

Chapter 8

Degree of digitalization and entrepreneurial orientation of internationalizing micro-, small- and medium-sized enterprises: The mediating roles of self-concept traits

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Introduction

Although the widespread adoption of digital technologies creates an enabling business environment based on wide scalability and powerful resources for processing and storing information, the digital context also accentuates the competitive landscape all around the world. As it shapes spatial and temporal boundaries of entrepreneurial processes and outcomes (Nambisan, 2017), digital technologies reduce many barriers as regards reaching the global marketplace. This context allows new players to compete and completely transforms the patterns of both domestic and international trade. In such a competitive environment, micro-, small- and medium-sized enterprises (MSMEs), and especially internationalizing ones, are required to adjust their efforts by aggressively trying to preserve a market advantage and demonstrate a strong entrepreneurial orientation (EO) (Covin and Slevin, 1989). EO refers to strategic behaviors that are entrepreneurial in nature, in other words, it consists of decision-making practices that demonstrate innovativeness, proactiveness and risk-taking (Anderson et al., 2009). In that regard, by allowing more variability in entrepreneurial activities and in value creation, integrating digital technologies into internal and external firms' operational dimensions might offer new opportunities, not only for building strong competitive advantage, but also for optimizing managerial and strategic decisions (Hull et al., 2007; Bharadwaj et al., 2013; Nambisan, 2017; Autio et al., 2018; Kraus et al., 2019). At a firm level, digital technologies are a major type

of external enabler that have a paradigm-shifting role in entrepreneurship (Nambisan, 2017; von Briel et al., 2018). They have rendered entrepreneurial activities less bounded and have decentralized and distributed firm governance between groups of actors, thereby enabling innovation collectives and the sharing of value creation (Nambisan, 2017). However, even if the change in competitive and technology landscapes creates entrepreneurial opportunities to be discovered and pursued by entrepreneurs (Schumpeter, 1934; Shane, 2000), those individuals need to be aware of these new possibilities in order to reinforce the entrepreneurial behaviors of their firms and be ready for sustainable innovations (Shane, 2000; Kraus et al., 2019). As acknowledged by Schumpeter (1934), it is individual characteristics that influence the discovery and exploitation of opportunity – and thus, personal traits. Prior knowledge, as well as technology and managerial capabilities are also required (Shane, 2000; Grégoire and Shepherd, 2012; Gruber et al., 2012). In the literature, despite the burgeoning scholarly interest in the digital area, a number of ontological questions persist. Indeed, minimal research has addressed the role of digital technologies in shaping entrepreneurial opportunities, decisions, actions and outcomes (Nambisan, 2017).

Within the entrepreneurship domain, particularly in a context of rapid technological advances, many researchers have been interested in profiling the specific characteristics that define the entrepreneur and his entrepreneurial actions (Schumpeter, 1934; Shane, 2000; Rauch and Frese, 2007; Gruber et al., 2012). As self-motivated individuals, entrepreneurs rely primarily on themselves to achieve their goals and thus, are a central driver in taking advantage of technological changes and defining competitive strategies (Schumpeter, 1934). Similarly, recurrent debates in scientific literature associated the personal traits of managers with a firm's EO (Miller and Friesen, 1982; Miller, 1983; Mueller and Thomas, 2001; Poon et al., 2006; Khedhaouria et al., 2015; McGee and Peterson, 2019). As contended in the Miller and Friesen (1982) study, executive goals and traits are central to driving a firm's EO. At the individual level, there are many self-concept traits that have a theoretical relationship with a firm's strategic posture. The most popular concepts in the field of entrepreneurship are self-efficacy, which refers to individuals' perceived ability to accomplish a certain level of performance (Bandura, 1986) and locus of control, which refers to the disposition of a manager to perceive control over the environment (Rotter, 1966). In our research, we suggested that entrepreneurs have several opportunities to maintain their firms' competitive and entrepreneurial strategic

posture by reinforcing EO capabilities with the use of digital technologies. Nevertheless, in the literature, only few empirical studies have explored these dimensions together in order to understand how the integration of digital technologies into firms may drive EO (Hervé et al., 2020a). In our research, we thus extended the theoretical boundary and contributed to the entrepreneurship literature by testing a comprehensive model that used both firm-level and individual-level variables to explain the EO of MSMEs. Specifically, drawing on digital and technology entrepreneurship, on EO and the theories of self-concept traits, we argued that the integration of digital technologies into internal and external dimensions of a firm is central to reinforcing the strategic posture of entrepreneurially internationalizing MSMEs and proposed that individuals are the central driver of this strategic approach. In sum, we aimed to investigate the effect of the digitalization of MSMEs on their EO as well as examine the role of individuals' behaviors as potential mediating variables to explain this relationship. Toward these ends, we developed a model linking four levels of digital transformation (i.e., process and infrastructure – people and culture – digital sales – customer involvement) to the three main EO components (i.e., innovativeness – proactiveness – risk-taking) and measured how the relationship transits through self-concept traits (i.e., self-efficacy and locus of control). Based on parallel mediation analysis, the model was empirically tested using 143 Swiss internationalizing MSMEs. Our study made two distinct contributions to theory on entrepreneurship. First, by using an integrative perspective, it provided new impetus to research on the effect on the firms' EO of integrating digital technologies into operational dimensions. Second, our research shed new light on the important role of individuals in shaping these digital opportunities to reinforce strategic posture. By providing empirical evidence of the mediating role of individual behaviors, we demonstrated that self-efficacy can be a way forward to strategically use digital technologies in order to reinforce EO and, simultaneously, to provide competitive advantage of internationalizing firms.

1. Theoretical developments

1.1. Digital entrepreneurship

Firms are evolving at the heart of digital disruption that involves changes in the competitive landscape. Resulting from the use of

digital technologies by new market entrants or existing competitors, these changes directly impact current offers and market strategic approaches of established firms (Ross et al., 2016). Simultaneously, the use of emerging and readily accessible technologies presents firms with opportunities to define new value propositions based on the combination of existing competencies and the capabilities allowed by technologies. This is especially true for MSMEs, which move more quickly (Ross et al., 2016). These emerging technologies have an increasing paradigm-shifting role in entrepreneurship and engender profound effects in shaping entrepreneurial processes, outcomes and opportunities (Nambisan, 2017). Because they create more fluidity and nonlinearity across time and space, the use of digital technologies completely reshaped the very nature of entrepreneurship (Nambisan, 2017). From this perspective, the use of digital technologies can be introduced as input for entrepreneurship opportunities (Giones and Brem, 2017). In scientific research, the phenomenon of digitalization is of growing interest to more and more scientists and gave birth to DE a decade ago (Hull et al., 2007; Davidson and Vaast, 2010; Giones and Brem, 2017; Nambisan, 2017; Kraus et al., 2019). At the intersection of digitalization and entrepreneurship theories, DE is described as a subcategory of entrepreneurship “in which some or all of what would be physical in a traditional organization has been digitized” (Hull et al., 2007). In other words, it is the association of traditional entrepreneurship with the new approach of creating value and doing business in a digital context. Considering the strong emergence of digital technologies in various aspects of innovation and entrepreneurship, DE can be defined as “the pursuit of opportunities based on the use of digital media and other information and communication technologies” (Davidson and Vaast, 2010).

Although DE entrepreneurship is gaining increasing importance in scholarly community, the field still struggle in providing a consolidated definition (Kraus et al., 2019). Furthermore, even if the research field is of high topically, literature on the topic is quite scarce (Kraus et al., 2019). Limited efforts have been made in theorizing opportunities, challenges and success factors of DE and researchers have overlooked the role of digital technologies in entrepreneurial activities (Nambisan, 2017; Kraus et al., 2019). By combining insights from entrepreneurship field and DE, our paper highlighted several insights into the major role of the use of digital technologies in adopting strategic orientations, both at the corporate and at the individual levels.

1.2. At the firm level – entrepreneurial orientation in a digital context

As reported by Porter (1985), technological change represents one of the main drivers of competition and significantly affects competitive advantage of firms. Consequently, as highlighted by Covin and Slevin (1989), in such a competitive environment companies need to adapt their efforts to current conditions by aggressively trying to benefit from or preserve their market advantage. In order to access such an advantage, entrepreneurial firms would have to build and adopt an EO as their strategic posture (Covin and Slevin, 1989; Lumpkin and Dess, 1996; Anderson et al., 2009; Rauch et al., 2009). This orientation has generally been conceptualized as an organizational trend in decision-making that favors entrepreneurial activities (Lumpkin and Dess, 1996; Anderson et al., 2009). To identify this trend, Covin and Slevin (1989, 1991) defined a continuum ranging from a more conservative posture to a more entrepreneurial one. In this regard, EO is the ability to adopt new behaviors in order to manage future changes in the external environment and the propensity to engage in investments with uncertain returns (Covin and Slevin, 1989; Lumpkin and Dess, 1996). In scientific literature, researchers have suggested that EO is a capacity that provides the main abilities for consolidating competitive advantage (Covin and Slevin, 1989; Lumpkin and Dess, 1996). Since EO is based on this potential source of competitive edge, entrepreneurship researchers agreed that firms with a high level of EO perform better than other firms (Anderson et al., 2009; Rauch et al., 2009). Alongside the literature, EO has been discussed from a primarily firm-level perspective (Covin and Slevin, 1991; Lumpkin and Dess, 1996). Some authors have nonetheless contended that there is no entrepreneurship without the entrepreneur and have adopted EO as an individual-level process by using a personal traits and behavioral approach (Poon et al., 2006; Rauch et al., 2009; Khedhaouria et al., 2015). In our study, we have considered EO to be a firm-level concept and took into consideration founders and decision-makers as a lever of influence to operationalize the orientation of strategic decisions (Covin and Slevin, 1991). As Miller (1983) suggested, the firm's degree of entrepreneurship could be characterized by the proclivity of a firm to value innovative, proactive and risk-taking actions. In other words, adopting an EO as a strategic posture is demonstrative of innovative, proactive and risk-taking efforts to better recognize and exploit

opportunities as well as outperform competitors (Miller, 1983). Thus, the most common conceptualization of EO is based on a unidimensional strategic orientation towards three components: innovativeness, which represents the firm's ability and willingness to encourage novel and creative processes, new insights and experimentation for launching new products and services: proactiveness, which describes the propensity of a company to identify and pursue opportunity for improving competitive situations, anticipate change and shape the business environment: risk-taking, which refers to the uncertainty that follows when an entrepreneur or a firm behaves entrepreneurially and engages in risky actions (Covin and Slevin, 1989; Lumpkin and Dess, 1996). By providing the main abilities for consolidating competitive advantage in markets, the concept of EO is often applied in the research stream of international entrepreneurship (IE) (McDougall and Oviatt, 2000). In the literature, academic researchers have even developed the multi-dimensional concept of international entrepreneurial orientation (IEO) that refers to the willingness of entrepreneurs in demonstrating innovativeness, proactiveness and take risks in international trades (Covin and Miller, 2014).

As introduced at the beginning, strategic entrepreneurship researchers exploring technological change have advocated from the outset that technological capabilities are paramount in the process of gaining competitive advantage and improving business performance (Porter, 1985). Today, with the advances in digital technologies, the basis of competitive advantage is being significantly transformed. The use of digital tools allows firms to think differently about business and to expand the possible approaches in solving problems (Weinman and Euchner, 2015). As Grégoire and Shepherd (2012) suggested, "an opportunity is neither solely about a new technology nor solely about a current market situation; rather, it is about the possibility of changing the current market situation by using the new technology". Based on wide scalability and powerful resources for processing and storing information, digital technologies favor an enabling business environment for MSMEs and allow firms to overcome several issues, such as the way to deal with uncertainty in entrepreneurial activities (Nambisan, 2017). At the firm level, the unique attributes of digital technologies have affected the fundamental character of corporate strategic orientation and is providing more variability in entrepreneurial activities, especially for internationalizing MSMEs (Hervé et al., 2020b). As outlined by Nambisan (2017), the digital context has reshaped two major assumptions of entrepreneurial processes and outcomes. First, digital technologies

have rendered entrepreneurial processes and outcomes less bounded and allow more flexibility and continuous improvement in activities. Second, by involving a more diverse set of actors in activities, the digital context drives to more collective ways of undertaking entrepreneurship in order to bring together new ideas and resources. Furthermore, as the structural connections of digital technologies make them interactive, it also leads to the creation of digital affordances that improve existing functions or perform entirely new ones (von Briel et al., 2018). Thus, it provides opportunities, especially for established MSMEs, to proactively deliver and capture value in the interactions with their entire ecosystem, including customers, partners, suppliers and stakeholders (Autio et al., 2018). Whether to develop and customize offers or optimize processes, involve new actors, improve managerial decisions and rethink current business models, the use of digital technologies triggers a transformation in firms activities (Bharadwaj et al., 2013; Ross et al., 2016; Autio et al., 2018; Kraus et al., 2019). These transformations are occurring both at the internal and external dimensions of firms. Indeed, innovation through digital technologies not only applies to products and services, but also extends to organizational dimensions related to infrastructure, processes, human capital, as well as customer relationships (Weinman and Euchner, 2015). In that regard, the use of emerging technologies might offer new opportunities to adopt strategic behavior and develop entrepreneurial activities through more innovativeness, proactiveness and risk-taking. However, as outlined by Nambisan (2017), scientific research has neglected to theorize their role in shaping entrepreneurial opportunities, decisions, actions and outcomes. Based on the insights of prior studies, we expected the use of digital technologies in external and internal dimensions of firms to provide new competencies and resources for consolidating strategic orientation and, thus, positively affect the EO of MSMEs. Thus, we developed the first hypothesis:

Hypothesis 1: The degree of digitalization of MSMEs is positively associated with their EO

1.3. At the individual level – entrepreneurial self-concept traits in a digital context

Within the entrepreneurship domain, particularly in a context of rapid technological advances, many researchers have been interested in profiling the specific characteristics that define the entrepreneur

and her/his entrepreneurial actions (Schumpeter, 1934; Shane, 2000; Rauch and Frese, 2007; Gruber et al., 2012). In his previous research, Schumpeter (1934) considered the entrepreneur as a central driver to taking advantage of technological changes and defining competitive strategies. It has been acknowledged that the individual perceptions that shape entrepreneurial behaviors about what the firm can achieve with its technological resources are paramount to better explaining and predicting the growth options pursued by an entrepreneur (Gruber et al., 2012). Although technological change presents numerous possibilities to transform production, distribution, as well as organization processes, it does not generate obvious entrepreneurial opportunities that anyone can discover (Shane, 2000). It is individual characteristics that influence the discovery and exploitation of opportunity (Schumpeter, 1934) and, thus, personal traits, prior knowledge, technology and managerial capabilities are required (Shane, 2000; Grégoire and Shepherd, 2012; Gruber et al., 2012).

As outlined by Shane (2000), psychological research has developed theories in which entrepreneurship represents stable characteristics that are not accessible to everyone. Indeed, EO is motivated and driven by diverse personality traits that characterize the entrepreneur (Miller and Friesen, 1982). Following this perspective, numerous personal attributes, such as the need for achievement, the willingness to take risks, self-efficacy and locus of control are closely associated with entrepreneurial behavior and lead some people to pursue entrepreneurship (Shane, 2000). In other words, EO is perceived as resulting from certain drivers related to entrepreneurs' behavioral traits (Miller and Friesen, 1982). Thus, because we were interested in the role of individuals in the relationship among the degree of digitalization of firms and their EO, we investigated two of these human attributes; self-efficacy and locus of control. As many authors have studied the influence of these individual motivation concepts on strategic behavior of firms and have supported significant positive relationships between these dimensions (Miller, 1983; Boyd and Vozikis, 1994; Mueller and Thomas, 2001; Zhao et al., 2005; Poon et al., 2006; Rauch and Frese, 2007; Khedhaouria et al., 2015; McGee and Peterson, 2019), we suggested a new perspective on these links in a context of digitalization.

Self-efficacy. In entrepreneurship research, there are many factors influencing one to become an entrepreneur. These factors are based mostly on combinations of personal attributes, such as traits, background,

experience, and disposition, (Gist, 1987; Wood and Bandura, 1989; Boyd and Vozikis, 1994; Chen et al., 1998). Self-efficacy is one of these personal attributes and is an important determinant of human behavior (Bandura, 1986; Boyd and Vozikis, 1994; Ajzen, 2002; Zhao et al., 2005; McGee et al., 2009). According to Bandura (1986), it refers to one's perceived ability to successfully reach a certain level of performance in various roles and tasks of entrepreneurship. More accurately, self-efficacy is defined as "people's judgements of their capabilities to organize and execute courses of action required to attain designated types of performance" (Bandura, 1986). In their research, Wood and Bandura (1989) offered a slightly different definition and described self-efficacy as "beliefs in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands". As it concerned people's beliefs in their capabilities to generate given attainments, this concept is distinguished from the skills one possesses and from outcome expectations. It is more reflective of what individuals believe they can do with those skills (Ajzen, 2002). Thus, because it influences an entrepreneur's choice of activities, aspirations, skill acquisition, goal levels, perseverance, performance and effectiveness, this motivational construct is a useful and dynamic approach that illustrates the process of evaluating and adopting entrepreneurial behavior (Boyd and Vozikis, 1994; Zhao et al., 2005). In the literature, researchers distinguished the concepts of general self-efficacy from that of entrepreneurial self-efficacy. General self-efficacy refers to an individual's confidence in successfully meeting the demands of a variety of tasks in a variety of situations, while entrepreneurial self-efficacy refers to an individual's belief in successfully performing the roles and tasks of an entrepreneur associated with new-venture management (Boyd and Vozikis, 1994; Chen et al., 1998; McGee et al., 2009; McGee and Peterson, 2019). However, as entrepreneurial activity includes many potential tasks and associated skills, it has been acknowledged in scientific research that general self-efficacy is much easier to measure (McGee et al., 2009; Khedhaouria et al., 2015; McGee and Peterson, 2019). Thus, because it more closely reflects a consistent disposition, we used general self-efficacy in our study.

The efficacy belief system is not holistic, but rather consists of a differentiated set of personal beliefs related to distinct areas of functioning. The acquisition of self-efficacy differs according to each person's areas and activities (Bandura, 2006). It is developed gradually through experience and affects skills development as well as effort expenditure and level of

persistence (Gist, 1987). Mastery experiences and repeated performance accomplishments are effective ways to acquire a strong sense of self-efficacy (Gist, 1987; Wood and Bandura, 1989). It has been acknowledged in scientific research that the more deeply individuals believe in the effectiveness of their work and ability to successfully accomplish any task or the more positive their perception that they can overcome the difficulties they encounter, the more they aim for ambitious goals and make a stronger commitment to achieving them (Wood and Bandura, 1989). Thus, individuals tend to be attracted to and to perform better in activities for which they have high self-efficacy. Inversely, they tend to avoid activities for which they have low self-efficacy (Wood and Bandura, 1989; Boyd and Vozikis, 1994; Chen et al., 1998; McGee and Peterson, 2019). To this end, because the infusion of digital technologies into a company's operational functions has refined the uncertainty in entrepreneurial processes and outcomes (Nambisan, 2017), entrepreneurs become more confident in their entrepreneurial activities. Hence, because they believe in their abilities and perceive themselves to be efficacious, entrepreneurs may be more likely to manage their business with entrepreneurial behaviors (Chen et al., 1998; Zhao et al., 2005), and would be more willing to encourage new innovative offers and experimentation, to act proactively on their environment and to engage in risky actions (Poon et al., 2006; Khedhaouria et al., 2015; McGee and Peterson, 2019). Given these findings, we developed the second hypothesis:

Hypothesis 2: General self-efficacy mediates the relationship between the degree of digitalization and the EO of MSMEs

Locus of control. As self-motivated individuals, entrepreneurs rely primarily on themselves to start a business and achieve their goals. Thus, many personal attributes are closely associated with entrepreneurial values and behavior, including the self-concept of locus of control (Mueller and Thomas, 2001). Developed in the field of psychology research by Rotter (1966), this construct is significant for measuring perceived control and defining its impacts on human behavior. Because self-efficacy differs greatly from perceived behavioral control, which is related to the capacity to perform a particular behavior (Ajzen, 2002), researchers in the field of entrepreneurship distinguish between the concepts of self-efficacy and locus of control (Boyd and Vozikis, 1994; Chen et al., 1998). First, even if these concepts are both cognitive and about control (Rotter, 1966; Ajzen, 2002), self-efficacy is task- and situation-specific, whereas locus of control is a generalized construct that includes a broader range of situations

(Gist, 1987). For instance, an individual might have a strong locus of control in general, while demonstrating low self-efficacy in performing specific tasks at a specific level of expertise. Second, although both concern behavioral control, locus of control also measures outcome control (Rotter, 1966; Ajzen, 2002). Whether results are determined by one's own actions or by external factors, locus of control is concerned with belief about outcome contingencies and not with perceived capability (Bandura, 2006).

This belief-based personality variable is a relevant indicator of a small firm's performance and more specifically, represents the disposition of a manager to perceive control (Boyd and Vozikis, 1994; Ajzen, 2002). Based on his belief that behavior is learned through social interaction, Rotter (1966) built his insights on the role of reinforcement in determining behavior. According to his research, the outcome of an event can be perceived either as contingent upon an individual's own behavior and under his or her personal control and understanding, or as being dependent upon external factors beyond their control and understanding. Consequently, Rotter (1966) distinguished between the internal locus of control – the perception that rewards depend on an individual's own behavior, and the external locus of control – the perception that rewards depend on outside factors (Boyd and Vozikis, 1994; Boone et al., 1996). In other words, individuals with an internal locus of control perceive that the reward is contingent upon their own behavior and believe they are able to control what happens in their lives, whereas individuals with an external locus of control tend to believe that most of the events in their lives are controlled and result from a chance occurrence. The personality trait of locus of control, especially the internal one, can be considered as a prerequisite for action orientation and can be related to proactiveness and leadership (Boone et al., 1996; Mueller and Thomas, 2001). Accordingly, strategies are highly dependent on the level of perceived control. For instance, internal managers show more transformational leadership and are more task-oriented than external managers, who are more emotion-oriented (Boone et al., 1996). Scientists have thus made an association between entrepreneurial behavior and an internal locus of control orientation. Indeed, it has been widely acknowledged in scientific research that individuals who demonstrate a high level of perceived locus of control (internal) are more associated with entrepreneurial behavior and innovative strategies, while individuals with a low level of perceived locus of control (external) are mainly related to conservative behavior and low-cost strategies (Boone et al., 1996; Mueller

and Thomas, 2001; Poon et al., 2006). In this regard, because digital technologies have refined the nature of uncertainties in entrepreneurial activities (Nambisan, 2017), entrepreneurs would be more inclined to believe that rewards depend on their own behavior. Consequently, they would be more willing to adopt entrepreneurial behavior to launch innovative ideas, to exploit new opportunities, to anticipate changes and to take risks (Miller, 1983; Mueller and Thomas, 2001; Poon et al., 2006). Based on these results, we developed the third following hypothesis:

Hypothesis 3: Internal locus of control mediates the relationship between the degree of digitalization and the EO of MSMEs

2. Research framework

As discussed, our proposed model aimed to test how individual behaviors – that is, general self-efficacy and internal locus of control – mediate the relationship between the degree of digitalization of MSMEs and their EO (Fig. 1). We thus address the following model, which can be tested using parallel mediation analysis including more than one mediator (Hayes, 2013):

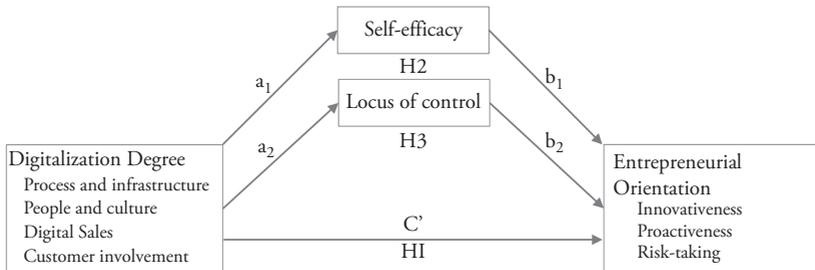


Fig. 1: Research model

Source: from authors

3. Methodology

3.1. Sample and data collection

Our study is based on a quantitative research model that draws on empirical data collected from Swiss MSMEs active in foreign markets.

One half of the sample is represented by manufacturing industries and the other half is adequately representative across other industries, including logistics, professional services, personal and consumer service, IT and communications, health, as well as wholesale and retail businesses. Highly competitive in terms of innovation and strongly involved on the international stage, Switzerland is exemplary in meeting the objectives of our research. By possessing a competitive and high-level infrastructure of new technologies, the country is a driver of innovation and is a particularly interesting setting regarding digitalization. The use of digital technologies allows Swiss MSMEs and the country to remain both entrepreneurial and internationally competitive (GDS, 2018). Another interesting aspect for our study is that the majority of Swiss companies are MSMEs, representing almost 99 % of the economic fabric. This large proportion constitutes a particularly diversified entrepreneurial universe of firms and highlights the country's strong entrepreneurial spirit.

The data were collected through a secondary data base from 8,000 Swiss internationalizing MSMEs, randomly selected and surveyed. Because our study focused exclusively on high-level insights, we identified executive decision-makers and business founders to fill out the questionnaire. In addition, to ensure homogeneity in our sample, we took into consideration only the responses received from MSMEs reporting 250 or fewer employees, as well as firms that generated at least 5 % of their total sales revenue in foreign markets. After removing responses with missing data or contradictory answers, our final sample includes 143 MSMEs that met our research criteria. The selected MSMEs averaged around 60 employees and generated more than 55 % of their total revenue abroad. Respondents demonstrated a wealth of experience in terms of internationalization and have been trading in foreign markets for an average of 30 years. Furthermore, decision-makers in the respective firms are mainly men (95 %), aged between 18 and 70 years (average 40 years old), who demonstrate a strong entrepreneurial mindset.

3.2. Measures

In our research model, we relied on four constructs – two variables at the firm level and two variables at the individual level. The first one at the firm level is the degree of digitalization. This variable is based on a four-item scale reflecting the company's main strategic dimensions. As part of a digital transformation, firms integrate digital technologies

at different levels and spheres of their organization. To differentiate them, we used key variables that include two internal pillars – process and infrastructure and people and culture – and two external ones – digital sales and customer involvement (Greif et al., 2017). Based on descriptive statements, the firms assessed the degree of digitalization of each pillar on a scale of 1–4. In interpreting the results, the higher the selected descriptive statement, the higher the degree of digitalization of the MSMEs surveyed. The second construct used in our study at the firm level is EO. Based on the questionnaire elaborated by Colvin and Slevin (1989), the measurement includes nine items consolidated under three unidimensional entrepreneurial orientations. The first three items are related to firm's innovativeness, the second three assess their proactive behavior and the last three represent their propensity to undertake risky actions. Respondents were asked to evaluate the extent to which the items, formulated by pairs of opposite statements, reflect their firm's strategic posture and answers were recorded on a Likert scale that in our case ranges from 1 to 7. The results were interpreted as follows, the higher the total score, the more firms demonstrate entrepreneurial behavior in their strategic orientation (Covin and Slevin, 1989). The third construct, self-efficacy, refers to the individual and consists of items that articulate a personal position in relation to various skills and competences associated with the topic in question. As outlined by Bandura (2006), scales of self-efficacy have to be tailored according to the specific domain that is the object of interest. In our study, it was measured on the basis of a conceptual framework of task requirements (Chen et al., 1998; Zhao et al., 2005). On a seven-point Likert scale, managers were asked to indicate how confident they were in successfully identifying new business opportunities, creating new products and services, managing innovation within a business, being a leader and communicator, building up a professional network, commercializing a new idea or development and successfully managing a business. The higher the overall score, the higher the respondent's beliefs in her/his capabilities to generate given attainments. Finally, the fourth construct, locus of control, also refers to the individual and was assessed based on the Levenson's (1974) scale, which is an adaptation and refinement of the original construct I-E scale developed by Rotter (1966). Because we were interested in entrepreneurial behaviors of decision-makers, we used the internal control dimension of this belief-based personality variable. Items were written in Likert format, using a seven-point response scale (Sapp and Harrod, 1993). The

higher the score, the higher the respondent's belief that outcome contingencies are determined by her or his own actions.

4. Analysis of findings

4.1. Descriptive statistics and construct reliability

In our study, the pattern of bivariate correlations reinforced our hypothesis of a parallel mediation between the variables tested (Hayes, 2013). Tab. 1 reports the means, standard deviations, reliability coefficient, and bivariate correlations between the variables of interest. As expected, the correlation between the level of digitalization and strategic orientation is positive and significant. The results also outlined a positive and significant correlation among the degree of digitalization and the two self-concept traits, as are the correlations between EO and self-efficacy and between EO and locus of control. The correlation between the two self-concept traits is relatively high and also demonstrates a positive and significant result. Moreover, to ensure the adequacy of our model's measurements, we assessed the composite reliability of each construct. Consequently, we conducted a reliability test to define the internal consistency of our measures and used Cronbach's Alpha to evaluate each construct. The major part of the composite reliability scores for measurement scales was above the suggested value of 0.70 (Hair et al., 2006) and ranged from 0.719 for the degree of digitalization, 0.828 for EO to 0.815 for self-efficacy, while the value for locus of control was slightly below, with 0.689. We thus included all of the components in our model.

Tab. 1: Analysis of the means, standard deviation, reliabilities and correlations of the variables

Variables	Mean	Standard deviation	1	2	3	4
1. Degree of digitalization	2.14	0.72	(0.719)			
2. Entrepreneurial orientation	4.35	1.06	.441**	(0.828)		
3. Self-efficacy	5.52	0.90	.219**	.507**	(0.815)	
4. Locus of control	5.62	0.83	.170*	.286**	.647**	(0.689)

Note: values in parentheses are reliability coefficient (Cronbach's Alpha)

*statistical significance at the 0.05 level – **statistical significance at the 0.01 level.

4.2. Testing our hypotheses

In our study, we relied on parallel mediation analysis to test our hypotheses. As a more complex model than traditional mediation analysis, parallel mediation analysis includes more than one mediator to test the relationship between the independent and dependent variables (Hayes, 2013). There are as many indirect effects as there are mediators. According to Hayes (2013), these mediators are allowed to correlate with one another, but not to influence each other in causality. As we were interested in the mediating effects of individual behaviors in the relationship between the degree of digitalization and EO, we checked if any of the self-concept traits in question drives the mediation more than the others, or if both contribute to it. Indeed, as we have no theoretical reason to assume that one dimension would lead to another, parallel mediation analysis is appropriate (Hayes, 2013). According to Baron and Kenny (1986), an empirical study with a classical mediation must follow a three-step approach and demonstrates that (1) there is a significant relationship between the independent variable and the mediating variable, (2) there is a significant relationship between the independent variable and the dependent variable without including the mediator, and (3) by incorporating the mediator, the relationship between the independent and the dependent variables reduces and the relationship between the mediator and the dependent variable is significant. In our case, to test for a parallel mediated relationship between the dimensions of degree of digitalization and EO, we estimated a series of regression analysis (see Tab. 2). First, the regression of the mediators on the independent variable with the coefficients a_1 and a_2 . Second, the regression of the dependent variable on the independent variable with the coefficient c . Third, the regression of the dependent variable on both the independent variable and mediators with the coefficients b_1 and b_2 .

According to this regression procedure, the mediating effect is proved if the regression coefficient associated with the degree of digitalization and the EO relationship is statistically significant and decreases or goes to zero when the mediators are added to the equation. Results from the parallel mediation analysis demonstrated that the relationship between the degree of digitalization and EO is positive and significant (H1 supported) and transits by self-efficacy (H2 supported) but not by locus of control (H3 not supported). In more detail, there is first a significant relationship between the degree of digitalization and EO ($c = 0.694$;

$p < 0.000$). Second, the degree of digitalization positively affects self-efficacy ($a_1 = 0.240$; $p < 0.01$), which in turn is positively related to EO ($b_1 = 0.582$; $p < 0.000$). Third, we also observed a significant relationship between the degree of digitalization and locus of control ($a_2 = 0.272$; $p < 0.01$), however, no significant relationship between locus of control and EO ($b_2 = -0.045$; $p > 0.1$) was obtained. Finally, we found that the regression coefficient between digitalization and EO decreases when the mediators are added to the equation ($c' = 0.567$; $p < 0.000$). Thus, our parallel mediation model (Fig. 2) illustrated a partial mediating effect that transits through self-efficacy (MacKinnon et al., 2007; Hayes, 2013).

Tab. 2: Results of parallel mediation

Parameters	Parallel mediation											
	M ₁ (SE)			M ₂ (LC)			Y (EO)					
	Coeff.	Standard Error	p	Coeff.	Standard Error	p	Coeff.	Standard Error	p			
X (DD)	a_1	0.240	0.097	0.014	a_2	0.272	0.095	0.005	c'	0.567	0.103	0.000
M ₁ (SE)	-	-	-	-	-	-	-	-	b_1	0.582	0.112	0.000
M ₂ (LC)	-	-	-	-	-	-	-	-	b_2	-0.045	0.113	0.694
Constant	5.004	0.217	0.000	5.072	0.214	0.000	0.188	0.538	0.727			
		$R^2 = 0.042$ $F(1, 141) = 6.182$, $p = 0.014$				$R^2 = 0.055$ $F(1, 141) = 8.136$, $p = 0.005$				$R^2 = 0.391$ $F(3, 139) = 29.760$, $p = 0.000$		

DD = digitalization degree – SE = self-efficacy – LC = locus of control

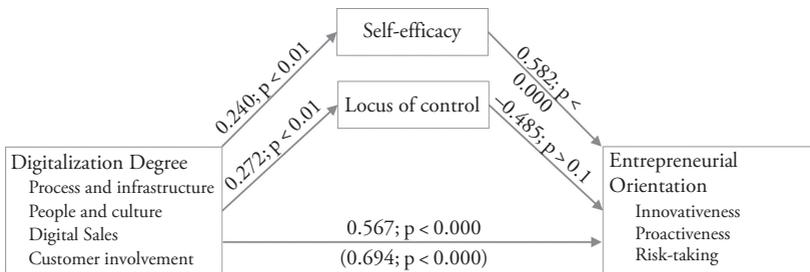


Fig. 2: Final model

Source: from authors

5. Discussion and implications

The main objective of our paper was to empirically test the mediating roles of self-efficacy and locus of control on the relationship among the degree of digitalization and EO of internationalizing MSMEs. Although EO constitutes a broad field of interests, little attention has been paid to empirically investigating associations among the use of digital technologies, self-concept traits and EO in a large sample of entrepreneurs. Based on parallel mediation analysis, we built a model linking key dimensions of a firm's digitalization to EO and self-concept traits. By addressing the call put forward by Nambisan (2017) to progress the function of digital technologies into entrepreneurial activities, our research provided new empirical evidence on the importance of digital technologies in shaping entrepreneurial orientation. Our findings emphasized the mediating role of self-efficacy – the entrepreneurs' beliefs in their capabilities to generate given attainments – in exploiting the opportunities provided by the integration of digital tools at different levels of firms in order to define a strong entrepreneurial strategic posture. Nevertheless, even if we recorded a positive and significant relationship between the degree of digitalization and locus of control – the entrepreneurs' ability to exercise control over the environment – we found no positive and significant results regarding its mediating role on the relationship between the use of digital technologies and the EO of MSMEs. These findings reinforce the important role of personal traits to better perceive the effect of digitalization in entrepreneurial strategic posture. This highlights that the use of digital technologies could be an important source of value creation in the manifestation of entrepreneurial behaviors that in turn, positively increases innovativeness, proactiveness and risk-taking of firms. Importantly, we showed that self-efficacy mediates the relationship between the degree of digitalization of firms and the adoption of EO.

5.1. Theoretical and practical implications

From a theoretical point of view, the major implication to the current literature is the establishment of the parallel mediation model, which tested the interrelationship between the use of digital technologies, self-concept traits and the adoption of EO by internationalizing MSMEs. Indeed, the key contribution of our research includes the analysis of a parallel mediation that paints a different picture on entrepreneurial

strategic decision-making and demonstrates that entrepreneurial self-efficacy could be a theoretical explanation for the positive relationship between digitalization and the EO of MSMEs. Furthermore, our research demonstrated relevant empirical evidence that entrepreneurs who digitalized her/his operational functions may lead their firms to a high degree of EO. Furthermore, by considering the degree of digitalization as an antecedent of EO, we provided a new perspective on the EO construct as a dependent variable and highlighted the importance of self-concept traits in building competitive advantage thanks to the digitalization of the operational backbone. This observation concurs with the intrinsic conceptualizations of both self-efficacy and locus of control and contributes to the extension of entrepreneurial theories, especially in DE and EO fields. This integrative perspective is likely to provide new impetus to research on the impacts of emerging technologies in entrepreneurship and on the important role of individuals in shaping these digital opportunities to reinforce an entrepreneurial strategic posture and competitive advantage. From a practical perspective, our study outlined new knowledge for business owners and decision-makers who strive to integrate digital technologies into their operational functions in order to maintain and reinforce their innovativeness, proactiveness and risk-taking in foreign markets. We demonstrated that self-efficacy can be a way forward to strategically use digital technologies in order to reinforce EO and, simultaneously, competitive advantage of internationalizing firms. The parallel mediation analysis foregrounds a new way to help MSMEs enhance their perceived ability to successfully accomplish a certain level of performance in the definition of strategic posture. Indeed, our findings emphasized that the use of digital technologies is imperative in this regard. Consequently, whether it be to improve innovativeness by integrating new actors in the idea-creation process via social networks or by developing new experiments with virtual reality and 3D printers – to enhance proactiveness by collecting and processing data through predictive algorithms or by using the internet of things to optimize the operational process – to securing risky action by using technologies, such as the cloud or the blockchain, many opportunities exist to improve the strategic orientation of internationalizing MSMEs (Hervé et al., 2020a).

As outlined by Schumpeter (1934), it is individual behaviors that influence the discovery and exploitation of opportunities initiated by technological change. Self-efficacy is theoretically significant to explain that entrepreneurs can take advantage of technological means to define

competitive strategies. In our results, as this belief-based variable mediates the relationship between the digitalization degree of firms and their EO, we emphasized the significant role of entrepreneurs' perception of their capabilities to successfully achieve a certain level of performance by using digital technologies. In contrast, our results highlighted that locus of control – more precisely, the internal locus of control – has no effect on this relationship. In other words, the disposition of an entrepreneur to perceive control of the environment plays no role in understanding the relationship among the degree of digitalization of MSMEs and their strategic orientation. As acknowledged in the literature, self-efficacy is about individuals' beliefs in their capabilities, whereas locus of control is related to the belief about outcome contingencies (Bandura, 2006). More specifically, self-efficacy is a judgment of the ability to perform given types of performance whereas outcome expectations are judgements about the likely results of that performance (Bandura, 2006). Based on this assumption, we suggest that entrepreneurs are more willing to expend their effort and have more intrinsic interest to make appropriate use of digital technologies in order to drive and run their businesses in an entrepreneurial way. However, it may be currently challenging for them to ensure control of the expected results. In addition, given the pace of digital progress, it may also be difficult for entrepreneurs to perceive an outcome as being contingent upon their own behavior and under their personal control and understanding. By focusing on building and maintaining a meaningful digital operational backbone, we argue that internationalizing MSMEs can build on the personal characteristics of entrepreneurs, and especially on their self-confidence, to improve their existing strategic posture and be driven to seek entrepreneurial opportunities. In this sense, the digitalization of the business is vital to endowing the individual with entrepreneurial behavior.

5.2. Limitations and further research

One limitation of this research is the use of only two measures of self-concept traits. Although self-efficacy and locus of control both represent major human behaviors that influence one to become an entrepreneur, it would be relevant to integrate other personal attributes, like the need for achievement, networking behavior or the willingness to take risks, into the research model. We thus encourage further research to investigate the influence of other personal traits on the relationship between

the degree of digitalization of firms and their EO. Furthermore, because we were interested mainly in the entrepreneurial behavior of decision-makers, we took into consideration the variable of the internal locus of control. Since digitalization is an external factor, it might be interesting for future studies to enhance the research model and test the influence of the variable external locus of control. We also pointed out a limitation in our study regarding the independent variable of the degree of digitalization of internationalizing MSMEs. Since we used the average level of digitalization, it was not possible to observe in detail the role of the internal and external dimensions of the firm on the relationship between the variables. Hence, future research might be interested in decomposing this variable and testing each of the dimensions in the model.

Another limitation can be formulated in view of the cross-sectional design of our study. Indeed, we provided an overview of one specific point in time and it would be relevant to take into consideration the impact of change over time. Thus, a longitudinal investigation would contribute to extending views into the dynamic nature of the relationship between the digitalization degree of internationalizing firms and their strategic orientation. In addition, our empirical results were collected from a sample of Swiss MSMEs, which raised questions about the extrapolation of the results to other countries. Future studies could address this issue by collecting empirical evidence in other countries and then providing comparative studies. Finally, as digital technologies are important determinants of competitive advantage, academic researchers need to focus in more detail on patterns of technological change as well as on individuals' competencies required in such a context. Furthermore, given the rapid development of the field of DE and the diversity of knowledge emerging from EO research, we believe it is time to propose a construct in the literature that can measure the digital entrepreneurial orientation of internationalizing firms and thus, offer new insights for advancing knowledge on this domain.

Conclusion

Using a model that links key dimensions of firms and individuals, our research investigated the impact of the degree of digitalization of MSMEs on their EO, and then assessed the mediating role of self-concept traits, i.e., self-efficacy and locus of control, in this relationship. Based on a survey of 143 MSMEs, we empirically tested our model through a

parallel mediation analysis. To the best of our knowledge, this research is the first empirical study to consider the mediation role of personal attributes in explaining how the integration of digital technologies into the dimensions of an operational firm affects the EO of MSMEs. Our results emphasized that the degree of digitalization of MSMEs positively affects their entrepreneurial behavior. Moreover, our findings highlighted the mediating role of self-efficacy in exploiting digital technologies to reinforce entrepreneurial strategic posture. However, we found no positive and significant results on the impact of locus of control on the relationship between the degree of digitalization and the EO of MSMEs. By empirically testing the effect of self-concept traits on this relationship, our research demonstrated the importance of considering the behavior of entrepreneurs. Indeed, our research provides a strong basis for future work investigations on the role of an individual's self-confidence in the entrepreneurial process of using digital technologies to reinforce innovative, proactive and risk-taking behaviors of MSMEs. It contributes to the literature on DE and EO by underscoring not only the positive and significant relationship between the degree of digitalization and EO of MSMEs, but also the mediating role of personal attributes. By drawing a new look at traditional theories, these findings provide significant insights for the scholarly community, as well as practitioners and suggest that entrepreneurs should believe in their capabilities of exploiting digital technologies in order to build a strong strategic posture.

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