Unveiling entrepreneurial action: a meta-synthesis on effectuation and bricolage

Abstract

Although bricolage and effectuation are the most cited theoretical approaches in the field of entrepreneurship, their research remain inconclusive with regard to their respective antecedents. In this study, we used meta-synthesis as a way to push the boundaries of both approaches and to reconcile the rich and fragmented evidence provided by case studies. This study extends the current theory by demonstrating which contextual antecedents and individual attributes were manifested in practice and explaining how they relate to actions of bricolage and effectuation, broadening our understanding of the issues of how and why they prevail, erstwhile called for in the literature.

Keywords: entrepreneurial action; bricolage; effectuation; meta-synthesis

INTRODUCTION

Bricolage and effectuation are the two most frequently cited theoretical perspectives on entrepreneurial actions in the field of entrepreneurship, and they contrast with the traditional model of entrepreneurial behavior addressed in economic thinking (Fisher, 2012). Although they are used in studies involving similar research problems and are sometimes used interchangeably (see Berends, Jelinek, Reymen, & Stultiëns, 2014; Ott, Eisenhardt, & Bingham, 2017; Reymen, Andries, Berends, Mauer, Stephan, & Burg, 2015; Wittel, Gebauer, Jaakkola, Hammedi, Patricio, & Perkis, 2017), few studies have considered analyzing them jointly (Fisher, 2012; Servantie & Rispal, 2018; Welter, Mauer, & Wuebker, 2016). They explain entrepreneurial actions that involved arrangements with few resources, a lack of formal planning, improvisation and experimentation, due to uncertainty or scarce resources. The intersection of bricolage and effectuation has been identified as a promising field of study (Welter *et al.*, 2016).

In the most recent literature review on effectuation, Grégoire & Cherchem (in press) claim that the literature has grown in a fragmented manner and using different conceptions and methods that make it difficult to make advances based on previous studies. Furthermore, the authors emphasized that the individual antecedents of effectual action remain inconclusive. To standardize the conceptual articulation of effectuation, they suggested that it should not be viewed as an isolated theory but rather as a mode of action that has a place in a broader field of research: human action theories (Grégoire & Cherchem, in press). Arend, Sarooghi and Burkemper (2015), when analyzing the theoretical maturity of effectuation, recommended that the comparison be extended to other approaches on entrepreneurial action, with a view to arriving at possible rational alternatives. Bricolage is one of the recommended approaches (Archer, Baker, & Mauer, 2009; Arend *et al.*, 2015; Welter et al., 2016).

In the case of bricolage, the literature has also pointed out the need for a delimitation of its boundaries, as the research continues to lack consideration on how this behavior can prevail or be replaced by other entrepreneurial behaviors (Senyard, Baker, Steffens, & Davidsson, 2014; Stinchfield, Nelson, & Wood, 2013; Welter *et al.*, 2016). Ott et al. (2017) suggested that bricolage could be incorporated into a group with other theoretical approaches, such as improvisation, trial-and-error and experimentation. They also suggested that future studies should be dedicated to understanding how and why entrepreneurs combine these different processes and how this combination unfolds over time. Although Ott et al. (2017) do not expressly use effectuation in their study, they mention its similarity to bricolage and experimentation in a footnote. Recently, Davidsson, Baker and Senyard (2017) conducted a study to improve the measurements proposed by Senyard et al. (2014) and defined bricolage as a one-dimensional construct, represented by making do with the resources at hand by recombining resources for new purposes, refusal to enact limitations, and bias for action. However, Wittel et al. (2017) argued that the operationalization of

bricolage, instead of being supported by a single construct, should be developed as a second-order construct and include multiple first-order constructs with greater explanatory power of the role of the capabilities that it requires.

Some studies have indicated a partial overlap between bricolage, effectuation and causation (Archer et al., 2009; Fisher, 2012; Servantie & Rispal, 2018; Welter et al., 2016). The reason for the combination or simultaneous use of approaches was associated with variations in the context, the skills of the people involved in the business and the relationship with stakeholders. Nevertheless, more studies are still required to broaden our understanding of how the diversity of individual and team skills influences changes in modes of action (Servantie & Rispal, 2018).

That said, there is an opportunity to advance research on the two approaches considering the intersection between the context and the individual attributes that, in turn, assume the role of antecedents of these modes of action. This work was guided by the following research question: "*What are the contextual antecedents and individual attributes that mobilize the modes of action of effectuation and bricolage and how do they do so?"* To answer the research question, we used meta-synthesis, a method stemming from evidence-based research to synthesize previous qualitative studies. It shares with meta-analysis the objective of gathering empirical evidence to advance a field of knowledge (Finfgeld-Connett, 2018; Hoon, 2013; Sandelowski & Barroso, 2007).

However, the field of entrepreneurship is marked by the prevalence of meta-analyses. It is important to remember that entrepreneurship research is diverse as a result of the multidisciplinarity and conceptual and methodological variations (Rauch, Doorn, & Hulsink, 2014). In addition, qualitative research, especially case studies, supports the development of theory in the field and meta-analysis cannot generate evidence from this type of study. Consequently, there is a lack of consensus on constructs, which compromises the accumulation of knowledge and

perpetuates the fragmentation and dissemination of diffuse knowledge, which could be integrated into broader and well-grounded theoretical frameworks (Rauch et al., 2014). Thus, there is a need to reduce this quantitative bias in evidence-based research, as it could be a huge mistake to use the exclusive support of meta-analysis while the unique insights of qualitative research remain scattered (Rauch et al., 2014).

This study extends the literature in several ways. First, by synthesizing the rich insights offered by case studies, we worked on issues of generalization and specifics of contexts, typical of qualitative research in general. The study allowed us to categorize the antecedents of each mode of action and differentiate their particular traits, answering calls to broaden our understanding of their respective boundaries. Second, by demonstrating which contextual antecedents and individual attributes were manifested in practice, we also explained how they relate to actions of bricolage and effectuation, broadening our understanding of the issues of how and why, erstwhile called for in the literature (Arend et al., 2015). This is an important step towards a more holistic and integral vision of the approaches on entrepreneurial action.

METHOD

Synthesizing existing information through evidence is a way of managing, combining and integrating scattered evidence to generate more comprehensible knowledge for the field (Rauch et al., 2014). We adopted meta-synthesis, an exploratory and inductive method that integrates and synthesizes qualitative studies in order to make contributions that go beyond each individual study (Hoon, 2013; Sandelowski & Barroso, 2007). Meta-synthesis is also useful for identifying gaps or omissions in a given research field and to extend, refine or generate theories (Hoon, 2013; Major & Savin-Baden, 2012). It is recommended for pinpointing antecedents, attributes and outcomes of processes contained in these primary studies (Finfgeld-Connett, 2018).

Rauch et al. (2014) suggested that researchers in the field of entrepreneurship should use evidence-based methods that are different from traditional meta-analyses, given that the field uses diverse methodological approaches, with case studies prevailing. Hoon (2013) suggested that case studies are particularly interesting because they enable the observation of the variables and their relationships, as well as the contextual conditions that influence a certain phenomenon (Hoon, 2013). Following these suggestions, we used a sample composed of case studies.

Sample and Selection

To locate the articles, we used the Web of Science database. We used the key-words "*effectuation*" *OR* "*bricolage*" in the Topic search bar. We did not use a time limit and we restricted the search to the fields of business and management, considering only published articles. The search was made in March of 2018 and resulted in 402 articles.

We adopted inclusion and exclusion criteria to select the sample (Finfgeld-Connett, 2018; Hoon, 2013; Sandelowski & Barroso, 2007). First, for inclusion, the works had to use effectuation or bricolage as a theoretical support, either individually or in association with other theories in the field of management. Second, the works had to employ the case study method, either single or multiple, involving the collection of data in the field. Third, the works had to analyze the entrepreneurial process, i.e., the creation of new businesses, innovation or internationalization. Works that addressed the use of the approaches in situations like marketing decisions, conflicts within organizations or the teaching of entrepreneurship were excluded. As our goal was to understand the particular aspects of each approach individually, the few works that used them jointly were not included in the sample. The final sample was reduced to 44 articles. We then proceeded with the critical appraisal. Following Lundvigsen, Hall, Meyer, Fegran, Aagaard, and Uhrenfeldt (2016), we used a tool of the Joanna Briggs Institute (http://joannabriggs.org/research/critical-appraisal-tools.html). After the evaluations, we excluded

5 works because they did not provide any evidence in keeping with their propositions. The final sample contained 20 articles for effectuation and 19 for bricolage (Table 1).

There is no rule regarding sample size for a meta-synthesis. There are references in the management field that consider samples of 13 to 22 articles sufficient (Hoon, 2013; Lesner, Reihlen, & Rauch, 2018). When pondering the question of handling data and the validated sample size in previous studies, we considered the final sample of this work sufficient for our research purposes.

"Insert Table 1 Here"

Data Extraction, Analysis and Synthesis

The data source for the meta-synthesis is interpretation of the results provided by the authors of the primary studies. These data were extracted from the results, discussion or conclusion sections of the articles in the sample (Hoon, 2013). Bricolage and effectuation samples were first analyzed separately and thus they were compared. We used the grounded theory techniques to data analysis because they allow the emergence of characteristics or patterns in the data (Sandelowski & Barroso, 2007). As the literature is inconclusive regarding our research question, the grounded theory process avoids a potential theoretical bias that might occur if we conducted our analyses through the codings used in previous works (Finfgeld-Connett, 2018). Following the directives of Corbin and Strauss (2008) for constant comparison techniques, the findings on the context and individual attributes were initially coded in each of the works in the sample. The coding at this stage was open and the data were edited following the recommendations of Sandelowski and Barroso (2007), which generated first-order codes. After this first coding, we clustered the data according to their conceptual proximity, as suggested in the axial coding process (Corbin & Strauss, 2008), generating the second-order themes. Finally, we used selective coding to generate the aggregate dimension of the themes. In this last stage, we resorted to the literature of the field to identify

concepts that supported the aggregation of our second-order themes related to the individual attributes and used the concepts of human capital and social capital (Carsrud & Brännback, 2011; Gimeno, Folta, Cooper, & Woo, 1997; Keating, Geiger, & McLoughlin, 2014; Simmerly & Li, 2000; Stam & Elfring, 2008). Figures 1 and 2 show the structure of the data resulting from the analysis. To extract and analyze the data, we combined the use of text and spreadsheet processors with Atlas ti software.

"Insert Figures 1 and 2 Here"

Qualitative Meta-summary

A meta-summary is the result of the extraction, separation, clustering and abstraction of qualitative discoveries in numbers (Lundvigsen et al., 2016). It quantitatively reflects the frequency of findings and allow the grounding of information on the discovery of a certain pattern or theme. As in meta-analyses, a form of extracting meaning and understanding the magnitude of qualitative findings is through calculating effect sizes. Whereas in meta-analyses effect sizes represent the magnitude of treatments, in qualitative studies, they represent the frequency of the occurrence of a pattern or theme and allow us to understand whether a finding is over or underestimated and provide the basis for preparing the meta-synthesis itself (Sandelowski & Barroso, 2007).

The data extracted from the Atlas ti software served as input for the meta-summary (Tables 2 and 3). To calculate the manifested frequency of the effects, we prepared a binary matrix, considering the ratio between the number of articles that contained a certain finding minus the number of articles with possible sample overlap and the total number of articles that contained this finding minus the number of articles with possible sample overlap. Meta-summary does not represent an attempt to simplify the complexity of the evidence, as the statistical significance is not necessarily that of the numbers, but also of the terms that are used to explain these numbers (Sandelowski & Barroso, 2007).

Validity

One way of ensuring trustworthiness is transparency in the methodological procedures. Furthermore, meta-synthesis, by nature, enables triangulation, as it uses diverse research frameworks, sampling methods, data analysis techniques and researchers when we consider the primary results analyzed. To guarantee validity, two researchers worked on the sample selection and the whole coding process. Each step was validated and discussed by the authors, with constant improvement from the feedback received on the data analysis. Throughout the analysis process, after checking the coefficients of agreement, any incompatibility in the analysis was discussed until a consensus was reached. The entire analysis was stored in an audit trail (Sandelowski & Barroso, 2007).

FINDINGS

The antecedents explored in this study are the factors or conditions that enable entrepreneurial action through bricolage or effectuation. They were identified as contextual antecedents and individual attributes. In the case of individual attributes, we had to resort to the broader literature on entrepreneurship and strategy to find concepts that explained a possible aggregation. We found that the concepts of human capital (Carsrud & Brännback, 2011; Gimeno et al., 1997) and social capital (Keating et al., 2014; Stam & Elfring, 2008) represent the aggregation of the individual attributes identified here. We considered the evidence as dependent on an agent, either an individual or company. We should also highlight that, in the case of effectuation, given its joint analysis with causation, these antecedents fed the two modes of action. The meta-summary shows the frequency of our findings (Tables 2 and 3). We then qualitatively explored their respective meanings.

"Insert Tables 2 and 3 Here"

Contextual antecedents

In bricolage, the scarcity of resources was more evident and is a constant for small businesses, even if they were already established. These companies used existing resources creatively, mainly when they faced periods that required changes in their business, either to survive or as an opportunity to innovate (Beckett, 2016). For the emerging economies business, the scarcity is due to a lack of support infrastructure, either due to the availability of few investments or because their products were not very attractive to the influential market (Gurca & Ravishankar, 2016; Holt & Littlewood, 2016; Sarkar, 2018; Sarkar & Pansera, 2018). Social businesses suffered from scarcity of resources because of the difficulties involved in obtaining private funding, as they need patient investment, and because of reduced donations or the availability of fewer government funds (Azmat, Ferdous, & Couchmann, 2015; Bhatt & Ahmad, 2017; Di Domenico et al., 2010; Tasavori, Kwong, & Pruthi, 2018).

Uncertainty also emerged from the data. In the technology sectors, the entrepreneurs faced difficulties when it came to obtaining funding, mainly due to the long development stages of solutions (Keating et al., 2014) and because the commercial potential of their innovations is hard to measure (Bicen & Johnson, 2015). In general, innovations were analyzed by models that could not see their potential in terms of short-term profits (Carlsson-Wall & Kraus, 2015; Halme, Lindeman, & Linna, 2012). Uncertainty was also perceived in partnerships, since the differences in the objectives and organizational practices or partners could lead to tension and insecurity when it came to committing resources (Ritvala, Salmi, & Andersson, 2015; Kwong, Tasavori, & Wun-mei Cheung, 2017). Furthermore, the type of partnership restricted actions and possible results due to the dependence on resources between the parties (Halme et al., 2012; Kwong et al., 2017). Uncertainty was also detected during emerging internationalization processes, derived from the perception of the organizations regarding the availability of resources and their operational capacity to serve these new markets (Su, 2013).

Institutional complexity emerges as a way of protecting the interests of specific groups or the company's lack of legitimacy and the proposed solution, generally associated with the degree of innovativeness of the idea. Digital innovations that altered institutionalized business models and challenged the interests of influential stakeholders were the ones that suffered most from the resistance of these major players. This occurred due to the modularity of their business models, which favored a single actor capturing a value that used to be dispersed among several actors (Ernkvist, 2015). Another difficulty was associated with the opportunity evaluation models in the market, which valued maximizing profits in the short term, leaving little room for experimentation (Carlsson-Walls & Kraus, 2015; Halme et al., 2012). Meanwhile, in the cases of social businesses, the environment was characterized by the interests of the elites in maintaining relationships of dependency or the influence of religious systems, of castes, culture and traditions in general (Azmat et al., 2015; Mair & Marti, 2009; Kang, 2017). Although bricolage occurs in these environments precisely because it is a response to institutional limitations, this same environment was shown to be a barrier to innovation (Halme et al., 2012).

Studies on effectuation have shown internal and external uncertainty as the scenario for the emergence of entrepreneurial action. Internal uncertainty was translated as the unpredictability of the technological development process, the market, chances of commercial success, sufficiency of resources and the relationship between suppliers, customers, competitors and investors (Gabrielsson & Gabrielsson, 2013; Galkina & Chetty, 2015; Jiang & Rüling, 2017; Kalinic et al., 2014; Maine, Soh, & Dos Santos, 2015; Murdock & Varnes, 2018; Nummela, Saarenketo; Jokela, & Loane, 2014). To mitigate these uncertainties, the entrepreneurs engaged in creating networks, experimentation processes or various parallel development projects. This characterizes ambiguity and can trigger uncertainty in the network of partners, in other words, external uncertainty (Gomes, Salerno, Phaal, & Probert, 2018; Reymen et al., 2015).

The partners felt insecure about which capabilities to develop in order to work together, how much the focal company was evolving in its development and whether it was feasible to continue the relationship. This uncertainty materialized in the form of delayed investments or the withdrawal of the partners from the ecosystem because they could not visualize a formal scheme for monitoring the project (Jiang & Rüling, 2017; Jiang & Tornikoski, 2019; Reymen, et al., 2015). In these contexts, as the partners could not develop their own business models and the investors could not see any possibility of a return on their investments, the entrepreneur tended to shift to causation (Gomes et al., 2018). Effectuation appeared to increase in periods of scarcity of resources but diminished in times when there were pressures from stakeholders, dependence on government decisions or threats from competitors (Maine et al., 2015; Reymen et al., 2015).

External uncertainty also emanated from the institutional environment in cases where government agencies were not prepared to handle innovations in the regulatory environment and, therefore, were unaware of the problems and possible risks of their commercialization (Chandra, Styles, Wilkinson, 2015; Gomes et al., 2018). Furthermore, as shown in the cases of the digital business models, these nascent businesses could emerge as threats to the established and influential players due to their modularity and capacity to capture more value (Ciszewska-Mlinaric, Obloj, & Wasowska, 2016; Sitoh, Pan, & Yu, 2014). Uncertainty was also associated with the lack of adequate resources and the spontaneity and ambiguity of social networks during internationalization. As the outcome of interactions with partners is unpredictable, room is made for the emergence of contingencies or opportunities (Chetty, Ojala, & Leppäaho, 2015; Galkina & Chetty, 2015; Hannibal, Evers, & Servais, 2016; Kalinic et al., 2014). The small companies and social business also suffered from the constraints on resources, and their innovations were restricted to their capacity to produce skills, equipment and personal connections already available internally,

which limited possible investments (Akemu, Whiteman, & Kennedy, 2016; Berends et al., 2014; Corner & Ho, 2010).

The sample generally considered alternation between actions of effectuation and causation. Both had unforeseen consequences that constituted the antecedents of subsequent actions (Jiang & Rüling, 2017; Jiang & Tornikoski, 2019; Reymen et al., 2015). This means that, irrespective of the mode of action, when interaction with stakeholders occurs, responses to actions cannot be known *ex ante* in any situation, even if the entrepreneur has adopted formal planning. However, external uncertainty is prevalent as an antecedent of effectuation.

Individual Attributes

The evidence in the literature indicates that resources can be the locally available materials, existing technologies, competencies and skills to operate these resources, specialized knowledge, previous experience and social structures (political, cultural and normative). Given their diversity, they were clustered as tangible and intangible. Tangible resources are materials, physical structure, technologies or cultural, normative and political resources that are part of the daily life of the entrepreneur. They are locally available, or the entrepreneur has access to them through his social network. Resources that could be appropriated in cultural, normative or political environments were considered tangible because they are intelligible within a group, although it may not be possible to transform them into material. Intangible resources were clustered under human capital and social capital. In the articles, human capital was considered experience, deep knowledge of the context, specialized knowledge and intrinsic motivation (Carsrud & Brännback, 2011; Gimeno et al., 1997). Social ties, social structure and social skills constitute social capital (Keating et al. 2014; Stam & Elfring, 2008). The entrepreneurs acted with a view to leveraging these three forms of capital to pursue an opportunity. Like contextual antecedents, individual attributes are interdependent.

Tangible resources

In bricolage, the tangible resources required for entrepreneurial action may be in the possession of the entrepreneur, as occurred in the cases of intrapreneurship and innovations in small companies in the sample. These companies began with what was available internally, in other words, raw materials, technologies or processes to incrementally broaden their scope (Beckett, 2016; Carlson-Walls & Kraus, 2015; Halme et al., 2012). In businesses from high-tech sectors, the technology developed by the researchers and the physical resources of universities, such as laboratories and their respective inputs, constituted the resources (Keating et al., 2014; Ritvala et al., 2015). Other technological innovations used existing materials that were adequate for other purposes and adapted them as prototype components (Gurca & Ravishankar, 2016). In digital businesses, technology was also the tangible resource that was available, and the arrangements of resources were characterized as arrangements in the business models and modularization of their proprietary systems (Ernkvist, 2015). Meanwhile, for social businesses and grassroots entrepreneurs, these resources ranged from discarded materials to natural local materials (Di Domenico et al., 2010; Sarkar, 2018; Sarkar & Pansera, 2018). In some situations, the institutional or cultural environment assumed the form of a resource, when entrepreneurs creatively converted their structures into "inputs" to aid their actions (Kang, 2017: Mair & Marti, 2009). In practice, this was shown with the strategic inversion of norms, discourses or widely accepted cultural values in favor of the business (Carlsson-Walls & Kraus, 2015; Kang, 2017).

In effectuation, tangible resources are the existing technologies developed by researchers or correlated resources, like physical resources of universities, that can be accessed by the entrepreneurs' social networks (Gomes et al., 2018; Hannibal et al., 2016; Maine et al., 2015; Reymen et al., 2015). These technologies ranged from algorithms to prototypes, such as microchips, solar panels, chemical analysis processes and many other biotechnological solutions

(Gabrielsson & Gabrielsson, 2013; Hannibal et al., 2016; Maine et al., 2015; Nummela et al., 2014; Reymen et al., 2015).

There are cases in which the entrepreneurs opted to use the garage in their home or turn to family and friends to obtain financial resources, thus avoiding costs that they initially could not afford (Chandra et al., 2015; Jones & Li, 2017; Maine et al., 2015). In internationalization processes, the resources were the existing production structure in the company or part of it. These resources could be complemented by resources from partners overseas, depending on how the process evolved (Galkina & Chetty, 2015; Kalinic et al., 2014). In the cases of product innovations in small companies, there was a creative recombination of processes and there is evidence of aspects of bricolage in effectual action. They used material resources that were available creatively, such as an award at an event, products inherited from an acquisition, production processes, knowledge from other fields or particular aspects of raw materials that could be used in other applications (Berends et al., 2014). During the innovation process, technology companies used resources left over from previous operations, such as source codes (Sitoh et al., 2014).

We also noted the use of ideational resources through effectuation. For example, Fairphone used an ideational resource in the form of an advertising campaign. This resource was initially used to raise awareness in people regarding social crises in the value chain of smartphones (Akemu et al., 2016). Another example is the case of The Last Bag, which reused the idea of an old school bag that was already out of production and created a company based on its relaunch as a fashion accessory (Murdok & Varnes, 2018).

Human Capital

The evidence showed that the entrepreneurs capitalized on their skills, knowledge and previous experience to begin their actions. Human capital was essentially associated with knowledge and skills, professional experience and intrinsic motivation. The bundle of resources

represented by human capital also proved to be useful to gain credibility and support for entrepreneurial actions.

In bricolage, attributes such as deep knowledge of the environment and users and specialized knowledge emerged in the analyzed documents. Specialized knowledge represents information or skills acquired throughout the trajectory of the entrepreneur. It may have been acquired through a previous professional occupation (Azmat et al., 2017; Beckett, 2016; Bhatt & Ahmad, 2017; Bicen & Johnson, 2015; Carlsson-Walls & Kraus, 2015; Ernkvist, 2015; Halme et al., 2012; Sarkar, 2018) or through an academic qualification (Keating et al., 2014). Deep knowledge of the environment and users was especially evident in the cases of social businesses and companies at the bottom of the pyramid, as these entrepreneurs experienced local problems (Di Domenico et al., 2010; Mair & Marti, 2009; Azmat et al., 2015; Sarkar, 2018; Sarkar & Pansera, 2018). However, deep knowledge of the environment was not exclusive to entrepreneurs on the bottom of the pyramid. Many startups also demonstrated deep knowledge of the environment of the user and his needs (Bicen & Johnson, 2015). This kind of knowledge also emerged in cases that required the formation of political opportunities so that a commercial opportunity could be explored, and was configured as a resource that allowed entrepreneurial action in complex institutional environments (Ernkvist, 2015).

Attributes related to intrinsic motivation were essential in all stages of the entrepreneurial process and leveraged all the other forms of capital. The evidence showed that intrinsic motivation led entrepreneurs to act and persist in the entrepreneurial process. It emerged associated with characteristics such as resourcefulness mindset, willingness to learn, flexibility, persistence and willingness to take risks (Azmat et al., 2015; Bicen & Johnson, 2015; Halme et al., 2012; Sarkar, 2018). The immediate resource most used by the entrepreneurs was their own time, very often used for experimentation processes, continuous learning (Carlsson-Wall & Kraus, 2015; Ernkvist, 2015;

Halme et al. 2012; Sarkar, 2018), and in social practices to obtain resources or gain legitimacy (Bhatt & Ahmad, 2017; Carlsson-Wall & Kraus, 2015; Halme et al., 2012; Keating et al. 2014). We noted that in cases involving more than one founder, their knowledge and skills were complementary and their motivations similar (Bicen & Johnson, 2015; Halme et al., 2012: Keating et al., 2014).

In effectuation, characteristics such as previous professional experience and entrepreneurial experience appeared to influence effectuation in diverging ways. Specialized knowledge proved to be relevant, but more intensely with regard to the "creation" of an opportunity and less during the action. Intrinsic motivation and its characteristics such as flexibility, willingness to take risks, willingness to work and strong conviction in ideas were important to effectual action. Previous experience appeared as a combination of professional experience in the industry or in business management and entrepreneurial experience. This previous experience, whether high or low, did not constitute an antecedent for effectuation. Instead, the perception of uncertainty, unavailability of resources and pressure from stakeholders were reported as drivers of action (Jiang & Tornikoski, 2019; Nummela et al., 2014; Reymen et al., 2015). Nevertheless, the more experienced entrepreneurs shifted more rapidly from effectuation to causation (Jiang & Tornikoski, 2019; Nummela et al., 2014).

Many entrepreneurs have highly specialized knowledge because they were professors and researchers, and they also had experience in creating spin-offs. In other cases, they were students or had recently graduated, and their only professional or managerial experience was in training courses they had attended in incubation programs or related events. Irrespective of experience, specialized knowledge was an essential resource for opportunity generation and constituted the resource in hand (Akemu et al., 2015; Chandra et al. 2015, Gomes et al., 2018; Hannibal et al., 2016: Maine et al., 2015). Some entrepreneurs claimed to have deep knowledge of their customers

and their needs (Berends et al, 2014; Corner & Ho, 2010) or they were convinced of their capacity to produce, indicating strong capitalization in their specialized knowledge (Kalinic et al., 2014). There is also evidence of market knowledge or previous international experience making the entrepreneur willing to undertake actions of causation. Some entrepreneurs began with a plan to create and internationalize their companies but remained open to experimentation as the business evolved (Rocha, Simões, Mello, & Carneiro, 2017; Kalinic et al., 2014). Meanwhile, entrepreneurs without international experience or without knowledge of the market immediately launched into experimentation while creating and expanding their businesses (Jones & Li, 2017; Murdock & Varnes, 2018; Rocha et al., 2017).

Factors inherent to intrinsic motivation were more important in learning and experimentation processes and to increase the chances of the business growing (Ciszewska-Mlinaric et al., 2016; Gabrielsson & Gabrielsson, 2013; Sitoh et al., 2014). Among the intrinsic motivation factors, we noted that the entrepreneurs were optimistic and committed to their ideas (Jiang & Tornikoski, 2019; Kalinic et al., 2014) and rejected the possibility of working as a professional in the industry (Hannibal et al., 2016). In some cases, the company was created by two entrepreneurs with complementary human capital, but different motivations. In these cases, the entrepreneur that was less oriented towards the venture left the company (Ciszewska-Mlinaric et al., 2016; Hannibal et al., 2016).

Especially during the internationalization process, the companies valued innovativeness and proactivity, taking risks and showing adaptive capability (Gabrielsson & Gabrielsson, 2013). When the process demanded joint action with partners, this required openness, willingness to share and transparency in their actions (Galkina & Chetty, 2015). However, it was not only in internationalization that flexibility emerged as an important characteristic. Owing to the experimental nature of effectuation, it was necessary to adapt the business in the face of restrictions

or situations of contingency and become more engaged in experimentation (Maine et al., 2015; Murdock & Varnes, 2018). Finally, we noted that some entrepreneurs were inspired by people they admired, family or by cases of success, which was an important stimulus for action through effectuation (Chandra et al., 2015; Jones & Li, 2017; Sitoh et al., 2014). The aspiration of creating social value was the main motivation of social entrepreneurs (Akemu et al., 2016; Corner & Ho, 2010).

Social Capital

The antecedents linked to social capital were important for broadening the resource base (tangible and human capital) and legitimacy of the process, ensuring support and avoiding possible obstacles to action. The entrepreneur's social ties, his position in a social network and his social skills were very important for action through bricolage.

In bricolage, social networks were useful for obtaining resources or additional human capital (Bhatt & Ahmad, 2017; Bicen & Johnson, 2015; Keating et al., 2014). The entrepreneurs seemed to be aware of the dispersion of knowledge among agents and that tacit knowledge, which is highly valuable to the entrepreneurial process, depends on constant interaction between different agents (Bicen & Johnson, 2015). Interaction also enabled learning on shared resources and the establishment of trust required to maintain partnerships (Kwong or Tasavori). Therefore, the geographical proximity between agents proved to be essential, and bricolage appeared to occur locally (Holt & Littlewood, 2017; Halme et al., 2012; Gurca & Ravishankar, 2016). Considering that in many cases action unfolded collectively, some entrepreneurs showed that they had the skill to work in a team (Carlsson-Wall & Kraus, 2015; Di Domenico et al., 2010; Keating et al., 2014; Ritvala et al., 2015).

The position of an entrepreneur within a social structure can leverage resources, and this entrepreneur can use his more diverse social roles to advance his idea (Halme et al., 2012; Ritvala

et al., 2015). Some entrepreneurs showed that they have the skills to use persuasive discursive practices and to shift between roles, using common language and narratives among a very diverse range of groups to obtain resources and legitimacy (Carlsson-Wall & Kraus, 2015; Di Domenico et al., 2010; Ernkvist, 2015; Halme et al., 2012; Kang, 2017; Keating et al., 2014). On the other hand, by depending on the cultural context, the entrepreneur encountered obstacles to his ideas in social ties. As a point in question, we can cite the cultural values and norms that locally influenced possible users of solutions (Sarkar, 2018). Moreover, although partners constitute an opportunity to obtain resources, they can also generate restrictions in the case of dependence on resources (Halme et al., 2012; Kwong et al., 2017). Partnerships can also mean complacency on the part of entrepreneurs, who run the risk of being stuck in networks of practice, which hinders recognition or the development of new opportunities (Keating et al., 2014).

In effectuation, the entrepreneurs' social ties were important for obtaining the seed capital for their businesses (Maine et al., 2015), for attracting human capital or for collaborating to exploit an opportunity involving local stakeholders (Akemu et al., 2016; Corner & Ho, 2010; Gomes et al., 2018; Murdock & Varnes, 2018; Reymen et al., 2015). Nevertheless, in the same way that social ties increased the availability of resources, the entrepreneurs only used effectuation if the restrictions imposed by their partners and the environment were low. This means that, as the business evolved and dependence on a partner increased (for example, the entry of venture capital) or when companies needed to adapt to the regulatory environment, the entrepreneurs altered their behavior to causation and limited the extension of their network to strategic partners (Maine et al., 2015; Reymen et al., 2015).

The most experienced entrepreneurs had a larger network than those with less experience (Chandra et al., 2015; Rocha et al., 2017). In particular, universitary spin-offs emerged in a context of wide social networks and benefitted from the entrepreneur's position within these networks

(Gabrielsson & Gabrielsson, 2013; Hannibal et al., 2016). However, having a previously formed network was not a determining factor for the use of effectuation because even the less experienced entrepreneurs managed to build and leverage them (Jones & Li, 2017; Rocha et al., 2017). This ability to build networks was very important, when immediate social ties lacked partners that were useful in accessing these new markets (Chandra et al., 2015; Kalinic et al., 2014). Furthermore, the networks proved to be dynamic, i.e., partners left, and new partners entered. The dynamism of these unplanned networks increases options for resources but can also mean new restrictions (Chetty et al., 2015). The entrepreneurs highlighted the importance of joint work and the need for constant interaction with partners to build the necessary trust and ensure that the partnership progresses (Galkina & Chetty, 2015). The networks also reduced the liabilities of newness, size and foreignness, as they provided additional resources, without making huge investments (Sitoh et al., 2014). It is very important for companies to have a wide network, but also to have the skills to expand it so as not to create dependence on habitual partners (Chetty et al., 2015; Gabrielsson & Gabrielsson, 2013).

The entrepreneurs invested in these partnerships to a greater or lesser extent and had closer relationships with partners that provided them with greater advantages (Ciszewska-Mlinaric et al., 2016). When entrepreneurs perceived external uncertainty, they made greater efforts to interact with their networks to understand the uncertainty that affected their partners and plan actions to reduce it (Gomes et al., 2018). Thus, they could generate new resources or goals and correct the route that their ventures were following (Jiang & Rüling, 2017). Summing up, the evidence showed that it is not sufficient merely to have networks. The ability to maintain them and build new ones is the aspect of social capital that is most important for effectuation.

DISCUSSION

The aim of this meta-synthesis was to identify the antecedents of bricolage and effectuation through evidence accumulated in the literature on these approaches. We believe that the results of this study will support future research on their boundaries. Having said this, we will proceed with a proposal regarding the relationships between the antecedents and action, highlighting possible points of differentiation.

How do the antecedents influence bricolage and effectuation actions?

In bricolage and effectuation, the entrepreneurial action occurred in an area of intersection between accessible resources, the entrepreneur's ability to operate these resources and the perception of external limitations, most notably uncertainty and scarcity of resources. However, during the analysis of the antecedents, some peculiarities could be seen with regard to each approach. In bricolage, scarcity of resources and institutional complexity appeared to be the dominant contextual antecedents. The scarcity of resources was denoted by the lack of adequate resources for the action. Furthermore, institutional complexity emerged as the resistance of key actors with a view to maintaining the status quo and preserving the interests of the influential elites. This context required action on the part of the entrepreneur to develop political opportunities before or simultaneous with the development of the opportunity. In effectuation, uncertainty, both internal and external, deserved to be highlighted. Internal uncertainty was related to the entrepreneur's doubts regarding his goals and his capacity to achieve them. External uncertainty was characterized as an inadequate response (or negative feedback) from the market or stakeholders concerning the entrepreneurial action. Internal uncertainty prevailed at the beginning of the entrepreneurial action, and was accompanied by external uncertainty in the later phases.

Although the context is characterized as scarce in resources and that the available tangible resources constitute individual attributes, what is clear is that the environment does not provide adequate resources for the action to occur in a planned manner. This makes the scarcity of resources

relative and dependent on other attributes of the entrepreneur, which influenced his perception and triggered actions of experimentation. The same logic was applied to the conditions of external uncertainty and the complexities of the institutional environment in which the trigger for experimentation may have been an inadequate response from the market or pressure from stakeholders, either in the organizational, socio-cultural or regulatory environment. Thus, intangible resources are mobilized to promote arrangements with the available tangible resources.

In bricolage, the action was shaped by the search for a satisfactory to address an opportunity or perceived need. The development of this solution was not oriented by a search for adequate resources to obtain an expected result, but rather for immediately available resources that could have their services transformed to enable the exploitation of the opportunity. Therefore, the entrepreneurs appeared to experiment more with the resources for the development of the solution itself than with the market. As bricolage could involve the creation of political opportunities due to the institutional complexity, these resources could be ideational, which required deep knowledge of the context. In effectuation, the definition of goals seemed to occur during interaction with partners, following the selection of possible effects (that could be related to the ambiguous preferences of the entrepreneur). Therefore, effectuation appeared to involve more experimentation in social relationships and with the market than with the resources themselves. When these effects were not received by the market or stakeholders as expected, the entrepreneur's goals were changed to adapt his business model.

The individual's perception of the context, his resources and capacity to orchestrate them were the trigger for action in bricolage and effectuation. The synthesis of the cases essentially resulted in two dimensions, in which the actions unfolded: the structural dimension, i.e., to obtain and organize resources to enable the exploitation of an opportunity (associated with the scarcity of resources); and the legitimacy dimension, i.e., to reduce cognitive dissonance through sensemaking

(associated with institutional environments and uncertainty). The entrepreneur acted in both dimensions using his social skills in tactics of interaction with the social networks.

Structural Dimension

The mode of acting in bricolage assumes an opening to explore what is known, with a focus on solving a problem or exploiting a perceived opportunity. In the evidence on bricolage, although the entrepreneurs defined a goal, they were not dedicated to planning to achieve it and turned to the action. They were convinced of their capacity to generate a solution, and their ideas were adjusted to an existing demand because they knew the context into which they were venturing very well. Therefore, even without engaging in planning activities, this deep knowledge of the environment and users directed the action. Furthermore, the specialized knowledge allowed the entrepreneur to explore further the services of the resources at his disposal.

The presence of these two types of knowledge seemed to provide the entrepreneur with confidence regarding the feasibility of the opportunity. Thus, when contingencies occurred or when he was faced with obstacles during the development of opportunity, he tended to promote arrangements in the resources rather than adapt his goals (or business models). Therefore, in bricolage the question that guides the action is *"How can I use the resources that I have to achieve my goal?"* This willingness to act was associated with intrinsic motivation, a component of human capital. Uncertainty is less evident in bricolage because the entrepreneur seemed convinced of his capacity to exploit the perceived opportunity and therefore deliberately challenged the limitations. In short, in bricolage, a certain predictability is assumed, although the design occurs at the same time as the actions are executed. This happens because deep knowledge of the context allows the entrepreneur to identify or create opportunities based on real needs rather than personal preferences and advance to the market more quickly.

Remaining on bricolage, as the environment was characterized as resource scarce, the entrepreneur intensively recombined the resources at hand, either those in his possession or others accessible through the network. This recombination was shown to be dependent on specialized knowledge, intensive experimentation and continuous learning processes. In this sense, the entrepreneur's previous knowledge served as a basis for experimentation, as it is through deep knowledge of the repertoire that the bricoleur feels confident about orchestrating resources. During experimentation, learning skills, especially self-taught skills, were important for the entrepreneur to make advances in the development of the opportunity and principally when contingencies occurred.

When action through bricolage required an exchange or collaboration between partners, in addition to working continuously on trust between the parties for exchanges to occur, the entrepreneur needed to familiarize himself with his partners' resources. It should be highlighted that when it came to exploiting resources with partners or for learning, the entrepreneur used a great deal of his own time. Therefore, characteristics such as flexibility, willingness to exchange knowledge and to learn were essential. Interaction with partners occurred more in geographically close networks, demonstrating the need to increase tacit knowledge. It may be for this reason that we did not find as much evidence on bricolage in internationalization processes. In short, the bricoleur depended more on the capabilities provided by his human capital to recombine resources.

Effectuation assumes that there is an opening to explore the possible effects that might be generated through means that the entrepreneur does not have in hand. Specialized knowledge was important for the development of solutions, but factors inherent to intrinsic motivation gained ground during the entrepreneurial action. Deep knowledge of the context appeared not to influence how the entrepreneur acted. Thus, we may suppose that the entrepreneur begins his action with ambiguous goals and cannot accurately predict the market because his human capital is different

from that of entrepreneurs that act through bricolage. In this case, the guiding question is: "What can be done with the means I have in hand?" Therefore, when they use the effectual mode of action, control-oriented actions are prevalent. These actions concentrate on monitoring available resources to minimize the possibility of losing them, and constant feedback from the market or partners to mitigate the risks of experimentation.

To compensate for possible deficiencies in knowledge, the entrepreneur sought a commitment from partners. The commitment of partners increased the means available to the entrepreneur, which included specialized knowledge and knowledge of the context, and allowed the sharing of risks between partners. By interacting with his partners, the entrepreneur can also increase his control over external uncertainty. Constant interaction led to greater trust and was important when it came to defining common objectives between the parties, which in the beginning of the relationship could be ambiguous. Consequently, the entrepreneur increases his resources and options of possible effects, which could become a joint goal and culminate in the co-creation of a business. The literature offers some insight into knowledge deficits acting as motivators to increase personal agency and control actions. Future research could use these studies as a starting point for a deeper analysis of these boundary conditions of effectuation (for more suggestions, see Jiang & Tornikoski, 2019; Welter & Kim, 2018). We noted that the literature on effectuation highlights the entrepreneur's capacity to create new networks or expand existing ones if they are not useful for action. This may have contributed to effectuation becoming a mode of entrepreneurial action that explains internationalization processes. In short, in effectuation, the entrepreneur depended more on the capabilities inherent to his social capital to proceed with the action.

Dimension of legitimacy

In the same way that the evidenced contextual antecedents constitute a backdrop for effectuation and for bricolage, they could also be presented as an obstacle to action. Therefore, in

both effectuation and bricolage, the entrepreneurs acted deliberately to address the limitations that impeded the creation of the desired value.

In the case of bricolage, they made use of widely accepted resources and tools in their respective environments to neutralize limitations and coopt agents. Using these resources, they were able to construct a persuasive discourse. For this, they reused mediating tools or boundary spanning organizations to "translate" the entrepreneurial action to their stakeholders. We noted the use of contradictions, ambiguities and gaps that the institutionally complex environments provided. Here, once again, deep knowledge of the context was an important aid in terms of legitimacy and, when added to specialized knowledge, conveyed a certain formal authority to the entrepreneur.

Persuasion, previously explored in the bricolage literature only in social entrepreneurship contexts, was also manifested in commercial entrepreneurship. Discursive skills were supported by specialized knowledge and knowledge of the context. Persuasive discourses were used to structure the social network and achieve legitimacy. The legitimacy process very often proved to be slow. On these occasions, intrinsic motivation was important in developing the resilience required to continue. Thus, in bricolage, human capital (deep knowledge of the context and specialized knowledge) functioned as a resource, and social capital (social skills) assumed the function of a capability.

In the case of effectuation, the actions of legitimacy appeared to be mainly associated with growing external uncertainty. On these occasions, the entrepreneurs sought to understand the reasons why their actions did not have a positive effect and which uncertainties were affecting the stakeholders. From there, they established actions to solve these problems. Their actions essentially involved increasing interaction with their partners, which favored an exchange of information and broader goals, which accommodated the interests of the parties involved. This interaction led to greater experimentation in the collective environment through a projection of a common future

which, in turn, was important when it came to reducing the perception of risk in the eyes of the stakeholders and making them more willing to share. However, according to the level of dependence on resources, the external pressure from stakeholders and the institutional environment, the entrepreneurs altered their actions to causation, as it permitted the projection of goals and restricted the entrepreneurial action to a space that was relatively protected from the propagation of uncertainty (Gomes et al., 2018; Reymen et al., 2015). Here, once again, it was necessary to leverage the capabilities that stemmed from social capital.

Social network tactics

Whether in the dimension of resources or of legitimacy, the entrepreneurs used their social skills to leverage their ties and, consequently, obtain more resources and support for their actions. In this respect, we did not find sufficient evidence that allowed us to differentiate between bricolage and effectuation. The evidence showed that the entrepreneurs used some interaction tactics in their social networks. These tactics, in practice, involved a form of collective sensemaking to reduce the limitations presented as contextual, but that actually stem from the social structure that supports the action (Weick, 1995). A common tactic was the use of diverse social roles, i.e., the entrepreneurs would expand their action to relational structures that transcended their environment of origin. In short, the entrepreneur used his personal ties (such as family and friends), community ties (such as participation in associations, political agencies and churches) and previous professional ties (former colleagues, companies with which he already had a relationship) to aid the creation of his business. Another common tactic was constant interaction with partners, not only to gain resources, but also specialized and tacit knowledge and their trust. To this end, they made efforts to promote teamwork, with constant interaction and cross collaboration. In this sense, the literature on bricolage was different, showing the importance of geographical proximity between partners to gain tacit knowledge (Gurca & Ravishankar, 2016). Although technology can

aid this process, it is useless if the local issue or problem is not close to the reality of the actors involved (Ritvala et al, 2015).

We also noted that, in both cases, when the entrepreneur did not occupy a privileged position in the network, he made an effort to involve influential actors close to him to make his action legitimate. Creating and maintaining a cohesive network appeared to be a demanding task. In this respect, the literature on bricolage afforded insights into the possible mechanisms of network integration (Ritvala et al., 2015).

FINAL CONSIDERATIONS

We agree with Grégoire and Cherchem (in press) on effectuation being a mode of action that could be part of broader theories on human action. We also believe that integrations, such as those proposed by Ott et al. (2017), would increase the explanatory power of the theories of doing (action) and thinking (cognition), as they are broad enough to include the structures that support entrepreneurial action in economic, social, psychological and strategic environments.

Using meta-synthesis, we have provided an example of how other approaches could be scrutinized, reserving their possible similarities, differences and complementarities. Evidence from meta-synthesis allows the preservation of these peculiarities. Therefore, the first recommendation that we make here is that future studies should be guided by the method used and attempt to discover the antecedents of other approaches. Efforts like these are especially important for the evolution of the field of entrepreneurship, as suggested by Rauch et al. (2014), since the exercise of gathering evidence on accumulated knowledge could be the first step towards solving the fragmentation represented by the lack of consensus regarding the main constructs of the field and their definitions, aggravated by different research strategies.

Developments such as those proposed by Ott et al. (2017) and Towsend et al. (2017) must be considered in future empirical works as a way of considering the variations in problems of

knowledge and the socio-cognitive structures that support them. As we found evidence that specialized and contextual knowledge, intrinsic motivation and certain social skills are factors that influence action, we believe that exploring the relationships between socio-cognitive structures is fundamental to advancing theories that substantiate entrepreneurial decision-making. For this purpose, it is likely that researchers will have to dabble in the origins of the field, notably the disciplines of sociology, psychology and strategy.

In the same way that effectuation and causation are not mutually exclusive, effectuation and bricolage can occur sequentially or simultaneously. Therefore, we suggest that greater efforts should be made involving process studies to advance the boundaries delimitation of the approaches. Studies such as those of Berends et al. (2014), Jiang and Tornikoski (2019) and Reymen et al. (2015), could be replicated, considering the inclusion of bricolage. However, given the influence of the antecedents identified here, we suggest that the coding schemes adopted by these works should be expanded to include our evidence. To operationalize these future studies, bricolage coding schemes like those in Fisher (2012) and Davidsson et al. (2017) could be used. We also recommend that the studies transcend the habitual codification of "experience" hitherto employed, to more elaborate schemes such as the one proposed by Gimeno et al. (1997), as it includes the human capital evidenced here and, partially, social capital and contextual antecedents. Although the study is often used to explain the antecedents of the decisions of the founder to leave a venture or to support studies on business mortality, we believe that it can also explain decisions on undertaking a new venture and complement studies on the birth of these companies. This suggestion could require expanding coding schemes on intrinsic motivation (Carsrud & Brännback, 2011), social capital (Stam & Elfring, 2008) or environmental dynamism (Baron & Tang, 2011; Simerly & Li, 2000).

We recall that there is a suggestion to operationalize bricolage as a second-order construct that includes multiple first-order constructs to provide a better explanation of the role of the capabilities that it requires (Wittel et al., 2017). We believe that this is also applicable to effectuation. Irrespective of our belief that there is sufficient material to conduct quantitative studies to test the differences between the approaches proposed here, qualitative studies will allow the development of a more accurate model regarding the observable variables and support theory.

Limitations

The meta-synthesis is a flexible method that allows different orientations and methodologies to be incorporated into a single study in order to capture its particular variations. We limited our sample to case studies. However, it should be remembered that by selecting a sample, we opted for a size that was manageable due to the large quantity of data that a qualitative study can generate by itself, which could compromise their handling. Furthermore, we opted to consider only published articles to increase the quality of the sample, but assuming the tradeoff of publication bias. This is a choice that is not made without other losses, such as the rich insights provided by theses, dissertations and other unpublished materials. Future studies could consider the inclusion of these unpublished works.

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TABLE 1.
Sample

Bricolage			*Effectuation*		
Article	**Sample**	**Journal**	**Article**	**Sample**	**Journal**
[B1] Di Domenico et al. (2018)	8 Social Enterprises (UK)	Entrepreneurship Theory and Practice	**[E1]** Nummela et al. (2014)	3 Software companies from small open economies (Finland, Ireland and Israel)	Management International Review
[B2] Halme et al. (2012)	2 Inclusive business at Nokia and ABB	Journal of Management Studies	**[E2]** Rocha et al. (2017)	5 borderless firms	Journal of International Entrepreneurship
[B3] Su (2013)	13 IT Suppliers (China)	MIS Quarterly	**[E3]** Ciszewska-Mlinaric et al. (2015)	Audiobooks - Audioteka (Poland)	Journal of East European Management Studies
[B4] Bicen and Johnson (2015)	10 Startups	Creativity and Innovation Management	**[E4]** Gabrielsson and Gabrielsson (2013)	4 High-tech INV (Finland)	Industrial Marketing Management
[B5] Sarkar and Pansera* (2017)	8 Grassroots entrepreneurs (India)	Technological Forecasting and Social Change	**[E5]** Hannibal et al. (2016)	4 spin-offs (Denmark and Ireland)	Journal of International Entrepreneurship
[B6] Sarkar (2018)*	8 Grassroots entrepreneurs (India)	Entrepreneurship & Regional Development	**[E6]** Chandra et al. (2014)	Startup in Biotech - Biovite (Australia)	Asia Pacific Journal of Management
[B7] Tasavori et al. (2018)**	9 Social Enterprises (UK)	Entrepreneurship & Regional Development	**[E7]** Kalinic et al. (2014)	5 manufacturing SME (Italy)	International Business Review
[B8] Kwong et al. (2017)**	9 Social Enterprises (UK)	Entrepreneurship & Regional Development	**[E8]** Chetty et al. (2015)	10 software firms (Finland and New Zealand)	European Journal of Marketing
[B9] Holt and Littlewood (2017)	2 Social Enterprises + 25 informal micro-entrepreneurs (Africa)	Business Strategy and the Environment	**[E9]** Galkina and Chetty (2015)	7 SMEs (Finland)	Management International Review
[B10] Beckett (2016)	7 Food Sector (Australia)	International Journal of Innovation Management	**[E10]** Berends et al. (2013)	5 manufacturing SME (Netherlands)	Journal of Product Innovation

[B11] Azmat et al. (2015)	2 Social Enterprise (India)	Journal of Public Policy & Marketing	**[E11]** Sitoh et al. (2014)	Game developer - Fuzzyeyes (onde)	IEEE Transactions on Engineering Management
[B12] Ritvala et al. (2015)	Cross sector partnership (Baltic Sea)	International Business Review	**[E12]** Jones and Li (2017)	Family Internet-based business - Jazooli (UK)	Entrepreneurship & Regional Development
[B13] Keating et al. (2014)	Startup (Biotech) - Levodex (Finland)	Entrepreneurship Theory and Practice	**[E14]** Murdock and Varnes (2018)	Fashion Manufacturer - The Last Bag (Denmark)	International Journal of Entrepreneurial Behavior & Research
[B14] Bhatt and Ahmad (2017)	1 Social Enterprise (Avishaankar) + 3 grassroots entrepreneurs (India)	Entrepreneurship & Regional Development	**[E15]** Jiang and Tornikoski (2018) ***	4 new technology-based (China)	Entrepreneurship Theory and Practice
[B15] Kang (2017)	Urban Entrepreneurship - BDK (UK)	Entrepreneurship & Regional Development	[**E16]** Jiang and Ruling (2017) ***	6 new technology-based (China)	Journal of Business Venturing
[B16] Gurca and Ravishankar (2016)	Electrical Vehicles - Mahindra Reva (India)	IEEE Transactions on Engineering Management	**[E17]** Reymen et al. (2015)	9 technology-based company (Eindhoven-Leuven-Aachen triangle)	Strategic Entrepreneurship journal
[B17] Ernkvist (2015)	Fintech - OM (Sweden)	Technological Forecasting and Social Change	**[E18]** Gomes et al. (2018)	7 startups (high-tech)	Technological Forecasting and Social Change
[B18] Carlsson-Wall and Kraus (2015)	Aerospace industry - Aircomp	Industrial Marketing Management	**[E19]** Corner and Ho (2010)	Social enterprise - TraidAid (New Zealand)	Entrepreneurship Theory and Practice
[**B19]** Mair and Marti (2009)	Social enterprise - BRAC (UK)	Journal of Business Venturing	**[E20]** Akemu et al. (2016)	Social enterprise - Fairphone (Netherlands)	Journal of Management Studies

Note. (*) (**) (***) sample overlap

TABLE 2
Effect sizes – *Bricolage*

	Finding		Effect size
Contextual Antecedents	**Scarcity of resources**	[B11; B10; B14; B4; B18; B1; B17; B16; B2; B9; B15; B13; B19; B12; B6*; B5*; B3; B7**]	**95%**
	Institutional complexity		**64%**
	(a) institutional complexity as a contextual antecedent	[B14; B18; B1; B2; B15; B13; B19; B12; B5*; B7**]	53%
	(b) institutional complexity as a barrier	[B16; B17]	11%
Individual Attributes	**Uncertainty**	[B11; B18; B17; B2; B13; B8**; B12; B7**)	**33%**
	Tangible resources	[B11; B12; B14; B4; B18; B17; B16; B2; B9; B13; B8**; B19; B12; B6*; B5*; B3; B7**]	**100%**
	Specialized knowledge	[B11; B12; B15; B4; B18; B17; B16; B2; B9; B13; B8**; B19; B12; B6*; B5*; B3; B7**]	**88%**
	Deep knowledge of the context	[B11; B10; B14; B4; B18; B1; B17; B2; B9; B15; B13; B19; B12; B6*; B5*; B3; B7**]	**88%**
	Professional experience	[B10; B14; B4; B18; B17; B16; B2; B13; B19; B12; B6*; B5*; B7**]	**67%**
	Entrepreneurial experience		**27%**
	(a) previous experience with businesses favored bricolage	[B10; B19; B12]	16%
	(b) previous experience with businesses was indifferent with regard to bricolage	[B14; B13]	11%
	Intrinsic motivation	[B11; B14; B4; B18; B1; B16; B2; B9; B15; B13; B19; B12; B6*; B5*; B7**]	**78%**
	Ties		**94%**
	(a) social ties favor action through bricolage	[B11; B10; B14; B4; B18; B1; B17; B16; B2; B9; B15; B13; B8**; B19; B12; B3; B7**]	89%
	(b) social ties provided a barrier	[B6*]	5%
	Social Skills	[B11; B14; B18; B1; B2; B9; B15; B13; B19; B12]	**53%**

Note. (*) (**) sample overlap

Table 3.
Effect Sizes - *Effectuation*

	Finding		Effect size
Contextual Antecedents	**Scarcity of resources**		**60%**
	(a) scarcity of resources motivated action through effectuation	[E20; E10; E1; E19; E4; E7; E14; E17]	40%
	(a) scarcity of resources was indifferent with regard to effectuation	[E6; E18; E13; E11]	20%
	External uncertainty		**53%**
	(a) external uncertainty was an antecedent that influenced effectuation	[E6; E5; E7; E16*; E15*; E17]	42%
	(b) external uncertainty was indifferent or constituted a barrier to effectuation	[E18; E13]	10%
	Internal uncertainty		**42%**
	(a) internal uncertainty was an antecedent that influenced effectuation	[E6; E3; E18; E16*; E15*; E13; E1; E17]	37%

Individual Attributes	(b) internal uncertainty was indifferent or constituted a barrier to effectuation	[E7]	5%
	Tangible resources	[E10; E6; E19; E4; E5; E12; E7; E13; E14; E1; E17; E11]	**60%**
	Specialized knowledge		**68%**
	(a) specialized knowledge favored effectual action	[E20; E10; E3; E19; E1; E4; E5; E7; E11]	45%
	(b) specialized knowledge was indifferent with regard to effectual action	[E6; E15*; E14; E17; E2]	25%
	Knowledge of the context		**60%**
	(a) knowledge of the context favored effectual action	[E10; E19; E5; E11]	20%
	(b) knowledge of the context was indifferent with regard to entrepreneurial action	[E20; E6; E15*; E7; E14; E1; E17; E2)	40%
	Professional experience		**60%**
	(a) professional experience was important with regard to effectuation	[E20; E6; E3; E19; E12; E11]	30%
	(b) professional experience was indifferent with regard to effectuation	[E15*; E7; E14; E17; E2]	30%
	Entrepreneurial experience		**45%**
	(a) previous entrepreneurial experience was important with regard to effectuation	[E6; E3; E19]	15%
	(b) previous entrepreneurial experience was indifferent with regard to effectuation	[E1; E2; E24; E15*; E17; E20]	30%
	Intrinsic motivation	[E20; E6; E3; E19; E4; E5; E9; E12; E14; E2; E11]	**55%**
	Ties		**80%**
	(a) the ties favored effectual action	[E20; E6; E8; E9; E3; E19; E4; E5; E13; E14; E17; E2; E11]	65%
	(b) the social ties were indifferent with regard to effectual action	[E18; E12; E7]	
	Social skills	[E20; E3; E6; E8; E19; E4; E9; E18; E5; E13; E14; E2; E11]	**65%**

Note. (*) sample overlap

FIGURE 1.
Data Structure – *Bricolage*

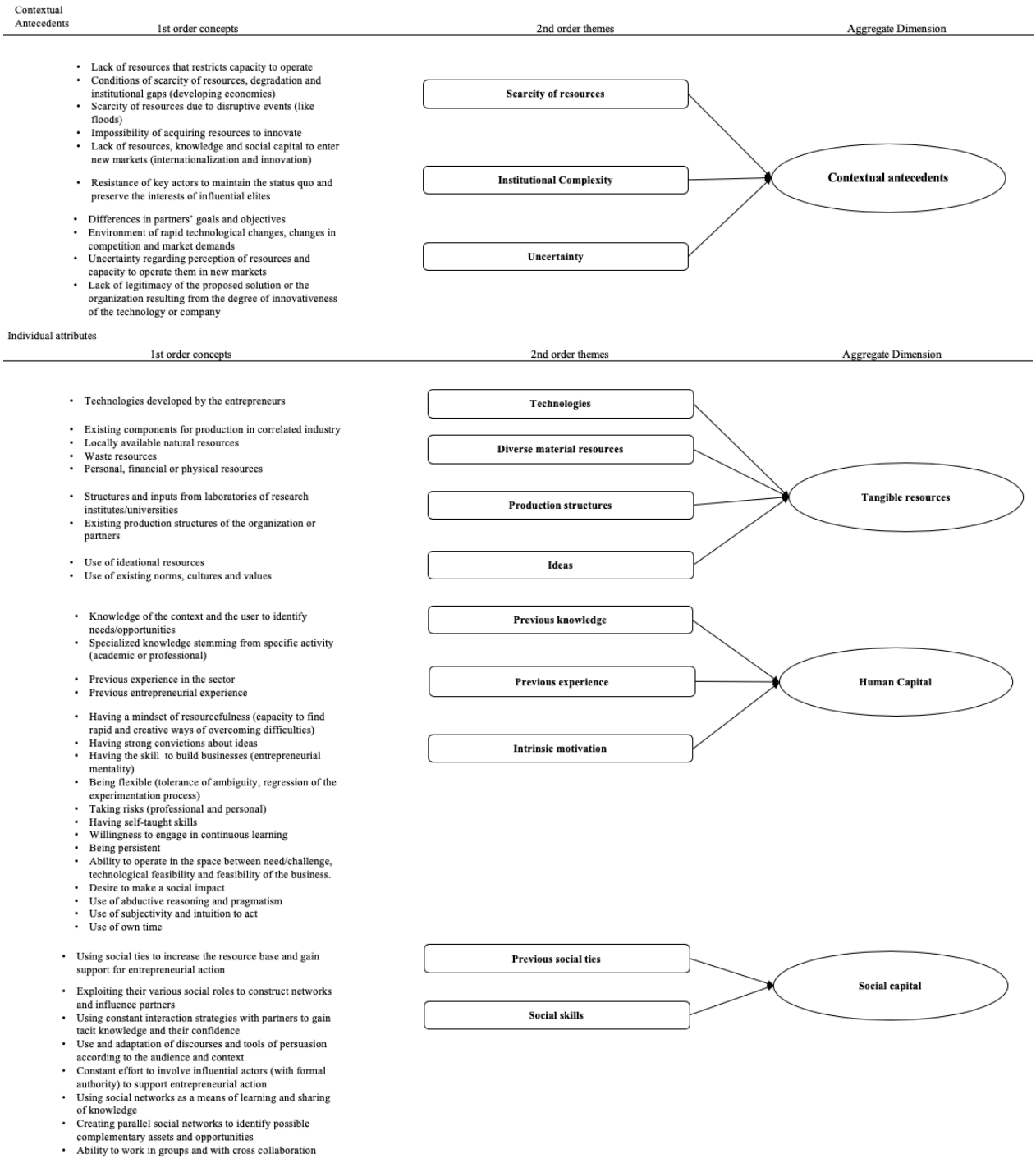

FIGURE 2.
Data Structure – *Effectuation*