 pandemic (Jones *et al.*, 2021). However, empirical evidence reveals significant digital adoption gaps when it comes to small businesses (Soto-Acosta, 2020). For instance, many countries are still lagging when it comes to DT in SMEs. In countries like Greece, Hungary, Poland, Portugal and Turkey, the median share of employees with connected computers in small firms remains at or below 40%, while larger firms in frontier countries (Denmark, Finland, Sweden at about 80% or above) have shown substantial progress over the last decade (OECD, 2020). Despite various difficulties, SMEs worldwide have intensified the use of digital technologies in response to the Covid-19 pandemic. Data from PayPal (2020) revealed that 72% of online small business owners interviewed in Canada believed ecommerce to be a necessity. Furthermore, 75% of the United Kingdom SMEs have moved to remote working during the pandemic and, as a result, had invested in digital technologies to run their business remotely (Riom, Valero, 2020).
Organizations fronted the effects of DT well before the Covid-19 pandemic (Chen *et al.*, 2016). In fact, DT has been explored at length over the course of the last two decades (Besson, Rowe, 2012). DT has been described as a complex process which includes a wide range of changes, including changes to business models, organizational culture, work habits, processes, delivery, and customer services, just to name a few (Marchini *et al.*, 2019; Alfiero *et al.*, 2018; Marchi, Paolini, 2018). One of the most comprehensive definitions of DT describes it as "… the profound transformation of business and organizational activities, processes, competencies, and models to fully leverage the changes and opportunities of a mix of digital technologies and their accelerating impact across society in a strategic and prioritized way, with present and future shifts in mind" (Digital Transformation: Online Guide to Digital Transformation, 2021).

DT has significantly increased its scope and relevance under Covid-19 (Gavrila Gavrila, De Lucas Ancillo, 2021). For starters, companies were able to implement remote working on a much broader scale (Wade, Shan, 2020). Consequently, they were able to get in touch with new and existing customers, as well as deliver their own products and services (Guenzi, Nijssen, 2021). In Italy, just as much as in the rest of the globe, the adoption of digital solutions under Covid-19 has increased exponentially (Galindo-Martín *et al.,* 2019). They served as a tool to respond and lessen the effects of potential economic losses resulting from the ongoing crisis (Crupi *et al*., 2020). Furthermore, it is safe to assume that the digital economy is and will characterize

the post-pandemic landscape (Gavrila Gavrila, De Lucas Ancillo, 2021). For instance, SMEs owners will be using digital platforms to sell and promote their products (Min, Kim, 2021). Broadly speaking, SMEs will be venturing into the new landscape powered by DT to expand upon the possibilities that were previously seen as necessities under Covid-19. DT represents a new frontier for business development and growth (Matarazzo *et al*., 2021).

Amid Covid-19 times, DT is becoming an increasingly popular topic in literature and research. Nonetheless, the implications for SMEs are yet to be fully understood. This is partially due to the multi-faceted nature of DT and the need for domain specific approaches to it. Implementation strategies and empirical research are hard to universalise (Korachi, Bounabat, 2020). On the other hand, the Covid-19 pandemic has inadvertently made DT more relevant within SMEs, as more and more small businesses were forced to implement digital solutions to overcome the limitations of restrictions and regional lockdowns (Hai, 2021).

More specifically, when it comes to small and micro businesses, research is still somewhat scant in terms of DT and its applications. Townsend *et al*. (2014) has pointed out that micro enterprises could benefit from an online presence. This could lead to an enhanced network, which in return could improve the company's visibility and sales. Moreover, Domazet *et al*. (2018) believe that DT can be a significant competitive advantage to micro and small businesses. However, several authors have stressed the importance of further research on the topic of DT. Especially when it comes to less explored point of view, such as the one of micro and small businesses (Marcysiak, Pleskacz, 2021; Truant *et al*., 2021).

2.2. Barriers to the Implementation of Digital Transformation in small and micro enterprises

DT has barriers that need to be overcome (Alrawadieh *et al*., 2020). To make a smooth transition into the digital era, SMEs need a clear understanding of their digital strategy to make sure that every resource at their disposal, whether tangible or intangible, will come together in shaping their digital future (Ellström *et al*., 2021; Lombardi *et al.*, 2021). A strong digital mindset is required from SMEs owners and management since they must be willing to approach DT with an open mind. Moreover, they must not get discouraged by the complexity of the new tools powered by Internet 2.0 (Eden *et al*., 2019). "Digital Readiness" is a literature trend which has recently gained

traction. It is meant to analyse the level of preparedness of SMEs when faced by the implications of DT (Bican, Brem, 2020).

The aforementioned elements, along with the need to adapt the existing business model to a new technological environment, are amid the toughest challenges of small and micro companies, as they approach the digital era. It is up to the enterprise to turn DT into significant competitive advantages, rather than being hindered by its complexity (Galindo-Martín *et al*., 2019). Governments from all around the world are taking unprecedented steps to promote DT and make sure that SMEs are getting ready to tackle the challenges arising from the digital age (Fleischer, Carstens, 2021), especially amid Covid-19 times (Klein, Todesco, 2021).

Barriers to DT prevent the adoption of digital technologies and can present themselves in a variety of ways (Tijan *et al*., 2021). Firstly, a lack of awareness on how digital transformation affects the organization might lead to insufficient investments in SMEs' technological infrastructures (Ullah *et al*., 2021). Furthermore, organisational barriers include a lack of management trust in innovation and DT adoption (Broccardo *et al*., 2019; Santoro *et al*, 2016). Previous research has investigated how events such as the global financial crisis affect small companies' barriers to innovation (Ausloos *et al*., 2017; Bartolacci *et al.*, 2016). Although, DT research has mainly focused on large sized companies (Olanipekun *et al*., 2021). Nonetheless, DT barriers do also apply to small and micro enterprises. Their limited size and resources often exacerbate DT barriers (Ramírez-Durán *et al*., 2021). In addition, empirical studies seem to suggest that limited degrees of digital maturity, which are commonly found in small and micro enterprises compared to larger ones (Truant *et al*., 2021), intensify the barriers to DT adoption (Masood *et al*., 2020; Ramírez-Durán *et al*., 2021).

Furthermore, Marcysiak, Pleskacz (2021) have pointed out that micro enterprises suffer from chronic lack of human resources, which consequently leads to poor performance in terms of financing, planning, control, training, and the adaptation of their information systems. The micro and small perspective has received limited attention throughout the years (Domazet *et al*., 2018), despite them being a massive portion of today's economy (ISTAT, 2020). Therefore, several research gaps remain. More specifically, further research should focus on the importance of digital maturity when it comes to the barriers to DT adoption during Covid-19 (Truant *et al*., 2021). Fletcher, Griffiths (2020) work suggests how Covid-19 has made DT obligatory for businesses of all sizes and sectors. However, empirical studies on small and micro businesses with a limited degrees of digital maturity are limited, as

most of the academic discourse has been developed around digitally mature SMEs (Domazet *et al*., 2018; Jones *et al*., 2021).

3. Methodology

3.1. Background and Research Design

The researchers adopted the Truant *et al*. (2021) definition of degree of digitalisation. Therefore, the authors purposely looked for SMEs at the earliest stage of DT, which can be defined as the "unknown phase", since they are at the very beginning of their DT process and are not aware of what DT is and which benefits it could bring to the company. Drawing on this theoretical framework was meaningful as it allowed us to find common traits within our sample of micro and small enterprises. The theoretical framework allowed the researchers to determine which companies could or could not be considered at an early stage of DT.

We adopted an inductive multiple case study approach and engaged in purposeful sampling to select information-rich cases that met these criteria (Gerring, 2007). Purposeful sampling has allowed us to gather empirical data on a specific set of SMEs with the same level of digital readiness, while excluding those at a very advanced stage of DT. The researchers were able to investigate and highlight the existing barriers of DT that are holding back those SMEs. To answer our research question, we adopted a qualitative interpretive methodology (Cunningham *et al*. 2016).

3.2. Research Sample

The research focuses on micro and small companies at a very early stage of their DT journey. Additionally, the selected businesses are struggling to overcome the barriers associated with the implementation of technology. The sampled enterprises operate within different sectors from one another. To find our sample, we focused on Piedmont, Italy, whose economy is dominated by SMEs (Fasano, Deloof, 2021; Ferraris *et al*., 2017). We focus our attention on small and micro enterprises (ISTAT 2020). Using data from the companies' websites alongside the AIDA Italian company information and business intelligence database, we were able to identify businesses that could fit in the micro and small definition provided by the European standards. More specifically, our inclusion criteria evaluated companies' size and

yearly profits. In other words, companies had to feature less than 50 employees and a turnover of less than 10 million euros. Furthermore, we have performed several checks on their level of digital maturity to filter out those at an advanced level of DT implementation. More specifically, we made use of our theoretical framework to identify companies at the earliest degree of digital maturity possible (Truant *et al*., 2021): enterprises had a very barebone website or no website at all, nor an e-commerce website; they did not have an actively maintained social media presence and they did not use IT tools in their daily business activities, such as computers or tablets. We verified this aspect both externally, by monitoring and reviewing their internet presence, and internally, by asking specific questions during the screening phase which will be further discussed in the following paragraphs. In addition to the aforementioned criteria, companies had to have experimented with DT as a response to the pandemic. In other words, we were interested in companies that were forced to step foot into DT due to the pandemic, either by setting up a website they never had before, by switching to smart working in some capacity due to lockdowns, or by intensifying their social media presence to make up for the lack of physical visitors, and much more (Catturi, 2021).

The above-mentioned sampling approach helped us identify 117 potential SMEs that could take part in our investigation. Out of the initial 117 potential SMEs, only 29 of them showed interest in taking part to the research. We then approached those 29 companies in an attempt to garner a more in-depth understanding of them. During this phase, we gained access to more information, which allowed us to apply a further level of screening. Additionally, the researchers were able to filter out those companies that did not fit the specified criteria, even thought, at first glance, they looked as if they belonged to an early stage of DT and had intensified their efforts in response to the pandemic. Ultimately, we were left with 11 cases available for close examination.

3.3. Data Analysis

Every company in our final sample fell within either the micro or the small category. Overall, the sample was deemed representative of Italian's landscape, as roughly 80% of Italian enterprises are considered micro (9 or less employees) and, out of the remaining enterprises, 18% are to be considered small by the standards set by the European commission (ISTAT, 2020). We began by contacting and interviewing these ventures' entrepreneurial

team members. Interviews were held in-person. The researchers aim is to detect common factors that might highlight the different nature of DT barriers (Palinkas *et al*., 2013), and to enable heterogeneity between cases, we applied maximum variation sampling. Maximum variation sampling, also known as heterogeneous sampling, has allowed us to set up a varied sample (Creswell *et al.*, 2006). To accomplish this goal, we iteratively added cases by monitoring several characteristics of companies, including overall size in terms of revenues and employees, the sector they operate in, and the age and gender of the owner.

Researchers tried to create a heterogeneous sample while still maintaining the aforementioned inclusion criteria. The iterative process ended when researchers deemed theoretical saturation had been reached (Creswell *et al.*, 2006). In other words, based on the data that had been collected and analysed hitherto, further data collection and analysis was deemed unnecessary (Saunders, 2017).

The interviews were conducted with the following protocol. When possible, we have interviewed employees as well as owners, in an attempt to gather as much information as possible. Interviews were carried from July 2021 to October 2021. Most interviewees were spoken to multiple times, for a grand total of 49 interviews, off a sample size of 21 unique individuals. The interviews were conducted one-on-one by a researcher and lasted from fifteen minutes to sixty, for an average of twenty-five minutes per interview. Interviews were semi-structured with open ended questions, as we delved deeper into the concepts of DT, barriers to digitalisation, the struggles of Covid-19 and the post pandemic road to recovery. Table 1 displays the sample in detail.

To facilitate qualitative data analysis and the coding process, the interviews were fully transcribed (Miles *et al.* 2014). The transcripts were analysed in a multi-step iterative process, involving both interviewers and co-authors who were not engaged in conducting interviews. The coding process operated as an interplay between theoretical preconceptions influencing the analysis and inductive reasoning influencing conceptual development (Markusen 2003; Miles *et al.* 2014). To optimise validity via critical verification techniques (Morse *et al.* 2008), the coders cross-checked and enriched each other's interpretation of the data. More specifically, qualitative data collected through in-depth semi structured interviews was analysed through the guidance of the Gioia method (Gioia *et al.*, 2012). The approach relies on researchers settling on a well-specified research question, which in our case consisted in determining the pandemic's impact on smaller companies at an early stage of DT.

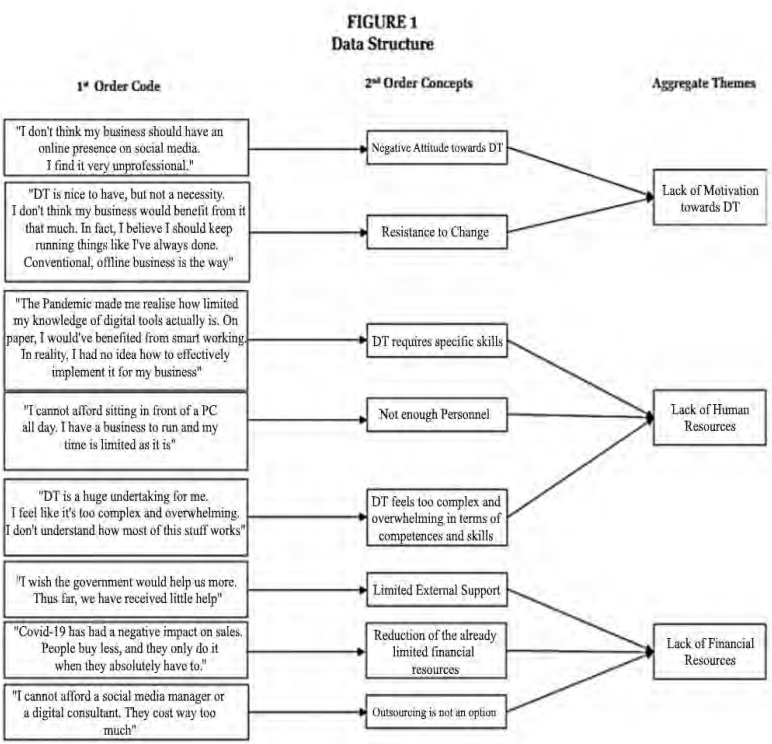
Table 1 - *Sample characteristics*

Coding Reference	Business Sector	Personnel Interviewed	Company Size	Age Group	Gender
#01a, #01b	Manufacturing	Owner, Accountant	Small	48–63, 26-47	F, M
#02a, #02b	Food, Beverage	Owner, Assistant	Micro	48–63, 26-47	M, F
#03a, #03b	Manufacturing	Owner, Accountant	Small	26-47, 26-47	M, M
#04a, #04b, #04c	Manufacturing	Owner, Accountant, Assistant	Small	26-47, 26-47, 18-25	F, F, F
#05	Food, Beverage	Owner	Micro	26-47	M
#06	Food, Beverage	Owner	Small	26-47	M
#07a, #07b	Manufacturing	Owner, Assistant	Micro	26-47, 18-25	F, F
#08a, #08b	Manufacturing	Owner, Accountant	Small	26-47, 26-47	F, M
#09a, #09b, #09c	Manufacturing	Owner, Accountant, Assistant	Small	48–63, 48–63, 18-25	F, F, F
#10a, #10b	Manufacturing	Owner	Micro	48–63, 26-47	M
#11	Service Provider	Owner	Micro	26-47	M

The Gioia approach relies on interview protocols and informant quotes as a means to make sense of the data being collected, on the basis of similarities and differences between the categories. The first round of coding, also known as the open coding phase, was conducted by going back and forth between the empirical observations and grouping together codes deemed similar by the researchers. We then moved to a more abstract level of coding, also referred to as axial coding, in an attempt to conceptualize the codes found in the first phase and group them in several themes. This phase, which resulted in the second-order concepts, saw the authors discuss and review

their understanding of the codes several times over, until an unanimous consensus was reached. Throughout the analysis, the authors iterated back and forth between data and the relevant literature to see whether the findings had precedents and how the emergent themes aligned with or diverged from previous work. More specifically, authors made use of DT literature to make sense and group the codes into distinct categories, while cross-referencing the results with previous works mentioning the role played by the pandemic when it comes to DT (Truant *et al.*, 2021; Fletcher, Griffiths, 2020). This work ultimately led to the final round of coding, which consisted of the theorization of three distinct themes, also known as aggregate themes. Figure 1 features the data structure obtained from coding, while Table 2 features representative quotes from the sample (Gioia *et al.*, 2012).

Figure 1 - *Data structure (Gioia et al., 2012)*



Source: Authors own elaboration

Table 2 - *Representative Quotations*

Negative Attitude towards DT	**"**I believe social media presence to be unprofessional and childish. It is not meant for companies and businesses. I do not understand what the fuzz is about" (#09a) "I dislike how everything is hyper connected these days. I do not want my business to turn into some sort of Amazon, in which customers coldly buy products with no human elements involved in the transaction whatsoever" (#01a)
Resistance to Change	"My business has survived several financial crises. I would say I will stick with my conventional way of doing business, rather than following trends" (#02a) "I am proud of the way I do business. I want to be able to travel to my customers, show them my product and talk to them. I do not want to do all of that through a computer, pandemic or not" (#08a)
DT Requires Specific Skills	"Covid-19 made me realize I am simply obsolete when it comes to digital skills. I see everyone around me use computers like it is nothing. Meanwhile, I'm struggling for even the most basic things" (#02a) "DT for a manufacturing company is not that straightforward. We are talking about automation, robots, and advanced IT systems. Sounds great on paper, but who's going to take care of it? Not me, for sure. I know nothing about any of that" (#04c)
Not enough Personnel	"I am understaffed, to put it bluntly. I already work long hours as it is. The pandemic made things even worse in a way, as I am forced to keep an eye out on several safety standards that weren't there before. I do not have the time to worry about anything else" (#09b)
DT feels too complex	"When I think of DT, I feel overwhelmed. It is not just a matter of competencies. As a process, it requires a huge commitment to it, along with long term vision and planning, both things we don't possess in the slightest" (#06) "I feel like DT is more than just opening and managing a website, or a social media page. People around me do not always get it, but DT is going to affect every single aspect of a company, not just the online presence. As such, it is far from being an easy task to achieve" (#05)
Limited external support	"I wish we had more support from the government throughout the pandemic. I got 600 euros a month from them, yet I had to completely shut down production. Do you believe it was enough to break even?" (#10a) "I have heard there are incentives, but the procedure is far too convoluted for me to consider it a viable option. By the time I get the funds, the pandemic will be over for sure. I guarantee you that." (#04c)
Reduction of financial resources	"We were already barely scraping by. Covid-19 hit us hard and hurt the already limited resources we had. I genuinely cannot even consider the option of investing in anything, right now." (#01a) "I feel like I have been stuck in a financial crisis since the dawn of time. Covid-19 did not help either. All I can think of is my day-to-day survival." (#02b)

Outsourcing is not an option	"I have asked for someone to make me a new fancy website. I felt like it could help draw new customers in. The prices, however, were simply absurd and I had to decline" (#02a) "Hiring external help is simply not a viable option. They cost too much, and we cannot afford it" (#10a)

4. Findings

In the interviews, SMEs owners and managers discussed at length the barriers they have collided against when trying to digitise their company, amid Covid-19. Based on the analysis of the interviews, secondary data and the extensive, iterative, and multi-step process of coding, several sub themes emerged concerning the impact of Covid-19 in terms of the exacerbation of barriers towards DT for smaller enterprises. The themes will be discussed in the following sections.

4.1. Lack of motivation and positive attitude towards Digital Transformation

SMEs owners see DT as a "nice to have", rather than something essential. This includes social media presence, which comes off as unnecessary or even unprofessional by some. "Having a Facebook page is silly. This is a business company. I'm not an influencer, nor a Youtuber" (#09a), when asked on why his company had no social media presence whatsoever. "Our customers are always the same and we go way back with most of them." (#01b) That was the reply when we pointed out that social media along with company websites are actively being used by SMEs all over the world to get in touch with new potential customers. "I know how Facebook works. But I don't think anyone would ever reach out for us through Facebook. I think it's not very professional for both parties (#03a)". Younger interviewees displayed a more positive attitude towards social media; however, they are still not quite convinced when it comes to its actual effectiveness. "Every company has a social media page nowadays; I see them all the time. But I don't think we would get a lot of traffic from it. The way I see it, it's not worth the hustle." (#04c).

Some owners reject DT out of a mixture of spite towards the new generation of entrepreneurs and pride in the old ways of going about it. "Call me old fashioned, but a website will never be a viable option to me. Face to face conversation is mandatory. I cannot see myself ever selling a product on the

Internet to an anonymous buyer. I want them to come here where I manufacture my goods, I want to know specifically what they want so that I can manufacture my products to meet my clients' demands. This is something that I'm sure some will appreciate" (#08a). This type of cultural barrier turns the tables on the concept of DT itself. Instead of DT being "out of reach" due to internal limitations, entrepreneurs willingly reject it and reclaim the traditional way of handling business as their adopted approach.

4.2. Not enough human resources to handle Digital Transformation

The second theme arising from our investigation is the lack of Human Resources needed to handle the digital side of the businesses. The interviewed SMEs showed signs of understaffing. Consequently, businesses could not devote a single individual to the management of a company's website nor social media presence.

"It's just me in the office. I work almost 10 hours a day and 5 on Saturdays. Where can I find the time to sit there and learn how a CRM works? That stuff takes time. Time that I personally don't have." (#02a). This sentiment is echoed in most of the contributions we have collected. Small and micro companies featured in our sample felt overwhelmed when it came to DT, as the whole ordeal felt too complex to handle properly.

In addition to the lack of time, small businesses owners claim there's a severe lack of competences needed to fully implement DT in their everyday business processes. "Making use of IT tools is not simple. Personally, I wouldn't be able to manage an online marketing campaign through social media. I'd have no idea where to start" (#04c). Lack of Human Resources is not to be intended purely in terms of employees and time spent educating themselves on DT. Instead, as mentioned several times in DT literature, digital technologies require specific skill sets to get the most out of them, which is something not many small businesses have, nor have the possibility to get access to.

4.3. Lack of Financial Resources

The lack of financial resources from an economic perspective is a significant barrier which emerged from our qualitative research. An interviewee said "I don't have enough money for that. We are already in massive debt and barely scraping by. I can't see myself spending even more money on

websites, social media promotion and IT infrastructure (#04b)". Furthermore, another owner claimed her company barely allowed her to get a salary for herself and her two collaborators. "Every single bit of money I invest in technology is something I put out of my own pocket, pretty much. I simply cannot afford it. And it's not like I'm living a fancy lifestyle either. More often than not, I earn less than my collaborators because I try to pay them first and only if there's enough money for them, I get my own check" (#06). The contributions from the rest of the sample were more or less along the same lines. DT is seen as something expensive and complex, while most of the interviewed small and micro companies struggle to simply keep their business afloat and, for that reason, can't see themselves spending more money on it.

When confronted with the option of outsourcing their online presence to third parties professionals, participants showed a negative sentiment. "I barely have the money to pay my employees. And I consider myself lucky. In fact, most of my competitors had to shut down during Covid-19 pandemic. We survived somehow, but the money is a problem just like it was a problem prior to this whole pandemic" (#10a). While the company's website features somewhat accessible price points, outsourcing DT doesn't appear to be a viable option overall due to limitations in economic resources. This point of view ties with previous dimension, as small business owners featured in our sample claim they are not able to afford external support on digital knowledge due to their limited financial resources.

5. Discussion

The obtained empirical findings partially contradict the perception of Covid-19 being an accelerator of the DT process of micro and small companies (Gavrila Gavrila, De Lucas Ancillo, 2021). In fact, previous literature has generally referred to the impact of Covid-19 on DT as a driver of innovation (Subramaniam *et al.*, 2021). DT must be evaluated on a case-by-case basis due to the uniqueness of companies (Kurniawati *et al*., 2021): what is true and relevant for digitally ready SMEs, may not apply to companies with a significantly smaller degree of digitalization (Truant *et al*., 2021). The gathered data shows how the pandemic has sharpened the effects of DT barriers, rather than breaking them down (Klein, Todesco, 2021). SMEs all over the world were forced to make use of digital technologies in response to the Covid-19 pandemic (Crupi *et al*., 2020). However, this study shows how the implementation of DT comes with specific challenges in terms of resources

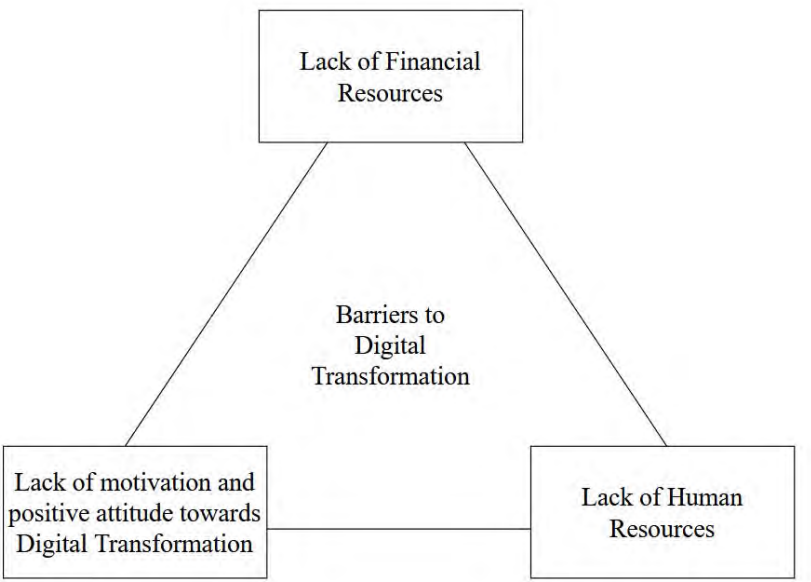
and knowledge. It is worth noting that in some cases, the pandemic has motivated SMEs to get around the DT obstacles to stay functional (Masood *et al*., 2020; Ramírez-Durán *et al*., 2021). However, the vast majority of the research sample suggests a different narrative. Those who saw Covid-19 as an opportunity to experiment with DT and discover new business horizons, generally showed a pre-existing digital friendly attitude towards innovation, as well as a strong awareness of the benefits brought by DT (Eden *et al*., 2019; Ellström *et al*., 2021). However, our sample sheds some light on a set of micro and small companies who still choose to run their business conventionally, regardless of the contextual factors brought out by the pandemic. The presented findings are in line with the study conducted by Kurniawati *et al*. (2021), who highlight the difficulties faced by less digitalised SMEs when trying to adapt to the disruptive changes brought by DT and the pandemic. Contrary to previous research which indicates the pandemic as a driver of DT (Subramaniam *et al*, 2021), we suggest that the Covid-19 pandemic does not positively impact the DT of micro and small enterprises operating in the early stages of their digital journey. Figure 2 displays the identified barriers for small and micro businesses amid Covid-19.

The empirical evidence obtained within this research indicates how micro and small enterprises at an early stage of their DT journey (Truant *et al*., 2021), face multiple obstacles when approaching the DT of their businesses. Multiple entrepreneurs have indicated how the high costs and delayed return on investment (ROI) of implementing DT projects prevent them from adopting and executing digital technologies within their processes (Klein and Todesco, 2021; Kutnjak, 2021). The pandemic did not reduce the already existing need for knowledge constructs for DT (Kutnjak, 2021). The digital tools readily available to SMEs, such as social media and websites, often lack functionalities (Klein, Todesco, 2021) and are frequently perceived as redundant, unneeded, and irrelevant to SMEs success and/or survival. Due to the lack of knowledge and time, micro and small businesses' entrepreneurs often perceive digital media as additional adversities rather than new opportunities despite the potential benefits that these instruments carry (Pelletier, Cloutier, 2019). Ultimately, no evidence which indicates Covid-19 as a driving force of DT for micro and small enterprises who are at an early stage of digitalisation has been found.

In their work on entrepreneurial stagnation, Brush et al. (2009) mention that while no manager ever willingly decides to stop growing, factors such as management, marketing and financial aid actively affect stagnation. DT literature agrees that in times of stagnating productivity and increasing competitive pressure, the digitization of value creation serves to achieve lasting

competitive advantages (Dallasega *et al*., 2018). Our study synthesizes both statements by illustrating how a significant lack in financial and human resources, as well as an overall negative attitude towards digital change, leads to a state of digital stagnation, in which small and micro businesses can't keep up with their industry (Jones *et al*., 2021) and, instead, decide to run their companies conventionally with little to no regards towards long-term planning (Kurniawati *et al*., 2021).

Figure 2 - *Barriers to Digital Transformation for small and micro businesses amid Covid-19*



As far as the age variable goes, the researchers have compared the gathered results to the ones previously discussed in the DT literature. Song et al. (2021) found that the Covid-19 pandemic accelerates the pace of digital technology utilisation but exacerbates the age-related digital divide. In our sample, we found older generations of entrepreneurs to be the ones showing a higher degree of resistance to change, despite the forced circumstances. In terms of gender divide, our empirical evidence does not highlight a significant correlation between gender identity and DT adoption (Grönlund, Öun, 2018; Rajahonka, Villman, 2019).

6. Conclusions

Even before the pandemic and the different lockdowns, DT has been imposing some challenges which are specific to SMEs (Klein, Todesco, 2021). Financial resources required to implement sophisticated IT systems often limit SMEs' ability to approach those technologies since it requires a conceived model with a satisfactory degree of fit resulting into a higher consumption of resources (Gianetti *et al*., 2021). The pandemic did not improve companies' financial stability. Consequently, the obtained data shows how the DT adoption has not increased in companies in which DT literacy was missing. Together with the lack of financial resources, micro and small enterprises often lack the necessary knowledge to implement DT. Some of the entrepreneurs that we have interviewed have shown a negative attitude towards the use of digital tools such as social media and websites (Metushi, Fradeani, 2018). Furthermore, the obtained empirical findings highlight how micro and small enterprises often lack the necessary personnel to correctly implement DT. The necessary knowledge required is often costly. Finally, the lack of time that can be invested into the process of DT often affects smaller businesses, as they struggle to both handle technology themselves and ask for external help from professionals.

The research provides readers with both theoretical and practical implications. From a theoretical perspective, our research bridges a gap in the DT literature by analysing the other side of the DT spectrum and drawing theoretical conclusions on the reasons why it is not implemented in some micro and small enterprises. The study, which is exploratory in nature, draws from empirical data a theoretical perspective on DT barriers. Our investigation expands upon our understanding of the barriers and challenges to DT which need to be continuously investigated due to the unique setting in which SMEs operate (Kutnjak, 2021). More specifically, it allows multiple stakeholders to garner a deeper understanding on how the Covid-19 pandemic has affected SMEs' relationship with DT. Additionally, our study answers the call for future research posed by the theoretical framework of Truant *et al*. (2021), by shedding light on the effects of Covid-19 in terms of digital adoption, which was yet to be fully explored.

From a practical perspective, the research speaks to owners, managers, practitioners, experts, and policy makers to inform them as to what is happening within small and micro businesses. Therefore, the aforementioned stakeholders can allocate the right resources and tools necessary to foster the creation of context specific structures, elements and culture which promote DT. Furthermore, the research also strives to provide practical and empirical

evidence to highlight a less known aspect of DT, which relates to companies who are not able to gain its benefits by implementing it. In this regard, the implications for policy makers are several, as they could consider addressing these barriers to DT to bridge the gap between small companies with limited degrees of digitalization and those with an already well-established DT. This can be done through both educational and financial initiatives, aimed at educating and providing companies with the necessary resources, knowledge, and tools to correctly implement DT. Moreover, micro and small enterprises' management have a better understanding of the steps required so to firstly approach DT. Additionally, the paper informs readers of the need to adapt the company and owners' culture before approaching DT. Hence, our research on DT barriers further explores said issue and provides insight to better understand the analysed context.

Our study comes with limitations related to its research design, sampling procedure and context. Firstly, the research is limited by the sample pool utilised to gather data, which restrains the generalisability of the findings. While our sample is representative of a significant portion of Italian micro and small enterprises (ISTAT, 2020), we expect the results to be fairly different within enterprises with a higher degree of digital readiness. For example, the results obtained by Chamochumbi et al. (2021) suggests how Covid-19 can indeed act as a catalyst of DT in small companies with significant degree of digital readiness.

The study is also limited to the use of a qualitative interpretive methodology which prioritize the participants' experiences without quantifying the impact of every business choice. During said interviews we sought to gather qualitative data which would help us understand how the Covid-19 pandemic has impacted the DT within small and micro enterprises, as well as discuss how their barriers to the adoption of DT have changed during the pandemic. Consequently, the adopted approach has its own limitations.

Further research around these topics is needed to provide additional empirical evidence. Future works should consider the dynamics between digitally friendly attitudes of owners and managers of micro, small and medium sized businesses. Moreover, additional research with a larger research sample is required to garner quantitative data aimed at assessing the correlation between the Covid-19 pandemic and DT adoption rate.

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