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COMPETENCE OR CONTEXT?
EXPLORING THE RELATIONSHIP OF EXPERTISE, UNCERTAINTY AND EFFECTUAL BEHAVIOR

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COMPETENCE OR CONTEXT? EXPLORING THE RELATIONSHIP OF EXPERTISE, UNCERTAINTY AND EFFECTUAL BEHAVIOR

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ABSTRACT

Effectuation is developed as a theory about how expert entrepreneurs make decisions in situations characterized with uncertainty. While the theory has gained prominence, the relationship between expertise, uncertainty and effectuation has not been critically examined. This paper addresses this gap and challenges the assumption that effectuation is mainly a behavior experts undertake under uncertainty through empirical testing. Contradictory to theoretical predictions, we find that expert entrepreneurs more often use causation, while novice entrepreneurs rely more on effectual principles. As expected, effectuation is used by entrepreneurs perceiving uncertainty. As expert entrepreneurs perceive less uncertainty, they are also less likely to use effectuation.

INTRODUCTION

The concept of effectuation (Sarasvathy, 2001) has gained prominence within the entrepreneurship domain and is increasingly influencing theory development and empirical research (Arend et al., 2015). A key argument is that effectuation is a decision-making approach used by expert entrepreneurs under situations of uncertainty (Sarasvathy, 2008; Dew et al. 2009). This paper argues that the relationship between expertise, uncertainty and effectuation is unclear, and potentially not as straightforward as the effectuation literature suggests. The purpose of the paper is to explore this issue empirically with data from founders in new firms with varying levels and types of expertise, as well as varying perceptions of uncertainty, as suggested in a recent review of effectuation theorizing (Arend et al, 2015). To this end, we build on expertise literature in addition to literature on effectuation. Expertise relates to being ‘outstanding’ within a domain (Ericsson & Smith, 1991) and is defined as special skills or knowledge developed from extensive experience within the subdomain (Farrington-Darby & Wilson, 2006). Hence, expertise is acquired from experience, but experience does not always lead to expertise.

In the context of entrepreneurship and effectuation, a variety of assumptions has been made about experts and novices. Read and Sarasvathy (2005) argue that experienced and expert entrepreneurs differ in behavior. Experienced entrepreneurs may rely too mechanically on prior experiences, become overconfident and blinded for new information. Experts, on the other hand, have developed an organized body of conceptual and procedural knowledge that can be readily accessed and used, enabling them to adapt their knowledge to new situations within the same domain (Chi, et al. 2014). Further, while novice entrepreneurs may use effectual approaches, their preference for effectuation is expected to increase over time, as they become experts in the process (Read & Sarasvathy, 2005). However, empirical support for this theoretical chain of relationships is scarce. Although numerous studies have found domain-specific
experience to be related to the entrepreneurial process (Alvarez and Barney, 2007), hardly any studies empirically examine how effectuation relates to expertise.

We examine the proposition that effectual behavior is developed through entrepreneurial expertise as an accumulation of entrepreneurial experiences. Further, we challenge this assumption and suggest alternative relationships between expertise and effectuation. In this argument, we also bring in the concept of uncertainty. Uncertainty has been defined as the suitable problem space for effectuation (Sarasvathy, 2008; Chandler et al. 2011, Brettel et al., 2012). Other studies have found that entrepreneurial expertise moderates the relationship between uncertainty and action (McKelvie et al, 2011). Although uncertainty is supposed to take a central role in effectuation literature, the theorizing about the relationship between expertise and uncertainty for effectual behavior remains underdeveloped (Arend et al., 2015). Following up on this, we examine the joint effects of expertise and uncertainty on effectual behavior.

This study contributes to the development of effectuation theorizing by putting forth testable and partly contrasting theoretical relationships concerning how expertise and uncertainty may be related to effectual behavior. In sum, this study poses two questions: 1) What is role of expertise on effectual behavior? 2) What are the interactions of uncertainty with expertise on the relationship with effectual behavior?

THEORETICAL FRAMEWORK

Expertise has been studied within decision-making and within cognitive science (Shanteau, 1992). Decision-making studies examined whether experts are better decision-makers than novices are, mostly finding that experts are no better at judgements and predictions than novices, that they did not make use of larger amounts of information or more advanced decision models. A common explanation were that experts rely on heuristics with systematic biases. On the other hand, cognitive science research portrayed experts as superior to novices in cognitive functioning. Expertise is seen as domain specific, as something gradually developing through learning through deliberate practice (Ericsson, 2003; 2006). Experts are assumed to have different thinking strategies and more automated thinking compared to novices.

Experts develop and use a variety of decision strategies to systematize decision-making and overcome cognitive limitations. It has been suggested that expertise is particularly valuable related to certain types of tasks. Early studies found experts are good at making judgements in situations that are static, with high predictability, when feedback is available, objective analysis is available, etc. In this perspective, an expert was seen as being able to discriminate between cases in a consistent fashion and to make the right judgements based on available information (Shanteau & Weiss, 2014). However, later studies have argued that expertise cannot be explained as rule-based, and that intuitive judgement is the essence of expertise (Dreyfus & Dreyfus, 2005). It is argued that expertise is essentially based on the making of immediate, unreflective situational responses. An expert knows how to perform the appropriate action without calculating and comparing alternatives, and behave intuitively without such calculation (Dreyfus & Dreyfus, 2005). Consequently, experts may be expected more successfully to use intuition in their decision-making.

Previous studies of entrepreneurial expertise typically uses experience as a proxy for expertise (e.g. Reuber & Fischer, 1994). Expertise is developed through learning from experience. However, while most professionals reach a stable, average level of proficiency, some continue to improve and eventually reach the highest levels of mastery within the domain (Ericsson, 2006), i.e. becomes experts. Hence, while expertise requires experience, experience does not always lead to expertise. Consequently, when studying the implications of expertise, one should make sure that it is really expertise, not experience, which is
measured. Further, Ericsson (2006) suggests that some types of experience, such as in routine work, may not lead to further improvement, and that further improvement depend on deliberate efforts to change and improve performance. Recently, the role of deliberate practice for the development of expertise has been acknowledged (Ericsson 2006).

Entrepreneurial expertise is generally assumed to result from previous venture start-up experience (MacMillan, 1986; Reuber & Fischer, 1994; Sarasvathy et al., 2013). Expert entrepreneurs have developed cognitive frames that “facilitate the encoding and selective access of representative information, abstract representation and retrieval of relevant information (Baron 1998; Feltovich et al. 2006; Forbes 1999)” (Sarasvathy, et al., 2013, p. 422). Further, they have developed an entrepreneurial mindset, allowing them not only to rely on acquired knowledge, but also on developed attitudes towards entrepreneurial activities (McGrath & MacMillan, 2000). Although entrepreneurial expertise is generally seen as improving the performance as entrepreneur, it has also been noted that expertise also may be related to liabilities (Starr & Bygrave, 1991; Rerup, 2005; Alsos, 2007). Expertise can constrain thinking “out of the box” as acquired heuristics, routines and networks may hinder taking the right decision in the case of unexpected events. Consequently, expertise does not always lead to better performance.

**Expertise and effectuation**

Expertise research is at the origin of the effectuation model. When Sarasvathy decided to pursue a study of entrepreneurial expertise, she was working in the research environment of cognitive psychologist Herbert Simon. Simon had built up an expertise in expertise studies, such as research looking into the expertise of chess players. Sarasvathy explained expertise as following:

“Expertise consists in tacit as well as learnable and teachable aspects of experience that are related to high performance in specific domains. Instead of taking either traits or circumstances as inputs and trying to explain variance in performance, the expertise lens focuses on understanding commonalities across a variety of experts in a single domain, given high levels of performance. In keeping with the literature, I define an expert as "someone who has attained a high level of performance in the domain as a result of years of experience" (Foley & Hart, 1992) and deliberate practice (Ericsson, Krampe, & Tesch-Römer, 1993a)” (Sarasvathy, 2008).

In setting up her expertise study Sarasvathy identified 27 serial entrepreneurs with a track-record of many entrepreneurial projects and at least one big success, which represented her operationalization of expert status. These entrepreneurs were asked to think about the commercialization of a computer game on entrepreneurship called “Venturing”. Instead of writing about their ideas, the participants were asked to voice their thoughts in real time and to allow recording. The resulting think-aloud protocols were supposed to limit self-censoring in line with a social desirability bias and allow the extraction of a purer form of expertise elements.

More recently, two discussions have come up around effectuation as expertise: 1) Does effectuation really distinguish experts from novices (expertise status)? 2) What is actually at the heart of the entrepreneurial expertise called “effectuation” (expertise type)? Criticism on the expertise status largely revolved around the control group. The initial paper (Sarasvathy, 2001) did not include any reports about a control group. In fact, subsequent papers who offered the group comparison (Dew et al., 2009) actually reported that the data on the control group was gathered only after the data on the experts were gathered (Allen, 2003, according to Sarasvathy, 2008, p. 49). Baron (2009) criticizes this approach, claiming the problem to be a “post-test only design with non-equivalent groups” (p. 310). With regard to expertise type, it can be noted that the task of the experimental thought experiment (commercializing a computer
program) can be discussed with regard to what kind of expertise it was able to capture. As this study is specifically interested in disentangling expertise and uncertainty, we pay specific attention to the notion of uncertainty coping as part of this expertise. Sarasvathy and Dew (2005) state in this context:

"Entrepreneurial expertise offers us, as the Galapagos Archipelago did for Darwin, an exceptional setting for understanding how human beings act in the face of mounting uncertainties and lurking ambiguities. Our aim in this paper is to put some legs under March's evocative conceptualization of the technology of foolishness, and maybe even to bring to the table a whiff of its relationship to literature and philosophy" (p. 386).

Although the serial entrepreneurs will have differed in terms of their individual relationship to computer games, it can be said that objectively the task does not seem to portray an extreme case of uncertainty. On the other hand, one could look at the task as being reasonably unspecified so that a goal-finding expertise may be at the heart of the expertise.

Expertise, effectuation and uncertainty

The theory of effectuation suggest that effectuation is expert behavior under uncertainty. The relationship between uncertainty and effectuation has been previously studied and often found to be related to the use of effectual principles (Alsos, et al. 2014; Chandler, et al., 2011; Gabrielsson & Politis, 2011). However, these studies do not specifically deal with experts. Hence, the findings indicate that effectuation is often used when the entrepreneurs experience high levels of uncertainty, regardless of the previous experience and knowledge of the entrepreneur.

In her 2001 article, Sarasvathy introduced effectuation and its principles to the wider the wider management community. The article contains two well-known thought experiments, one artificial start-up story (i.e. Curry in a Hurry), and one real start-up story (i.e. U-Haul). Both thought experiments were used to illustrate effectuation and its principles as an alternative to causation. Interestingly, the entrepreneurial expertise of the two founders in these two thought experiments are not explicitly mentioned. Quite on the contrary, the image of a rather in-experienced and (financially) resource scarce entrepreneur is conveyed in both examples. Thus, while the two thought experiments illustrate effectuation and its principals well, they can also be used to challenge the expert-based notion of current effectuation theorizing as the expertise of the two entrepreneurs in the thought experiments were not explicitly addressed. Moreover, if something about expertise can be interpreted out from the two thought experiments, then this suggests that while both founders are non-experts they could nevertheless pursue effectuation as an approach to business creation.

METHOD

Data for this study is gathered from newly established firms in Norway. All limited liability companies registered as new firms in the formal Norwegian Business Register in 2015 were used as the sampling frame, hence including entrepreneurs that registered a firm about one year prior to data collection. The register provides contact information to the firm and name of CEO, including e-mail addresses, in addition to characteristics of the firm (e.g. location, industry, financial information). A web-based questionnaire including measures on different types of experience of the lead entrepreneur, his/her entrepreneurial behaviour (i.e. causation and effectuation) as well as control variables, was administered through e-mail. Effectual and causational behaviour was measured using a newly developed and validated scale (Alsos, et al., 2014). Different measures of expertise were obtained from the prior literature (McKelvie et al, 2011; Smith et al, 2009), and a measure of intuition was obtained from Tang et al (2012). Control variables were sourced from the literature, particularly related to the experience of the founders.
Factor analysis (principal components) and Cronbach alpha were used to examine the reliability and dimensionality of latent concepts. Discriminant validity of concepts were also examined using factor analysis. A methodological issue in our research is that data is collected from a single respondent. Such practices may give raise to common method bias problems. However, it is argued that a multiple respondent approach is sometimes impossible to obtain in the case of new ventures, and may not even be necessary since the small scale of new organizations suggest that the strategies and behaviors of the lead entrepreneur reflect those of the firm (Delmar & Shane, 2003). Moreover, our interest lies in examining issues (perceived uncertainty, expertise, causation/effectuation) central to the focal entrepreneur and where external raters may have little – or no – information about. However, we implemented the so-called Harman's single factor test for common method variance. Results from the Harman's factor test came out favorably: Many factors were extracted and the first factor accounted for only a smaller part of the explained variance. Thus, the analysis suggests that common method bias is not a central methodological concern in our study.

A closer inspection of the correlations between key constructs in our analysis shows that (a) causation and effectuation is negatively and significantly related to each other (persons correlation coefficient of -0.3), (b) that there is a strong positive correlation between effectuation and perceived uncertainty (correlation of 0.5) and (c) that causation has a negative and significant correlation with uncertainty (-0.2). Hence, the correlations between the key concepts in our study is in line with current effectuation theorizing. What is unclear in effectuation theorizing is how expertise is related to these concepts, and issue we examine using regression analyses.

RESULTS

Several regression analysis (OLS) were run to analyze relationships between expertise, uncertainty and effectuation/causation. Results from these analyses show that there is a negative and significant relationship between expertise and effectuation and that expertise has a negative and significant influence on uncertainty. These results hold for different measures of expertise, i.e. the measure from McKelvie et al (2011) and from Smith et al (2009). Contrary to the original and subsequent theorizing of effectuation by Sarasvathy and colleagues (e.g. Sarasvathy, 2001; Read & Sarasvathy, 2005), we find a negative relationship between (a) expertise and effectuation and (b) expertise and uncertainty. Simply put, expert entrepreneurs in our sample perceive less uncertainty and are more likely to pursue causation. While Sarasvathy and colleagues has not elaborated to the same extent on the relationship between expertise and causation, our analysis shows that measures of expertise has a positive and significant relationship with causation (also when controlling for uncertainty). These findings are clearly at odds with recent theorizing on effectuation.

However, since authors have suggested that intuition may be an aspect of expertise, a latent variable measuring this was also entered into our analyses obtained from Tang et al (2012). Our regression analysis reveal that intuition has a strong and positive relationship with both effectuation and uncertainty (also when controlling for expertise).

The correlation matrix, but also the regression analyzes shows that some of the employed control variables are related to effectuation/causation and uncertainty. In general, we find that (a) measures of experience have a positive relationship with measures of expertise, (b) measures of experience has a positive relationship with causation and a negative relationship with uncertainty, (c) while measures of experience has a negative influence on effectuation.
DISCUSSION AND IMPLICATIONS

Results from our analysis as a whole reveal empirical patterns between expertise, uncertainty and effectual behavior that are largely inconsistent with current theoretical predictions. Contradictory to previous theoretical predictions, our findings indicate that effectuation is an approach more often taken by novices rather than experts, and that experts tend to take a causal approach. This finding supports Baron (2009) who suggest that deliberate practice and expertise are more closely related to causation. Moreover, findings from this study indicate that perceptions of uncertainty related to entrepreneurship are reduced by entrepreneurial expertise, suggesting that expert entrepreneurs use their expertise to evaluate the situations and hence control uncertainty. This partly explains why expert entrepreneurs may not always turn to effectual behavior. However, regardless of uncertainty levels, expert entrepreneurs are more likely to use causation while novices seem to be more inclined to adopt effectual principles. We conclude that the relationship between uncertainty, expertise and effectuation is more complex than previously discussed.

Furthermore, there seems to be a need to unpack the concept of entrepreneurial expertise, analyzing how different types of experience relate differently to perceived uncertainty and effectual behavior. One important issue in this regard is to theorize and analyze how intuition relates to entrepreneurial expertise and effectuation. Results from our analysis suggests that effectuation behavior is more related to intuition based notions of how entrepreneurs think, and that the current expert based notion of entrepreneurship that lie underneath current effectuation theorizing may be erroneous. If this is the case, it may have important implications not only for theorizing, but also for practice. Disconnecting expertise from effectuation may vastly increase the applicability of effectuation as an approach to business creation for founders. Since most entrepreneurs are novices, and not experts, current theorizing on effectuation and its practical implications may be of less relevance for them. However, if effectuation is disconnected from expertise, this changes. Further, such disconnecting will require further development of theorizing on effectuation, which is a great opportunity for both past effectuation scholars but also for current scholars that have been skeptical to effectuation theorizing in its current form (e.g. Arend et al., 2015).

This study has revealed some relationships that are hitherto limitedly discussed in the literature. Further research is needed to confirm our findings and to explore in more detail the processes leading to the development of effectual and causal behaviors. Moreover, this study has only examined the tendency to use effectuation and causation during business start-ups, and has nothing to say about the success of such behaviors. Although expert entrepreneurs are less likely to use effectuation, they may still be better able to succeed with effectual principles compared to novices due to their expertise. Likewise, although novices has a tendency to use effectuation, it might be that they would benefit from adopting a more causal approach. Future research should look into the outcomes of effectuation and causation, and their relationship with expertise and uncertainty.

Our ambition in this paper has been to further develop theorizing on effectuation by pointing to some potentially unresolved issues between expertise, uncertainty and effectual behavior, and provide some ideas for how they may be interlinked. The study also has important implications for practice as it further delineates the potential and boundaries of teaching the elements of an entrepreneurial expertise in combination with assessments of the contextual factors of a given task.

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