Master Thesis

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Fear the unknown or embrace the uncertainty? A German study on the entrepreneurial approaches of effectuation and causation.

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Preface

Writing this Master Thesis has enabled me to learn and develop several skills, not only with regards to gaining a better understanding of the research problem at hand, analyzing and developing my own research framework, but also to understand the practical aspects revolving around entrepreneurship. During these difficult times, I have come to understand the relevance of theoretical insights and how they can contribute to more successful ventures, more now than ever. Through the data collection process that took over 4 months, I have gotten to know many entrepreneurs as well as organizations that facilitate the starting of new ventures and was able to expand my knowledge surrounding the topic of entrepreneurship.

I would like to thank my supervisor Dr. M.R. Stienstra for the helpful feedback and supervision throughout the process. Your feedback always enabled me to critically think about and develop this thesis further than I originally expected. Secondly, I would like to thank Drs. Patrick Bliek for his feedback which helped me to further improve this paper. Lastly, I would like to thank all entrepreneurs that participated in this study and allowed me to collect this dataset.

Steffen Hillmer,
Enschede, September 29th ,2020

Abstract

This study examines the effect of the intolerance of uncertainty and entrepreneurial passion on the decision-making processes of entrepreneurs. These processes revolve around the entrepreneurial approaches of effectuation and causation and deal with either a reliance on a set of large number of means with a desired outcome, or a limited amount of means without a clear business plan. Data were collected through an online questionnaire and included a total of 81 German entrepreneurs. Results show that both prospective and inhibitory anxiety affect the effectuation approach. For entrepreneurial passion, neither the passion for inventing, developing, nor founding predict an effectuation or causation approach, indicating that entrepreneurial passion does not affect the decision-making logics of entrepreneurs. The passion for inventing was however found to moderate the relationship between prospective and inhibitory anxiety and the causation approach. This study contributes to existing entrepreneurial literature and provides novel insights into the role of entrepreneurial passion in the context of effectuation. Future research should include a more distributed sample to account for regional differences and increase the generalizability for German entrepreneurs.

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1. Introduction

The consultant agency Ernst & Young revealed that the total investments in German startups after the third quartile in 2019 have exceeded almost 5 billion euros, already surpassing the level of the entire previous year (Lennartz, 2019). Despite the current economic downturn, investments in the third quartile more than doubled in comparison to the precedent year. The rising of investments can be attributed to not only the increase of the amount of money invested in each startup, but also to the expansion of the number of startup founders in Germany by more than 25%, from 3763 founders in 2018 to 4707 in 2019 (Kollmann, Hensellek, Jung & Kleine-Stegemann, 2018; Kollmann, Hensellek, Jung & Kleine-Stegemann, 2019). The continuous numerical rise of entrepreneurs and startups in recent years have led many scholars to further devote attention to the investigation of the processes surrounding entrepreneurship, which can be witnessed in the rapid growth of the number of articles published in academic journals (Bock, Huber & Jarchow, 2018). As competitiveness is sharply increasing and the complexity of academic research in the field of entrepreneurship is rising, founders need to select the right strategy for a successful launch of their new venture (Teece, 2010). In light of the competitive landscape for startups, entrepreneurs need to choose the strategy that fits both their personality as an entrepreneur, as well as possible future contingencies, level of (market) uncertainty and aspired goals (Arend, Sarooghi & Burkemper, 2015).

This given challenge formed the basis for researchers to investigate the differences between the value of having a business plan prior to starting a new venture, known as the planning school, over a reliance on learning, flexibility and the controlling of resources, known as the learning school (Brinckmann, Grichnik & Kapsa, 2008). The study by Brinckmann et al. (2008) conducted entrepreneurship research to find out about the relationship between planning and performance, as well as possible influencing factors to shine light on this ambiguous debate. Findings indicate the importance for small firms to rely on a business plan by showing a positive relationship between business planning and venture performance (Brinckmann et al., 2008). However, different factors such as uncertainty and passion were found to influence this relationship, also indicating the importance of aspects from the learning school.

2. Research Gap

One of the most contradicting and debated literature in entrepreneurship with regards to entrepreneurial strategy revolves around the theory of effectuation. The influential paper of Sarasvathy (2001) discriminates between the processes of causation and effectuation, defining them as follows: "*Causation processes take a particular effect as given and focus on selecting between means to create that effect. Effectuation processes take a set of means as given and focus on selecting between possible effects that can be created with that set of means*" (Sarasvathy, 2001, p.245). Although the notions of effectuation in entrepreneurship presented in their paper have been influential for research in this field, not all scholars view the theory of effectuation as a feasible alternative to other entrepreneurial theories that describe entrepreneurial action. Due to the complexity and controversy among academics with regards to the effectiveness and the value of the effectuation, Arend et al. (2015) formally assessed the effectuation theory and provides an overview of the strengths and weaknesses of Saravathy's proposed theory. According to their article, effectuation is still lacking substantial developmental work in order to become a "*solid theory*" (Arend et al., 2015, p.644). Among other recommendations for future research, Arend et al. (2015) mention the need to identify behavioral fundamentals that drive the entrepreneurial decision-making process to move from Saravathy's explanation of what entrepreneurs do towards why and how they act in an uncertain environment. Especially variables, which they refer to as antecedents, that influence the effectuation decision-making processes remain "*underspecified*" (Arend, 2015, p.644). Given the proposed alterations by Arend (2015) of Sarasvathy's model, the context of effectuation remains unclear.

Forming the basis of the effectuation theory of Sarasvathy (2001), uncertainty has long played a major role in the context of entrepreneurship. Despite other extensive literature on uncertainty in entrepreneurship such as Liesch, Welch and Buckley (2014); Kurlov and Khairullin (2015); or Heavey and Simsek (2013), little research has yet been carried out that focuses on the individual entrepreneur and how personal uncertainty plays a role in this regard. McKelvie, Haynie and Gustavsson (2011) identified that the ways in which uncertainty has an influence on entrepreneurs' behavior is ambiguous. This ambiguity calls for a different research aspect of uncertainty. For now, most research has been focused on factors such as the uncertainty of the environment, rather than characteristics regarding entrepreneurs themselves. Moving from a

perspective of market uncertainty to the domain of psychology, the intolerance of uncertainty deals with the person facing uncertainty, putting a higher emphasis on entrepreneurs themselves. Carleton, Norton and Asmundson (2007) define the intolerance of uncertainty as "*the tendency of an individual to consider the possibility of a negative event occurring unacceptable, irrespective of the probability of occurrence*" (Carleton et. al, 2007, p.105). Research carried out by Dugas et al. (2005) studied the intolerance of uncertainty and found that people with high scores on intolerance of uncertainty are more concerned about ambiguous situations, indicating its' influence on the decision-making processes when starting a new venture. However, still to this date research lacks a substantial amount of information that would allow for a detailed explanation of the scope and influence of uncertainty in this context.

2.1 Entrepreneurial passion as a key moderator

A large amount of academic literature on entrepreneurship argues the importance of entrepreneurial passion (Warnick, Murnieks, McMullen & Brooks, 2018; Gielnik, Spitzmuller, Schmitt, Klemann & Frese, 2015), both for the success of the venture creation processes as well as for the entrepreneurs themselves as an emotional resource to cope with entrepreneurial challenges (Mueller, Wolfe & Syed, 2017; Cardon, Wincent, Singh & Drnovsek, 2009). Entrepreneurship scholars have found passion to be an important motivator for entrepreneurs (Bhansing, Hitters & Wijngaarden, 2018), to have a significant impact on the recognition and exploitation of business opportunities (Cardon, Gregoire, Stevens & Patel, 2013), as well as having an influence on the choice of their decision-making logics (Stroe et al., 2018).

Given this relevance and central role of entrepreneurial passion, it is interesting that entrepreneurship theory has yet to investigate the role of entrepreneurial passion in a more detailed manner. So far, research investigating the effects of passion has been scarce and passion is oftentimes only referred to in future research recommendations. For example, the literature review of Grégoire and Cherchem (2019) revolving around effectuation research encourages researchers to provide more thorough explanations for effectuation. Despite the call for a more detailed-oriented research approach, factors that may influence the decision-making processes and why entrepreneurs are opting to follow an effectuation approach to venture creation are only referred to as "*antecedents*" (Grégoire & Cherchem, p.3, 2019). Furthermore, the paper lacks in

explanations that would specify what is meant by antecedents and their possible consequences to effectuation research, only indicating results of research of antecedents to be inconclusive.

Other research such as Arend et al. (2015) gives considerable attention to other factors, such as the characteristics of an uncertain business environment and restricted resources availability. These may affect the process of effectuation, however, other influencing factors have simply been left out or, again, referred to for future research directions. Taking a central stand among these suggestions is the call for '*why'* entrepreneurs act the way they do under the given circumstances and what factors are the underlying causes of their actions (Arend et al., 2015). Referring to an earlier study of Utsch and Rauch (2000), suggestions are made that refer to entrepreneurial passion as being an indicator of persistence when facing difficult and uncertain outcomes.

Essentially, this paper argues that entrepreneurial passion plays a major role in the processes of effectuation. Due to the lack of current insights into the precise role of entrepreneurial passion and the complexity of influences of the variable, it investigates if entrepreneurial passion not only has a direct influence on the decision-making logics of entrepreneurs, but also indirectly moderates other factors involved.

2.2 Research Questions

Following the call of both critics (Arend et al., 2015) and advocates (Sarasvathy 2001), as well as individual reports on effectuation theory (such as Grégoire & Cherchem, 2019), this paper strives to close the knowledge gaps surrounding the role of uncertainty, entrepreneurial passion in the context of effectuation research and contribute to academic literature on entrepreneurship. In order to get a better overview of the connections between the various variables, Figure 1 provides a model summary of all variables. This subject matter will be investigated through the research questions:

How does uncertainty affect the decision-making processes of entrepreneurs?

How does entrepreneurial passion affect the decision-making processes of entrepreneurs?

What is the moderating effect of entrepreneurial passion on the relationship between uncertainty and the decision-making process of effectuation in entrepreneurship?

3. Theoretical Framework

3.1 Effectuation and Causation

Sarasvathy's (2001) effectuation theory revolves around a process that includes resource-poor entrepreneurs and their establishment of a new successful venture in an uncertain setting. This entrepreneurial theory rests on the approach of creating different effects from a limited number of available means, rather than having a pre-determined (desired) effect that is achieved by a large number of means. In comparison to the prior focus of business planning in entrepreneurship, this theory shifts the attention towards entrepreneur enactment and allows for a different perspective on the entrepreneurs themselves, rather than relying on the detailed orientation of a business plan.

Forming the core of Sarasvathy's effectuation theory are five main components that build the basis of effectuation. Hereby, the two entrepreneurial strategies of causation and effectuation are being compared, giving a more detailed overview of the differences between the strategies at hand. By discussing these sub-constructs, a thorough understanding of both concepts of effectuation and causation will be achieved. The differences revolve around the following five sub-constructs and will be discussed in more detail in the following paragraphs:

- Basis for taking action
- View of risk and resources
- Attitude towards others
- Attitude towards unexpected events
- View of the future

Firstly, the basis for taking action describes the starting point of the venture creation process and revolves around the orientation of means vs ends. Following a causation approach, the entrepreneur would determine a specific goal (*ends*) and allocate the necessary resources in order to achieve the desired goal. In comparison, an entrepreneur following the effectuation approach uses their currently available resources (*means*) and takes action based on potential outcomes of the allocation of these means, allowing for a more flexible approach to venture creation (Sarasvathy, 2001).

Secondly, the view of risks and resources deals with the principles of affordable loss rather than expected returns. This means that effectuation entrepreneurs strive to create more options for their future rather than creating options that may maximize returns in the present. By examining the amount of loss that is affordable for the venture, the effectuation approach allows for a variety of choices of strategies, rather than being pre-set on an original plan (Sarasvathy, 2001).

The third sub-construct revolves around the attitude towards others. Contrary to strategic models such as Porters five-forces analysis that are favorable in the causation approach, effectuation focusses on the elimination of uncertainty through strategic alliances in comparison to competitive analysis (Porter, 1980; Perry, Chandler & Markova, 2012). As causation models are reducing uncertainty through detailed analysis of their competitors, the effectuation approach eliminates uncertainty by prior commitments from their stakeholders, again focusing on available means (Sarasvathy, 2001).

Fourthly, the sub-construct of the attitude towards unexpected events deals with current expertise of the venture and the occurrences of unexpected contingencies. As Sarasvathy (2001) indicates, the effectuation approach may be preferable to exploit unexpected contingencies throughout the entrepreneurial process due to flexibility aspects, while the causation approach would choose the exploiting of preexisting knowledge (Sarasvathy, 2001).

Lastly, the focus is put on the view of the future. The differences between an effectuation and causation approach in this regard revolve around the view on uncertainty and being able to handle an uncertain future. While causation approaches favor the *prediction* of aspects from an uncertain future, effectuation approaches favor a focus on *controllable* aspects of an unpredictable future (Sarasvathy, 2001).

In summary, the differences between effectuation and causation are therefore based on the outcomes or givens of the processes, where the effect or outcome is already given for causation processes, whereas only the resources (means) and the tools are given in effectuation processes. While for causation processes the selection is mainly based on the choice between means for the expected outcomes, effectuation processes are based on the criteria of acceptable risk and affordable loss, as well as the choice of possible outcomes that can be reached with the scarcity of the given means.

3.2 Intolerance of uncertainty

Uncertainty in entrepreneurship has long been regarded as a key cornerstone and is oftentimes seen as the basis for any theory within this field. Research revolving around entrepreneurial uncertainty has mostly been centered around two research streams, namely the amount of uncertainty that is perceived by the entrepreneur, differentiating entrepreneurs taking action from those who do not, as well as the willingness to accept uncertainty with regards to personal characteristics such as individual motivation, attitude and risk propensity (McMullen & Shepherd, 2006; Douglas & Shepherd, 2000). Oftentimes, studies about entrepreneurial uncertainty focus on the aspect of environmental uncertainty, ignoring the domain of psychology revolving around the uncertainty that is concerned with the person dealing with uncertainty. Striving to extend the existing literature in this domain and shortening the existing measure for intolerance of uncertainty based on underlying factors, Carleton, Norton and Asmundson (2007) developed a reduced measure of the existing Intolerance of Uncertainty Scale (IUS). They defined this intolerance as "*the tendency of an individual to consider the possibility of a negative event occurring unacceptable, irrespective of the probability of occurrence*" (Carleton et. al., 2007, p.105). Results of their research indicate the existence of two types of uncertainty tolerances, namely *prospective anxiety* and *inhibitory anxiety*. Prospective anxiety describes a fear of future events, revolving around the negative effects of unexpected events to the person. Inhibitory anxiety on the other hand is concerned with the inhibition of action or experiences due to uncertainty (Carleton et al., 2007).

3.3 The concept of entrepreneurial passion

As identified by the study of Cardon, Gregoire, Stevens and Patel (2012), entrepreneurial passion is key in the discovery and exploitation of potential new business ventures and is linked to various important aspects to develop a successful business. Passion can help advance, discover and exploit the recognition of new information and possible opportunities, indicating the practical relevance for entrepreneurs (Cardon et al., 2012,). Generally, entrepreneurial passion can be defined as "*consciously accessible, intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur*" (Cardon, Wincent, Singh & Drnovsek, 2009, p. 515). According to Cardon et al.'s literature review, research still lacks a predictive influence of entrepreneurial passion on

entrepreneurial behavior, therefor also incorporating the effect on decision-making processes. According to Cardon et al. (2012), entrepreneurial passion has multiple dimensions, which include experiencing intense positive feelings, the centrality of activities for entrepreneurs' self-identity, as well as different domains of passion. These dimensions will be discussed in a more detailed manner in the following paragraphs.

3.3.1 Dimensions of entrepreneurial passion

The experience of intense positive feelings

The first dimension of entrepreneurial passion revolves around the experience of intense positive feelings which plays a key role in both entrepreneurship research and organizational behavior (Cardon et al., 2012). In accordance with previous research, Cardon et al. (2012) regard entrepreneurial passion as the experience that is linked to the thoughts and actions of entrepreneurship and not as a personality trait of the entrepreneur. Resulting from this is the characterization of entrepreneurial passion as "*deeply experienced positive feelings*", which, contrary to the personality trait of passion, is more permanent (Cardon et al., 2013, p.375). Furthermore, in an earlier study of Cardon, Sudek & Mitteness (2009) entrepreneurial passion was defined as feelings that were consciously accessible, allowing entrepreneurs for reflection of these feelings based on their current situation. Resulting from this insight is the importance of intensity of passion that the entrepreneur is experiencing in order to investigate this dimension of entrepreneurial passion.

The centrality of these activities for entrepreneurs' self-identity

The second dimension includes the activities of entrepreneurs that define their self-identity (Cardon et al., 2012). According to Weick, a person's self-identity can be defined as a "person's sense of who he or she is in a setting" (Weick, 1995, p.461). Previous studies of Cardon build on the notion of entrepreneurial passion by investigating the connection between both the intense positive feelings (defined above), as well as the connection to an entrepreneur's identity through their activities. Although the study of Cardon et al. (2012) identifies the lack of academic literature on the role of identity in the field of entrepreneurial passion, broadening the scope from entrepreneurship to other research fields, such as Psychology, has enabled researchers to make

further connections. As the study of Down and Warren (2008) identified, several debates in the fields of Philosophy, Sociology and Social Psychology have come to the conclusion that a person's sense of identity is not part of the individual personality, but rather established through interactions of the person within their society and culture. This view of identity hence allows a person to change their identity over time, depending on their cultural and social context (Giddens, 1991).

As a central aspect of academic literature, the aspect of being distinct from others is especially relevant in entrepreneurship (Baker & Nelson, 2005). Identifying oneself as an entrepreneur enables people to be different from others by creating their own venture and therefor "satisfy their need for distinctiveness" (Shepherd & Haynie, 2009, p. 316). Following the definitions of identity from the various research fields and applying them to the field of entrepreneurship, it may lead to the notion that entrepreneurs follow those activities that are relevant to their sense of self-identity and detach themselves from those that are not (Cardon et al., 2012).

3.3.2 The domains of entrepreneurial passion

Central to the entrepreneur are the roles that are associated with being an entrepreneur. As identified by Cardon et al. (2009), these revolve around the invention of new products and services, the founding of new organizations, as well as the development of such organization in advance of original success and survival. With regards to each of these roles, the associated tasks of each of these roles may bear different threats for the entrepreneurial process (Katila & Ahuja, 2002).

Passion for inventing

The actions of finding new market opportunities by examining the environment of a business, the development of new products and offering of new services and the inclusion of working prototypes are considered examples of inventing (Cardon et al., 2009). The extent and frequency to which entrepreneurs look for new business opportunities may vary from person to person. In this regard, the passion for inventing shows by the dedication that entrepreneurs put into creating new products. Effects of the passion of inventing also extend from the entrepreneur themselves. The study of Breugst, Domurath, Patzelt and Klaukien (2012) examined the effects of entrepreneurial passion for inventing on the commitment of employees. Their results indicate that an

entrepreneurs' passion enhances the commitment of employees, which may ultimately result in a better overall firm performance, supporting the need for further research in this field.

Passion for founding

In order to start a new venture, several resources need to be assembled. Among others, these include financial, human, as well as social resources which are needed to form the basis of a business and ensure a preceding functioning of a firm. The process of summoning these resources along with the concept of entrepreneurial passion is considered a passion for founding (Cardon et al., 2009). This passion is linked to the effectiveness of venture creation, which determines the effectiveness of the entrepreneur to overcome the challenges associated with the assemblance of the above-mentioned resources (Cardon et al., 2009; Cardon et al., 2013). Central to the entrepreneurial process is the motivation of entrepreneurs to start a venture on their own and build it from scratch. The passion for founding plays a key role for the motivation of the entrepreneur (Segal, Borgia & Schoenfeld, 2005) and establishes a personal identity around the venture (Cardon, Zietsma, Saparito, Matherne & Davis, 2005).

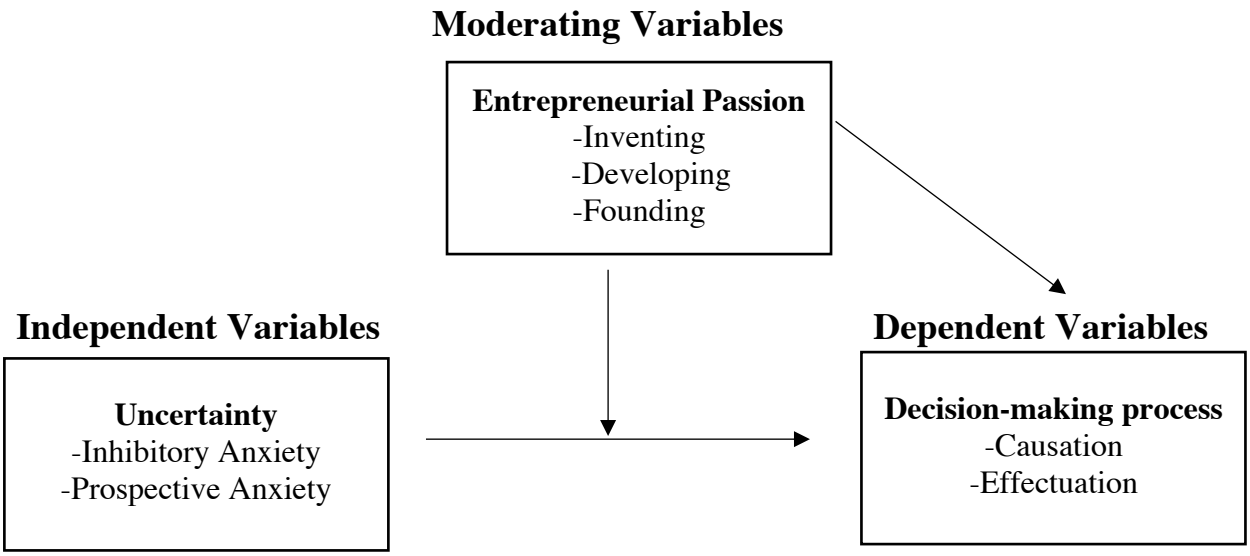
Passion for developing

The third passion of entrepreneurs deals with the actions following the initial founding that was discussed above. The passion for developing revolves around expanding the founded organization and growing various dimensions of the venture (Cardon et al., 2009). Their study furthermore extends the definition of passion for developing by specifying the underlying assumption that the development of a venture is not limited to organizations that the entrepreneur has founded him/herself but may also include existing ventures that require further development to become more successful in the future.

Similar to the passion for founding, expanding an existing business may serve as an important motivation and energy for entrepreneurs (Bierly, Kessler & Christensen, 2000). The study of Baum and Locke investigated entrepreneurial traits, skills and motivation and their relation to the venture growth. According to their study, entrepreneurial passion for developing includes the skills of effectively communicating with partners of the firm (Baum & Locke, 2004). Their findings indicate that a strong passion (for developing) ultimately results in subsequent

venture growth. Although these entrepreneurs are usually also involved in the equity financing of start-ups, they show strong passion for the overall development of the presented ventures.

Figure 1: Model summary of dependent, independent and moderating variables.



4. Hypotheses

On the basis of the theoretical concepts in the previous paragraphs, several hypotheses can be proposed. These will allow for explanations of the relationships between variables and guide the investigation of the research topic at hand. In light of recent academic literature, each hypothesis is discussed and explanations will be given. The last paragraph of this section will show a model summary of all hypotheses in relation to the variables (see Table 1).

In order to gain a more detailed understanding of the relationships between the various constructs, several distinctions of the variables need to be made. Firstly, Sarasvathy's effectuation theory distinguishes between both the decision-making processes of causation and effectuation (Sarasvathy, 2001). Because of the differentiation, the decision-making processes of causation and effectuation will consequently be treated separately in the following sections to further understand the decision-making processes of entrepreneurs in relation to other variables. Secondly, due to the previously discussed distinction between the two types of uncertainty, prospective and inhibitory

anxiety, both will be treated separately in order to evaluate their differences (Carleton et al., 2007). Similarly, the study of Cardon et al. (2013) explored the concept of entrepreneurial passion and distinguished between several domains, namely the passion for inventing, founding and developing which will be used distinctively in the last section.

4.1 The concept of intolerance of uncertainty and the decision-making process

The study by Carleton, Norton and Asmundson identified a person with inhibitory anxiety to perceive the occurrence of a negative event as unacceptable (Carleton et al., 2007). Furthermore, Barlow (2004) found that such peoples find ambiguous information threatening and are a facilitator of cycles of fear. It can therefore be assumed that people scoring high on inhibitory anxiety prefer the causation approach, which includes less ambiguity.

Hypothesis 1.1: *A significant negative relationship exists between inhibitory anxiety and effectuation.*

Contrary to effectuation, the causation approach rests on the prior development and guidance of a detailed business plan and selecting means that lead to the desired outcome (Sarasvathy, 2001). Being able to use competitive analysis and trying to control an unpredictable future will thus try to limit uncertainty, leading to entrepreneurs scoring high on inhibitory anxiety to be inclined towards using a causation approach.

Hypothesis 1.2: *A significant positive relationship exists between inhibitory anxiety and causation.*

Prospective anxiety on the other hand varies from inhibitory anxiety, as it refers to the fear of future negative events. Similar to the above-mentioned inhibitory however, this part of intolerance of uncertainty shares the aspect of uncertainty avoidance. This leads to the assumption that with prospective anxiety, ambiguous situations are likely to be avoided, which ultimately results in a preference for the causation approach.

Hypothesis 1.3: *A significant negative relationship exists between prospective anxiety and effectuation.*

As identified by the study of Dugas, Freeston and Ladoucer (1997), high intolerance of uncertainty leads to a tendency for entrepreneurs to avoid ambiguous situations, showing support for the later findings of Carleton (2007). Similar aspects can be found in Saravathy's comparison between causation and effectuation, in which the nature of unknowns for causation processes revolves around the "focus on the predictable aspects of an uncertain future" (Saravathy, 2001, p.251). The overall relationship between prospective anxiety and causation can therefore assumed to be positive.

Hypothesis 1.4: *A significant positive relationship exists between prospective anxiety and causation.*

4.2 The relationship between the domains of entrepreneurial passion and the decision-making process

The study of Wiltbank, Read, Dew and Sarasvathy (2009) pointed out the difficulty of the entrepreneurial context due to its' complex and uncertain environment. It furthermore highlights the importance of Sarasvathy's earlier work in that the effectuation approach focuses on the resources that the entrepreneur possesses, rather than the goal that the entrepreneur wants to achieve (Sarasvathy 2001; 2008). Entrepreneurial passion may be regarded as one of these pre-possessed resources, leading the entrepreneur to seek after different strategic approaches. Regarding entrepreneurial passion as a key resource for overcoming ambiguous situations and using it as a central motivator to handle the non-predictive environment of effectuation, passion is assumed to be positively associated with the effectuation approach.

Hypothesis 2.1: *A significant positive relationship exists between the domains of entrepreneurial passion and effectuation.*

To this point, there has not yet been a study to investigate the relationship between passion and causation. The study of Stroe et al. (2018) has identified the influence of passion on the decision-

making logic of entrepreneurs. However, a distinction was only made between harmonious and obsessive passion, which ultimately differs from the conceptualization of entrepreneurial passion by Cardon et al. (2013). Because of the fundamentally differences between causation and effectuation and the proposed positive relationship between passion and effectuation, it is proposed that a negative relationship exists between entrepreneurial passion and causation.

Hypothesis 2.2: *A significant negative relationship exists between the domains of entrepreneurial passion and causation*.

4.3 The moderating effect of passion on the relationship between uncertainty and the decision-making approaches of entrepreneurs

Due to the unique roles of each of the three domains of entrepreneurial passion, they are representative of the various different aspects of entrepreneurship and may differ with regards to the set of tasks and skills that are required to the individual entrepreneur (Cardon et al., 2013). Due to these variations, the three domains are regarded separately to further understand their role. In the following paragraphs, each domain of passion and their moderating role on the relationship between uncertainty and effectuation/causation is discussed.

4.3.1 Passion inventing

The passion for inventing revolves around the development of products or services, as well as prototypes and the scanning of market opportunities in the environment (Cardon et al., 2009). The study of Katila and Ahuja (2002) identified the passion for inventing to be an important motivator for entrepreneurs to deliver new solutions. According to Baron (2008), passion could be used to discover and exploit business opportunities, as well as foster creativity. Oftentimes facing uncertain situations when making decisions, entrepreneurs may be reliant on their passion to overcome challenges and further motivate them. The tendency for these individuals to work towards establishing a new product in a possibly unknown market may propose that it alters the relationship between uncertainty and an entrepreneur's decision-making processes.

Hypothesis 3.1: *The proposed relationship between prospective and inhibitory anxiety and the causation approach is moderated by the passion for inventing.*

Hypothesis 3.2: *The proposed relationship between prospective and inhibitory anxiety and the effectuation approach is moderated by the passion for inventing.*

4.3.2 Passion for developing

The passion for developing revolves around the growth and expansion of the business after the initial founding phase (Cardon et al., 2009). Entrepreneurs scoring high on the passion for developing are motivated to further grow their business and oftentimes use different strategies to manage their organization than their competition (Cliff, 1998; Gundry & Welsch, 2001). Their passion for developing is furthermore characterized by communicating with key stakeholders to increase the expansion of their venture (Baum and Locke, 2004). Similar to the effectuation approach, this could be a way to reduce uncertainty and may propose a moderating effect.

Hypothesis 3.3: *The proposed relationship between prospective and inhibitory anxiety and the causation approach is moderated by the passion for developing.*

Hypothesis 3.4: *The proposed relationship between prospective and inhibitory anxiety and the effectuation approach is moderated by the passion for developing.*

4.3.3 Passion for founding

The passion for founding refers to the assembling of human, financial and social resources in order to start and found a new venture (Cardon et al., 2009). This desire was found to be a key motivator to overcome the complexity and uncertainty of the business environment (Aldrich & Zimmer, 1986). This passion is characterized by a high identification of the entrepreneur with their venture (Cardon et al., 2005). As identified by Cardon et al. (2013), an entrepreneur with a passion for founding may be regarded as an "*habitual entrepreneur*" showing assimilations to the causation approach of using habits, such as a described in a detailed business plan (Cardon et al., p.376,

2013). It can therefore be proposed that the passion for founding moderates the relationship between uncertainty and the decision-making processes.

Hypothesis 3.5: *The proposed relationship between prospective and inhibitory anxiety and the causation approach is moderated by the passion for founding.*

Hypothesis 3.6: *The proposed relationship between prospective and inhibitory anxiety and the effectuation approach is moderated by the passion for founding.*

Table 1: Overview of the hypotheses

Hypothesis	Independent Variable	Dependent Variable	Direction
1.1	Inhibitory Anxiety	Effectuation	Negative
1.2	Inhibitory Anxiety	Causation	Positive
1.3	Prospective Anxiety	Effectuation	Negative
1.4	Prospective Anxiety	Causation	Positive
2.1	Entrepreneurial Passion	Effectuation	Positive
2.2	Entrepreneurial Passion	Causation	Negative
3.1	Prospective/ inhibitory anxiety	Causation	Moderated by passion for inventing
3.2	Prospective/ inhibitory anxiety	Effectuation	Moderated by passion for inventing
3.3	Prospective/ inhibitory anxiety	Causation	Moderated by passion for developing
3.4	Prospective/ inhibitory anxiety	Effectuation	Moderated by passion for developing
3.5	Prospective/ inhibitory anxiety	Causation	Moderated by passion for founding
3.6	Prospective/ inhibitory anxiety	Effectuation	Moderated by passion for founding

5. Methods

5.1 Study Design

The present study is a quantitative exploratory research based on an online questionnaire survey design. Its goal is to understand the effect of intolerance of uncertainty and entrepreneurial passion on the decision-making logic in entrepreneurship. Additionally, the study investigates the moderating effect of entrepreneurial passion on the relationship between the intolerance of uncertainty and the decision-making approach of entrepreneurs. The study was conducted by a Master student in Business Administration at the University of Twente, Enschede, at the faculty of Behavioral, Management and Social Sciences. The study made use of a combination of 3 different scales as well as several control variables. Scales include the effectuation measurement scale of Alsos, Clausen and Solvoll (2014), the scale of entrepreneurial passion of Cardon et al. (2013) and the intolerance of uncertainty scale of Carleton, Collimore and Asmundson (2007).

Prior to starting the survey, participants gave their informed consent by agreeing to participate in the study after being informed about the aim and methods of the study. Furthermore, information was given to ensure the confidentiality of the collected data. Participants were informed that they could withdraw from the study at any point without having to give reasons for terminating the study. Before distributing the survey, a pilot study was conducted with 6 participants in order to check for misunderstandings and ensure a proper data collection procedure. The study was approved by the ethical committee of the University of Twente (Request number: 200831)

5.2 Data collection/Sampling

The data were collected through the online platform Qualtrics.com as well as through hard copies of the questionnaire. German entrepreneurs were chosen for this study for two main reasons: Firstly, there has been a steady increase in the academic interests of entrepreneurship research in Germany, as can be witnessed by a large devotion to entrepreneurship at universities and conferences (Schmude, Welter & Heumann, 2008). Secondly, Germany shows strong entrepreneurial framework conditions through various political initiatives and programs that have been implemented for a number of years and contribute to a strong tradition of SME's (Bergmann & Sternberg, 2007)

Entrepreneurs were contacted through various online channels, such as LinkedIn, Facebook and the German Entrepreneur Association (Deutscher Gründerverband). Besides entrepreneurs from personal networks, individual entrepreneurs of firms were found online and contacted by phone and email through networking partners of national startup associations, such as the DSM (German Startup Monitor). Other organizations revolving around the topic of entrepreneurship were involved to distribute the survey to entrepreneurs. These included German regional and national accelerators, incubators, universities, as well as common working spaces rented out to startups. Around 150 German incubators and accelerators were contacted individually by phone or email to ask about their interest for participating in the study and in order to provide them with a description and the purpose of the study. Each of these carried approximately 20 start-ups in their portfolio, depending on their industry of expertise. Furthermore, over 100 independent entrepreneurs from start-up firms were contacted to partake in this study. The difficulty of collecting enough valid data through an online questionnaire can furthermore be seen in the approximate response-rate of 5%, which is why additional individual regional startups were also visited in person with hard copies of the Qualtrics survey. Entrepreneurs in this survey were chosen based on the characteristics of being the founder of a firm and being of German citizenship. Respondents had to be above the age of 18 and currently own a firm. To gain a better understanding of the data set, various control variables were included for further analysis (see also Materials in 5.3).

5.3 Materials

5.3.1 Controlling variables

The first part of the questionnaire revolves around the demographics of the participants for descriptive purposes of the sample. Participants gender, age and nationality were collected in order to gain a broad understanding of the respondents. Furthermore, their level of education was asked and respondents could indicate their highest graduation from a drop-down list. Possible answers included the German equivalents of primary school, middle school, high-school graduation, Bachelor, Master and other (Hauptschule, Realschule, Abitur, Bachelor, Master, Andere). Additional questions include more specific entrepreneurial information of the respondent. Firstly, the number of years as an entrepreneur was asked to gain an understanding of their entrepreneurial

experience. Secondly, participants indicated the age of their last created venture and the number of people they employ. The controlling variables are later used for additional analysis and contribute to the findings of this study. For the regression analysis, dummy coding was used to represent the dichotomous variables. Gender was coded as a 0=Female and 1=Male. Furthermore, dummy variables were created for the categorical variable of education, namely for High-school, Undergraduate and Graduate.

5.3.2 Entrepreneurial passion

Entrepreneurial passion was measured using the scale of Cardon et al. (2013), which was developed based on a three-stage procedure, including a measurement strategy based on psychometric research, the development of consistent items, as well as several validation studies. The questionnaire includes a total number of 13 items, which articulates the two dimensions of intense positive feelings, as well as identity centrality with regards to the domains of passion for inventing, founding and developing. Items 1-5 assessed the passion for inventing, while items 6-9 assessed the passion for founding and items 10-13 the passion for developing. With the use of a Likert-scale, participants respond to statements such as "Searching for new ideas for products/services to offer is enjoyable to me" or "Establishing a new company excites me". Likert scale items ranged from strongly disagree to strongly agree, depending on the extent to which participants agreed to statements in the questionnaire. The original survey was developed in English and translated to German for the use in this study on German entrepreneurs. The translations were validated by several bilingual colleagues from the University of Twente.

5.3.3 Intolerance of uncertainty

The intolerance of uncertainty was assessed using the Intolerance of uncertainty scale by Carleton et al. (2007). The questionnaire is based on an original 27-item questionnaire of Freeston, Rhéaume, Letarte, Dugas and Ladouceur (1994) measuring the construct of intolerance of uncertainty. It was reduced by Carleton et al. (2007) due to high inter-item correlations, factor instability and further theoretical research. Support for the reduced measure also included an acceptable internal consistency and a moderate correlation between the two factors. The reduced measure used in this study includes a 12-item questionnaire that includes items such as

"Unforeseen events upset me greatly" and "I can't stand being taken by surprise". The scale is based on a two-factor structure that measures the factors of prospective anxiety (items 1-7) and inhibitory anxiety (items 8-12). Participants indicate the extent to which they believe the statements are characteristic of themselves using a 5-point Likert-scale ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). Again, the original English survey was translated for the purpose of this study and validated by several colleagues.

5.3.4 Effectuation/causation

In order to measure the decision-making approach of entrepreneurs, the effectuation measurement scale of Alsos et al. (2014) was used. Following a quest for further research by Chandler, DeTienne, McKelvie and Mumford (2011) due to a lack of important validity problems of previous questionnaires, this survey takes into account five principles of causation and effectuation based on theory, resulting in a total number of 10 items. Items ranging from 1-5 measure the causation approach of entrepreneurs while items ranging from 6-10 measure the effectuation approach. Participants responded to statements through a Likert-scale with answers ranging from totally disagree to totally agree. Overall, the questionnaire shows moderate-high correlations and good internal reliability and discriminant validity, showing several improvements in comparison to earlier questionnaires. The original English survey was translated for the purpose of this study and validated by several colleagues. The scale can be retrieved from the original authors, Alsos et al. (2014) for a detailed overview of the items.

5.3.5 Participants

The sample included 115 responses, of which 34 cases were excluded due to non- or partial completion of the survey, resulting in a sample size of N= 81. In total, 17 women and 64 men completed the study. The mean age of the sample was 36.86 years (SD=13.18) ranging from 20 to 71 years. A complete overview of the descriptive statistics of the sample can be found in Table 2. With regards to the entrepreneurial experience, the number of years ranged from 1 to 48, with a mean of M=7.65 and a standard deviation of SD= 10.43. The age of the current venture ranged from 0 to 56 (M=6.36, vSD=9.49) and the mean number of ventures is M= 1.84 (SD= 1.76) with

a minimum of 1 to a maximum of 12. Lastly, the mean number of employees in this sample of entrepreneurs was 15.56 (*SD*=75.06), ranging from 1 to 580 employees.

Tables 2: Descriptive Statistics

Descriptive Variable	Mean	Standard Deviation	Frequency
Gender			Male: 64 Female: 17
Age	36.86	13.18	0-25: 17 26-35: 34 36-45: 7 46-71: 23
Nationality			German: 81
Education			Hauptschule: 2 Realschule: 8 Abitur: 15 Bachelor: 21 Master: 22 Other: 13
Entrepreneurial Experience (in yrs)	7.65	10.43	0-1: 23 2-3: 20 4-6: 14 7-48: 24
Age of current venture	6.36	9.49	0-1: 24 2-3: 24 4-6: 13 7-56: 21
Number of created ventures	1.84	1.76	0-1: 50 2-3: 21 4-12: 16
Number of employees	15.56	75.07	0-1: 39 2-3: 12 4-6: 16 7-580: 14

5.4 Multiple Regression Assumptions

Following the guideline of Hair, Black, Babin and Anderson (2009), several assumptions have to be met in order to use multiple regression. The next paragraphs will first describe and then test these assumptions in order to ensure that a regression analysis is appropriate. These include checking for the linearity, heteroscedasticity, independence of error terms, as well as normality. Additionally, a check for multicollinearity will be done.

1. Linearity of the phenomenon measured

The first assumption revolves around the linearity of the relationships between dependent and independent variables. The change in the dependent variable needs to therefore be associated with a change in the independent variable and this regression coefficient is constant across all values of the independent variable. In order to test this assumption, a graphical analysis of the variables is conducted. Appendix A shows the linearity for each dependent variable (causation and effectuation), as well as their relationship with each of the independent variables (passion and uncertainty). Based on the scatterplots, results of the analysis show a linear relationship between the variables, meeting the first assumption.

2. Constant variance of error terms: Heteroscedasticity

The second assumption includes the constant variance for error terms, checking for homoscedasticity. This is done to ensure that the residuals are equal across the regression line and can be checked with a graphic analysis of the scatterplots (see Appendix A). The scatterplots show that the data are homoscedastic, therefore meeting the second assumption.

3. Independence of error terms

Thirdly, the independence of error terms is required for linear regression analysis, meaning that there is no autocorrelation in the data. In order to check if the residuals are indeed independent from each other, the Durban-Watson test is used. It tests the null hypothesis that the residuals are not linearly auto-correlated and assumes values between 0-4. According to Hair et al. (2009), values between 1.5 and 2.5 indicate no auto-correlation in the data. Table 3 shows the results of the Durban-Watson test. As all values are between the scores of 1.5-2.5, indicating no auto-correlation and therefore meeting the third assumption.

Table 3: Results of the Durban-Watson test

	Causation	Effectuation
Uncertainty Prosp. Anxiety	2.033	2.033
Uncertainty Inh. Anxiety	1.951	2.090
Passion Inventing	2.043	2.085
Passion Founding	1.945	2.086
Passion Developing	2.001	2.088

4. Normality of error term distribution

The normality of the error term distribution will be checked due to the requirement for regression analysis that all variables are required to be multivariate normal. The Shapiro-Wilk test tests the null hypothesis that a variable is normally distributed. Appendix A shows the results. For the dependent variables of causation and effectuation the null hypothesis is accepted, indicating a normal distribution for these variables in this sample.

5. Multicollinearity

Lastly, multicollinearity was checked with the variance inflation factor (VIF). According to Hair et al. (2009), scores above 5 indicate that multicollinearity may be present. As Appendix A shows, all scores are below 2 indicating that no multicollinearity is present, therefore meeting the last assumption.

5.5 Factor Analysis

In order to identify latent variables of the scales, a factor analysis was conducted. To test whether this is appropriate, a Kaiser-Meyer-Olkin (KMO) test was used. For each scale, the KMO as well as the Bartlett's test of sphericity was run to measure the sampling adequacy for each variable as well as the complete model. The Bartlett's test of sphericity checks the null hypothesis that the variables are uncorrelated. For all scales, the Kaiser-Meyer-Olkin test shows positive results and all null hypothesis of the items being uncorrelated are rejected, as the Bartlett's tests are significant (see Table 4). On the basis of these results, a factor analysis is appropriate.

Table 4: Overview of the KMO and Bartlett's test results

Scale	KMO	Bartlett's Test
Causation	.529	36.06; p<.001
Effectuation	.707	97.37; p<.001
Passion	.764	363.24; p<.001
Uncertainty	.822	331.49; p<001

To further understand the underlying dimensions of the scales, an exploratory factor analysis is used (Hair et al, 2009). The aim of the analysis is to find groups of variables that show high intercorrelations (called factors) through the statistical approach of principal component analysis.

Results of the exploratory factor analysis reveal several insights to the underlying factors. For the effectuation/causation scale, four factors were extracted with an Eigenvalue above 1, however, only factor 1 and 2 account for a large percentage of variance (see Appendix B). This finding also supports Alsos et al. (2014) who developed the scale on the basis of two factors, namely effectuation and causation. Furthermore, results show that items (1-5) of causation show high loadings of (>.417) on the second factor. Effectuation items 6-10 all show high loadings of (>.598) on the first factor (see Appendix B). However, item 4 of the causation scale shows high loadings on both factors, namely .402 on effectuation and .590 on causation. When looking at the inter-correlations of the causation scale, it becomes apparent that only item 1, 2 and 4 show significant correlations with other variables. On the contrary, inter-item correlations of the effectuation scale show significant correlation for all items except for the inter-correlation between item 1 and effectuation 4.

Results of the factor analysis for entrepreneurial passion show three components with an Eigenvalue above 1 (see Appendix B). Similar to the scale developed by Cardon et al. (2013), the results of the factor analysis reveal that there is a total of three components, namely for the passion of inventing, founding and developing. The inter-item correlations in Table 12 show that all items but 4 and 8 are significantly correlated. Furthermore, results show that items 1-5 of the passion for inventing show high loadings of <.425 on factor 3. Similarly, items 6-9 of the passion for founding show high loading of <.657 on the first factor. Lastly, items 10-13 show high loadings

of <.341 on the second factor (see Appendix B). The factor analysis also shows that item 1 loads high (.423) on both factor 1 and factor 3, similar to item 2 loading on both factor 2 (.423) and factor 3. The same can be seen with item 13, which also loads highly (.653) on factor 1 and factor 2.

Lastly, results of the factor analysis for uncertainty reveal a total number of 4 components with an Eigenvalue above 1, however, components 1 and 2 account for 50.427 % of the variance. This is in line with the literature of Carleton et al. (2007) who proposed the scales to measure both inhibitory and prospective anxiety, resulting in a total of two main components. The inter-item correlations in Table 13 show that for prospective anxiety, all items are significantly correlated except for number 4 and 6. For inhibitory anxiety, all items are significantly correlated with the exception of number 3 and 4. Additionally, items 1-7 show high loadings (<.336) on the factor of prospective anxiety, with the exception of items 4, 5 and 6 which only show very small loadings (.100; .101; .130). Items 8-12 all show high loadings (<.616) on the first factor of inhibitory anxiety.

5.6 Reliability of scales

In order to test the reliability of the scales in this study, a Cronbach's Alpha test was conducted. By measuring the internal consistency of items, the extent to which a set of items are related can be assessed. Cronbach's alpha was measured for each of the scales in this study, with the results showing internal consistency for Uncertainty of (α=.844) and for Passion of (α=.838). Following the rules of thumb of Hair et al. (2009), these scores can be considered to show good internal consistency (>.80). Scores for Effectuation of (α= .760) showed acceptable internal consistency, while Cronbach's alpha for causation (α=.502) is considered as poor and indicates that the construct may not be measuring the same underlying construct. According to Tavakol and Dennick (2011), reasons for this low score may be because of the low number of questions, low inter-relatedness between items or a heterogeneous construct. Because the effectuation scale of Alsos et al. has however been widely used and validated in several other studies such as Waardenburg (2016) and van Essen (2019), the low score of internal consistency of the scale will still be used for the purpose of this study.

Table 5: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Gender	1													
Age	.017	1												
Education	-.170	.033	1											
Experience	-.126	**.802****	-.024	1										
Age-Venture	-.151	**.582****	.053	**.609****	1									
Experience	-.091	**.381****	.064	**.644****	**.421****	1								
Employees	-.084	**.369****	.177	**.474****	**.221***	.143	1							
Causation	.017	.119	-.110	.109	.104	-.041	.104	1						
Effectuation	-.131	-.167	-.090	**-.257***	**-.231***	-.106	-.135	.001	1					
Passion inventing	.120	.101	.061	.134	.164	.124	.185	.185	-.081	1				
Passion Founding	.001	-.012	.169	.016	-.142	.099	.122	.214	.077	**.461****	1			
Passion Developing	.021	.133	.029	.172	.125	.075	.159	.169	-.025	**.496****	**.435****	1		
Uncertainty Prosp. Anx	.095	-.073	-.157	.011	-.015	-.102	.065	.053	-.183	**-.273***	**-.284***	-.129	1	
Uncertainty Inh. Anx	-.067	-.111	-.163	-.117	-.030	-.158	-.010	-175	.151	**-.326****	**-.420****	-.216	**.532****	1

**Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed)

6. Results

A hierarchical regression analysis was run to test the hypothesis mentioned in the previous section. The following paragraphs are structured as follows: Firstly, the results of the regression analysis with the dependent variable effectuation will be shown. Following are the results of the regression analysis with the dependent variable causation. For both, a total of three models for running the regression analysis were created. The first model tests for the effect between the dependent variable and the controlling variables. Secondly, the model includes the independent variables of uncertainty and entrepreneurial passion. The third model includes the interaction terms of the passion of inventing, developing and founding on both inhibitory- and prospective anxiety for the moderation analysis. An overview of the complete results of the regression analysis can be found in Tables 6 for effectuation and Table 7 for causation.

6.1 The relationship between independent variables and effectuation

Results of the first model with the controlling variables show a significant regression coefficient for gender (ß=-.250, p<.05) and entrepreneurial experience (ß=-.588, p<.05). The overall model is not statistically significant (F=2.043, p=.061). Model 2 includes the independent variables of entrepreneurial passion and uncertainty. The three concepts of passion for inventing (ß=-.077, p>.05), founding (ß=.129, p>.05) and developing (ß=.037, p>.05) show no statistically significant results. For uncertainty, the variables of prospective anxiety (ß=-.307, p<.05) and inhibitory anxiety (ß=.318, p<.05) show statistically significant results. The overall model is not statistically significant however (F=1.443, p=.180). Lastly, the third model includes the interaction terms for the moderation analysis. Results show no statistically significant moderation effects for the passion of inventing (ß=.784, p<.05; ß=-.814, p<.05), for the passion of developing (ß=.174, p<.05; ß=1.085, p<.05) and for the passion of founding (ß=.155, p<.05; ß=-.705, p<.05) on prospective- and inhibitory anxiety and the effectuation approach.

Table 6: Effectuation as dependent variable

Variables	**Model 1**		**Model 2**		**Model 3**	
	ß	T	ß	T	ß	T
Gender	**-.250****	**-2.195**				
Age	.333	1.632				
Education	-.173	-1.504				
Experience	**-.588****	**-2.235**				
Age-Venture	-.197	-1.391				
Number-Ventures	.213	1.366				
Number-Employees	.036	.785				
Passion inventing			-.077	-.545		
Passion founding			.129	.920		
Passion developing			.037	.286		
Prospective anxiety			**-.307****	**-2.281**		
Inhibitory anxiety			**.318****	**2.305**		
PINV_X_UNPA					.784	.563
PINV_X_UNIA					-.814	-.704
PDEV_X_UNPA					.174	.137
PDEV_X_UNIA					1.085	.936
PFOUND_X_UNPA					.155	.151
PFOUND_X_UNIA					-.705	-.878

6.2 The relationship between independent variables and causation

Results of the first model revealed no significant regression coefficients for any of the controlling variables. Consequently, the overall model is not statistically significant (F= .537, p=.804). Similarly, Model 2 shows no significant coefficients for the independent variables passion for inventing (ß=.136, p<.05) founding (ß=.183, p<.05) or developing (ß=-.014, p<.05). The same holds true for the independent variables of prospective anxiety (ß=.257, p<.05) and inhibitory anxiety (ß=-.269, p<.05). Lastly, the third model includes the interaction terms for the moderation analysis. The moderation of the variable passion of inventing on the relationship between

prospective anxiety and the causation approach is statistically significant (ß=-2.855, P>.05). Additionally, although not statistically significant at the α .05-level, the passion for inventing shows similar results for the relationship between inhibitory anxiety and the causation approach (ß=2.132, P=.067). Results for the variables passion of developing (ß=-1.208, p<.05; ß=-.667, p<.05) and founding (ß=.792, p<.05: ß=-.683, p<.05) on prospective- and inhibitory anxiety show no significant results.

Table 7: Causation as dependent variable

Variables	**Model 1**		**Model 2**		**Model 3**	
	ß	T	ß	T	ß	T
Gender	.015	.128				
Age	-.003	-.012				
Education	-.113	-.922				
Experience	.118	.411				
Age-Venture	.084	.555				
Number-Ventures	-.148	-.884				
Number-Employees	.071	.609				
Passion inventing			.136	.926		
Passion founding			.183	1.252		
Passion developing			-.014	-.102		
Prospective anxiety			.257	1.772		
Inhibitory anxiety			-.269	-1.808		
PINV_X_UNPA					**-2.855****	**-2.082**
PINV_X_UNIA					**2.132**	**1.869**
PDEV_X_UNPA					-1.208	-.968
PDEV_X_UNIA					-.667	-.582
PFOUND_X_UNPA					.792	.785
PFOUND_X_UNIA					-.683	-.861

6.3 Implications for the proposed hypothesis

Based on the above-mentioned results of the regression analysis, the following section will discuss the hypothesis proposed in section 4. Hypothesis 1.1 states that there exists a statistically significant negative relationship between inhibitory anxiety and effectuation. According to the literature, hypothesis 1.2 proposes that the opposite direction is to be true for the causation approach, namely that there exists a significant positive relationship between inhibitory anxiety and causation. Results of the analysis show that there is a statistically significant relationship between inhibitory anxiety and effectuation (ß=.318, p<.05). The direction of the relationship is however positive (see Table 6). Therefore, hypothesis 1 1.is rejected. Secondly, results of the regression analysis reveal that there exists no statistically significant relationship between inhibitory anxiety and causation (ß=-.2.69, p>.05). Hypothesis 1.2 is therefore also rejected.

Hypothesis 1.3 and 1.4 revolve around prospective anxiety and the approaches of causation and effectuation. It was proposed that there exists a significant negative relationship with effectuation and a significant positive relationship with the causation approach. Results of the analysis shows that for prospective anxiety, there is indeed a significant negative relationship with effectuation (ß=-.307, p<.05). Hypothesis 1.3 is therefore accepted. For prospective anxiety and the causation approach, although positive, there was no significant regression coefficient found. Hypothesis 1.4 is therefore rejected.

Hypotheses 2.1 and 2.2 state that there exists statistically significant relationships between the domains of entrepreneurial passion and effectuation (positive) as well as causation (negative). As results in Table 6 and Table 7 show, no statistically significant regression coefficients were found for any of the domains of passion. This was the case for neither causation, nor effectuation. For effectuation as the dependent variable, both the passion for founding (ß=.129, p>.05) and the passion for developing (ß=.037, p>.05) show a weak positive, but insignificant relationship. For causation, the same positive relationship exists for the passion of inventing (ß=.126, p>.05) and founding (ß=.183, p>.05). As these relationships were statistically insignificant, both hypothesis 2.1 and 2.2 need to be rejected.

Lastly, hypotheses 3.1-3.6 propose various moderating effects of the domains of entrepreneurial passion on the relationship between uncertainty (inhibitory and prospective anxiety) and the approaches of causation and effectuation. Hypothesis 3.1 proposes a moderating effect on the relationship of prospective and inhibitory anxiety and the causation approach.

Similarly, hypothesis 3.2 states a similar moderating effect with the approach of effectuation. Results of the moderated multiple linear regression analysis show that the increase in variance in model 3 containing the interaction terms (PINV_X_UNPA; PINV_X_UNIA) is statistically significant for both prospective and inhibitory anxiety (ß=-2.855, p<.05; ß=2.132), indicating a moderating effect of the passion for inventing on the relationship between prospective and inhibitory anxiety and the causation approach. Hypothesis 3.1 is therefore accepted. For hypothesis 3.2, results indicate no statistically significant increase in variation between the different models (ß=.784, p>.05; ß=-.814, p>.05). Hypothesis 3.2 is therefore rejected. Hypotheses 3.3 and 3.4 propose a moderating effect of the passion for developing on the above-mentioned relationships. For both effectuation (ß=.174, p>.05; ß=1.085) and causation (ß=-1.208, p>.05; ß=-.667, p>.05) results are statistically insignificant, indicating no moderating effect of the passion for developing. Both hypothesis 3.3 and 3.4 are therefore rejected. Lastly, hypotheses 3.5 and 3.6 propose a moderating effect of the passion for founding. Again, results of the moderation analysis show not statistically significant differences between model 2 and model 3 containing the interaction terms (PFOUND_X_UNPA; PFOUND_X_UNIA). Therefore hypotheses 3.5 and 3.6 are also rejected.

Table 8: Overview results hypotheses

Hypothesis	**Independent Variable**	**Dependent Variable**	**Relationship**	**Result**
1.1	Inhibitory Anxiety	Effectuation	Negative	Rejected
1.2	Inhibitory Anxiety	Causation	Positive	Rejected
1.3	Prospective Anxiety	Effectuation	Negative	Accepted
1.4	Prospective Anxiety	Causation	Positive	Rejected
2.1	Entrepreneurial Passion	Effectuation	Positive	Rejected
2.2	Entrepreneurial Passion	Causation	Negative	Rejected
3.1	Prospective/Inhibitory Anxiety	Causation	Moderated	Accepted

3.2	Prospective/Inhibitory Anxiety	Effectuation	Moderated	Rejected
3.3	Prospective/Inhibitory Anxiety	Causation	Moderated	Rejected
3.4	Prospective/Inhibitory Anxiety	Effectuation	Moderated	Rejected
3.5	Prospective/Inhibitory Anxiety	Causation	Moderated	Rejected
3.6	Prospective/Inhibitory Anxiety	Effectuation	Moderated	Rejected

7. Conclusion

This study investigated the effect of uncertainty and entrepreneurial passion on the decision-making processes of entrepreneurs in Germany. These decision-making processes revolve around the approaches of effectuation and causation and deal with either a reliance on a set of large number of means with a desired outcome (causation) or a limited amount of means without a clear business plan (effectuation). Furthermore, the moderating effect of entrepreneurial passion with its' dimensions of passion for inventing, founding and developing on the relationship between uncertainty and the decision-making processes was investigated. In order to receive insights to the above-mentioned relationships, several research questions were formulated:

How does uncertainty affect the decision-making processes of entrepreneurs?; How does entrepreneurial passion affect the decision-making processes of entrepreneurs?; What is the moderating effect of entrepreneurial passion on the relationship between uncertainty and the decision-making process of effectuation in entrepreneurship?

Results of the analysis reveal that both prospective and inhibitory anxiety affect the effectuation approach. While for prospective anxiety, this relationship is negative, it is positive for inhibitory anxiety. On the contrary, both forms of uncertainty do not influence the decision-making logic of causation in entrepreneurs. For entrepreneurial passion, neither the passion for inventing,

developing, nor founding predict an effectuation or causation approach, indicating that entrepreneurial passion does not affect the decision-making logics of entrepreneurs. Lastly, results of the moderation analysis show that the passion for inventing moderates the relationship between prospective and inhibitory anxiety and the causation approach, but no other moderating effects between the variables were found.

Conclusively, the concept of uncertainty affects the decision-making logics of entrepreneurs directly, while the domains of entrepreneurial passion do not seem to have an influence. A moderating effect only seems to exist for the passion for inventing and the causation approach.

8. Discussion

Differents points of view revolving around the effectuation approach proposed by Saravathy (2001) were assessed by Arend et al. (2015) and Grègoire and Cherchem (2019) to further understand and develop the theoretical constructs of effectuation. Their call for future research, along with the behavioral fundamentals that influence the decision-making processes, as well variables that may affect these relationships led to the investigation in this paper.

Firstly, results of the analysis indicate the importance of uncertainty in the context of entrepreneurship. More specifically, the author is able to show that the intolerance of uncertainty of the entrepreneur significantly affects the decision-making logics. Interestingly, this only holds true for the relationship between prospective and inhibitory anxiety and the effectuation-, but not for the causation approach. This finding suggests that entrepreneurs scoring high on either form of anxiety are drawn to the effectuation approach. Prior research such as Carleton (2007), Heydayathi (2003) or Barlow (2004) on the topic of uncertainty have mainly suggested that high scores on inhibitory anxiety would predict a causation approach due to a reduction of uncertainty when having a detailed business plan. Quite the opposite has been found to be true in this paper. Participants in this sample showed a preference for the effectuation approach when scoring high on prospective or inhibitory anxiety. Although contrary to the above-mentioned literature on effectuation, this finding is in line with the original paper of Sarasvathy (2001), in which the focus of effectuation was put on the controllable aspects of an unpredictable future and therefore reducing uncertainty. The main challenge from the critical assessment of Arend (2015) was to

move from *what* entrepreneurs are doing towards *how* they act under conditions of uncertainty. This study proves that entrepreneurs scoring high on uncertainty prefer the effectuation approach, which also answers the call of Perry, Chandler and Markova (2012) and Chiles, Bluedorn and Gupta (2007) to further investigate and properly test effectuation theory and its' contexts.

Secondly, the current literature with regards to both the extend of entrepreneurial passion, as well as its' impact on effectuation and causation approaches is very limited. The lack of literature became especially apparent when proposing and supporting hypothesis about the relationships of passion and its' moderating effect (see section 4.2; 4.3). Gaining a better understanding of the various domains of entrepreneurial passion and the impact they have on the strategy of entrepreneurs is crucial to further understand the theory behind venture creation (Sarasvathy, 2001). Results of this study show that none of the dimensions of passion (passion for inventing, developing and founding) have an effect on the approaches of causation and effectuation. It can therefore be said that entrepreneurial passion can be excluded from the factors that Arend et al. (2015) identified as *antecedents,* namely factors that may influence the decision-making processes. The idea of Katila and Ahuja (2002) who identified entrepreneurial passion to be an important motivator for entrepreneurs can therefore only be attributed as a general characteristic of entrepreneurs that may enable them to launch a successful venture. Results of this study surrounding the approaches of effectuation and causation seem to indicate that the decision-making processes are not significantly affected by the factor of entrepreneurial passion.

Thirdly, in relation to the above-mentioned aspects of uncertainty and the decision-making processes, the moderating role of entrepreneurial passion was investigated. Previous research suggested entrepreneurial passion to be important for overcoming the uncertainty and complexity of venture creation (Katila and Ahuja, 2002). It was found that the passion for inventing moderates the relationship between uncertainty and the causation approach. Interestingly, this is not the case for the effectuation approach. This implies that the extent to which entrepreneurs are passionate about inventing alters the relationship between uncertainty and effectuation. The passion for inventing with its' unique actions of finding new market opportunities and examinations of the business environment, along with the development of new products and services therefore influences the relationship between uncertainty and effectuation in entrepreneurs (Cardon et al., 2009). The finding is similar to findings from Coviello and Joseph (2012). These authors state that effectuation is valuable for the success in new product development. As results of this study

indicate, there is indeed an effect of the passion for inventing on the above-mentioned relationship. Inferring from this finding, it seems as if the level of passion for inventing has an influence on whether uncertain entrepreneurs choose an effectuation approach.

Practical implications

Insights from this paper are not only contributing to the academic literature on effectuation research, but also draw several implications for practical use. The scores of the different scales provide important insights for entrepreneurs starting their own venture. The descriptive scores in this sample show a general preference for the causation approach (M= 4.8, SD= .87) over the effectuation approach (M=3.87, SD= 1.23). Entrepreneurs from this sample are therefore relying on a structured business plan rather than an acceptance of the risks with no specific outcomes. However, as has been identified in the theoretical chapter of this paper, academics view the effectuation approach as a viable alternative to the causation approach (Fisher, 2012; Coviello & Joseph, 2012). The scores of this sample confirms these assumptions. Even if the majority of entrepreneurs in this study prefer a more structured approach, opting for an effectuation approach may still be highly recommendable for various new ventures. The decision to either follow a causation or effectuation approach may be based on individual preferences and personal characteristics of the entrepreneurs. This also aligns with the original ideas of Sarasvathy (2001) surrounding causation and effectuation approaches, who stated that analyzing causal and effectual approaches as a strict dichotomy makes sense.

Furthermore, participants show a very high general score of passion (M=4.19, SD=.54). Although neither the passion for inventing, nor for developing or founding were found to affect the decision-making processes of entrepreneurs, it may still be highly relevant for other practical purposes of entrepreneurship. For practical implications of this study, the moderating effect of the passion for inventing is of more relevance. As previously discussed, there exists a moderating effect for the relationship between uncertainty and causation. For practical purposes, entrepreneurs may benefit from personal insights of their passion, which may give helpful insights to the venture creation approach they should follow. Results suggest that entrepreneurs scoring high on uncertainty and passion for inventing may be better off relying on an effectuation approach.

Generally, the theoretical aspects in this report may be especially helpful for novel entrepreneurs. Detailed insights discussed in this paper about the theoretical foundations of

entrepreneurship may be beneficial prior to the venture creation process. Although the approaches of causation and effectuation are quite dissimilar from each other, entrepreneurs may need to be aware of these differences before they begin their venture creation. Conclusively and to give an answer to the title of this paper: Don't fear the unknown, but regard uncertainty as a necessity.

Limitations

Similar to other studies, this paper does not come without limitations. One of such limitations revolves around the reliability of scales used for measuring the causation approach. The low Cronbach's alpha of (α=.502) indicates that the construct may not be measuring the same underlying construct. The reliability could be increased by substituting items with poor correlations and making sure that all items are inter-related (Heo, Kim and Faith, 2015). Additionally, there has been a debate surrounding Cronbachs's alpha and its appropriate usage among the social sciences. According to Bonnett and Wright (2014), the assumptions surrounding Cronbach's alpha that are commonly used put unnecessary restrictions on the usability of scales. The authors instead recommend a confidence interval that has no requirement of equal variances.

Furthermore, the study includes a total of 81 respondents. This limited sample size brings forward problems when interpreting results with regards to their generalizability. Reasons for the limited sample size included several factors. Among these is the difficulty when contacting entrepreneurs of firms due to their workload and the limited ability to talk to entrepreneurs in person due to the Corona pandemic. Furthermore, as Bartholomew and Smith indicate, response rates are usually a lot lower when people involved in the development or management of the firm are involved (Bartholomew & Smith, 2006). This was enhanced through the distribution of online questionnaires, which limited the response rates in comparison to the large number of entrepreneurs that were contacted. Further limiting the generalizability of the results is the sampling of respondents, which mainly centers around entrepreneurs of Northern and Eastern Germany. As Franco, Haase and Lautenschläger (2010) identified, large differences exist between entrepreneurs of Eastern and Western Germany. This could be taken into account when conducting further studies.

Recommendations for future research

Several recommendations for future research can be drawn from the newly gained insights from this report. These recommendations revolve around the scales used to measure the constructs at hand, the generalizability of the results, as well as other areas of research in the field of entrepreneurship that may be relevant for further insights.

Firstly, the causation scale of Arend et al. (2015) shows a very low Cronbach alpha score, indicating that the proposed instrument may not be measuring the intended construct of causation. A scale with other items that are better suited to measure the intended construct may be more appropriate for future measurements. Secondly, regarding the generalizability of the results, a larger and more distributed sample across Germany should be used. With several main differences regarding cultural aspects such as local language between Northern and Southern Germany, future studies should take this into account. These differences also include governmental rules and regulations due to the different state laws may affect entrepreneurs. Among others, these include options for funding or the availability of entrepreneurial networks (Kraus, Richter, Papagiannidis & Durst, 2015). Thirdly, other areas of entrepreneurs' personality should be considered in a more detailed manner. The existing literature on the context of effectuation and causation is still underdeveloped and lacks detailed insights. Among other insights, this study showed that the factors of entrepreneurial passion and uncertainty seem to play an important role in entrepreneurship. Future research should follow up on this more detailed approach to find out the precise role of both uncertainty and passion to expand the theory of effectuation.

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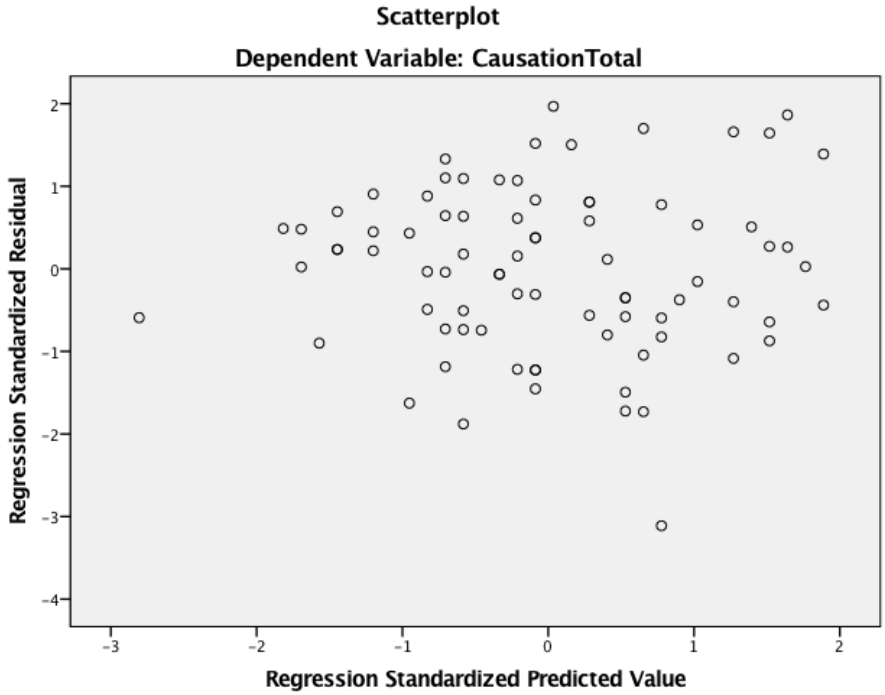
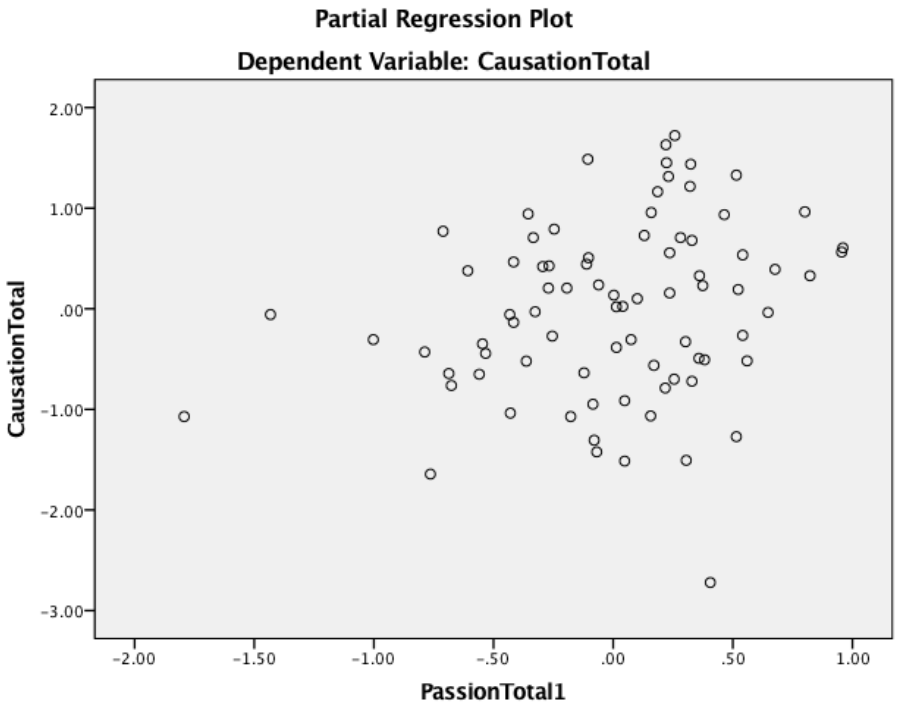
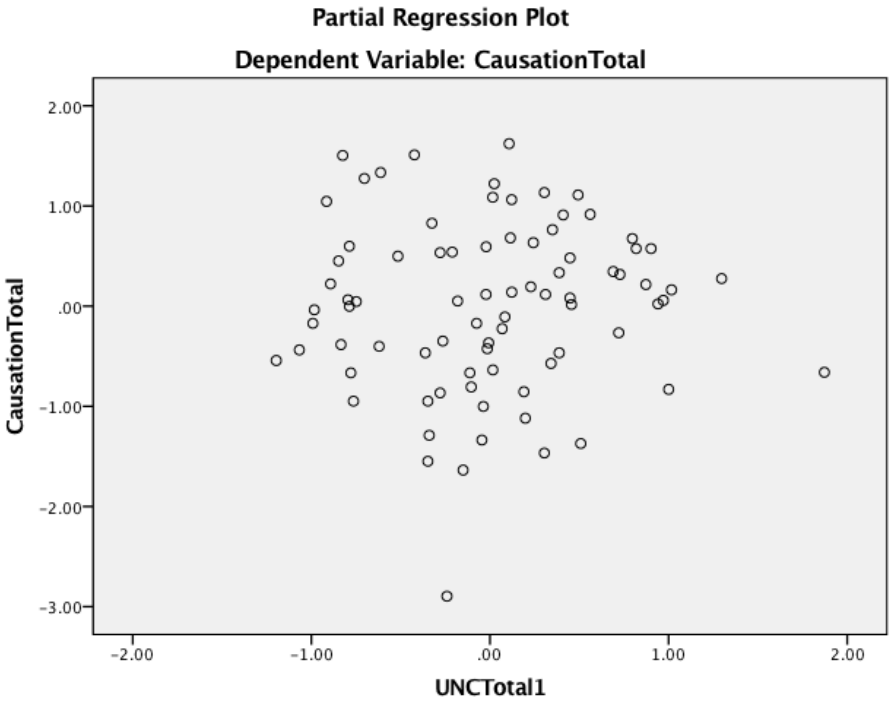
Appendix

Appendix A: Multiple Regression Assumptions






Partial Regression Plot
Dependent Variable: CausationTotal
CausationTotal
UNCTotal1
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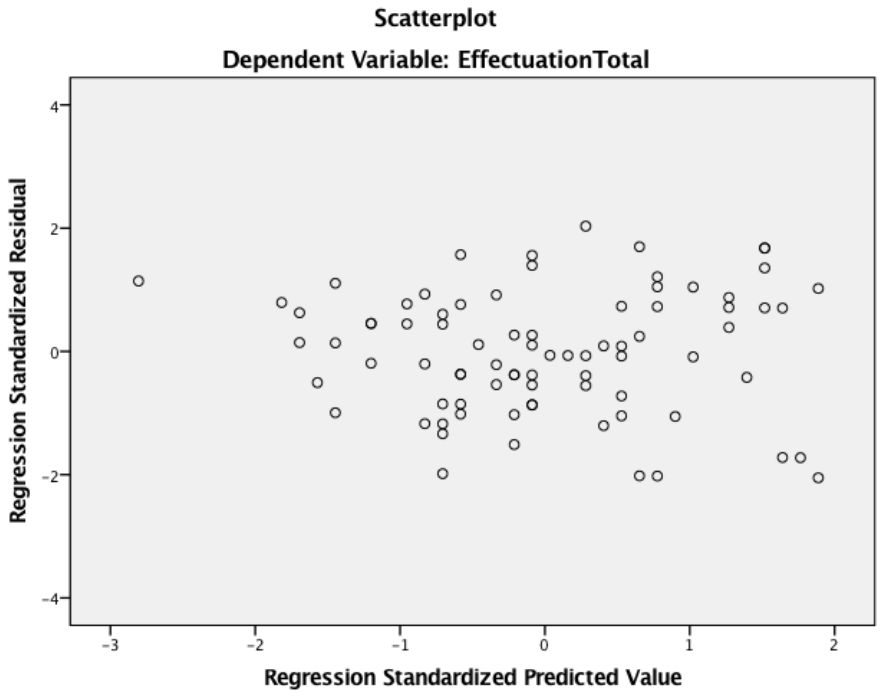
1.00
.00
-1.00
-2.00
-3.00
-2.00
-1.00
.00
1.00
2.00


Scatterplot
Dependent Variable: EffectuationTotal
Regression Standardized Residual
Regression Standardized Predicted Value
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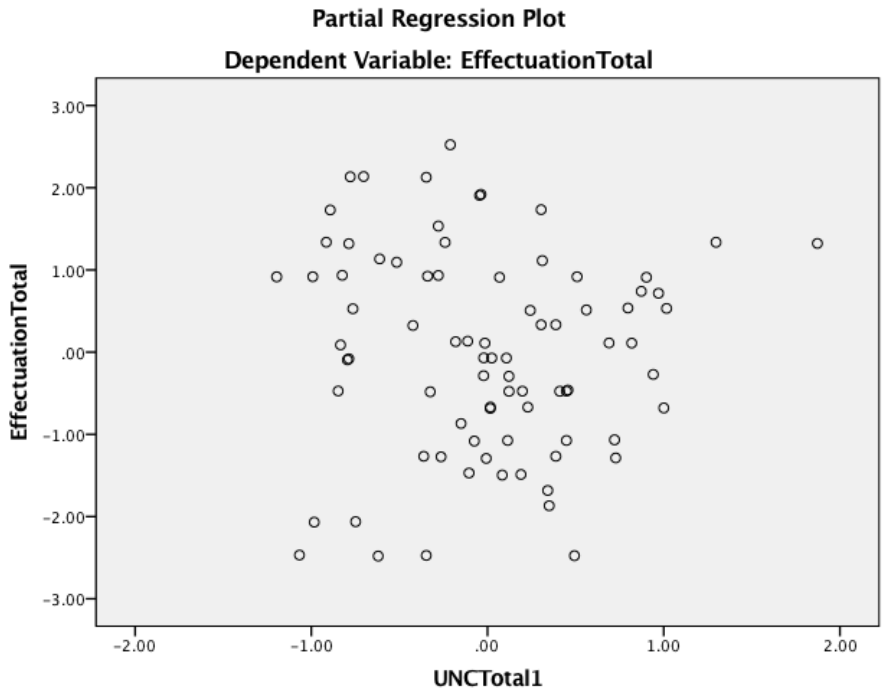
2
0
-2
-4
-3
-2
-1
0
1
2


Partial Regression Plot
Dependent Variable: EffectuationTotal
EffectuationTotal
3.00
2.00
1.00
.00
-1.00
-2.00
-3.00
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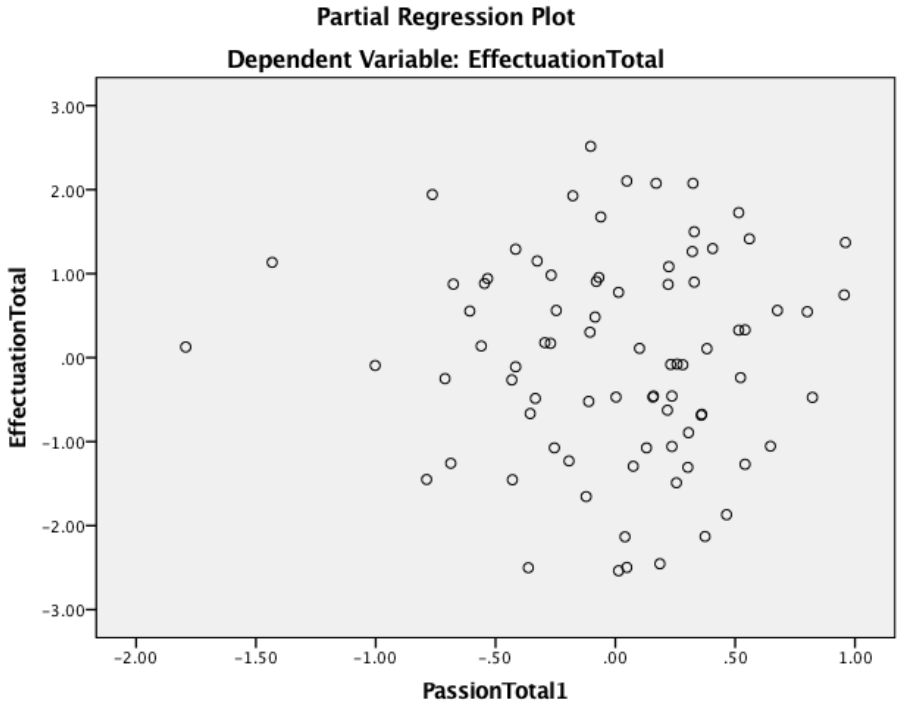
-1.00
.00
1.00
2.00
UNCTotal1


Partial Regression Plot
Dependent Variable: EffectuationTotal
EffectuationTotal
3.00
2.00
1.00
.00
-1.00
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-3.00
-2.00
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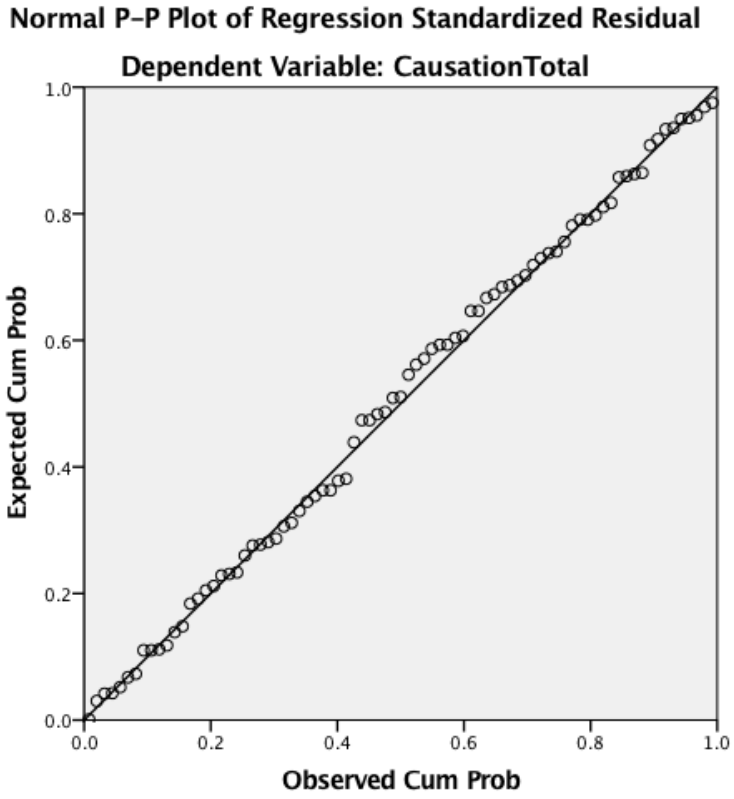
-1.00
-.50
.00
.50
1.00
PassionTotal1


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: CausationTotal
Expected Cum Prob
Observed Cum Prob
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0.2
0.4
0.6
0.8
1.0

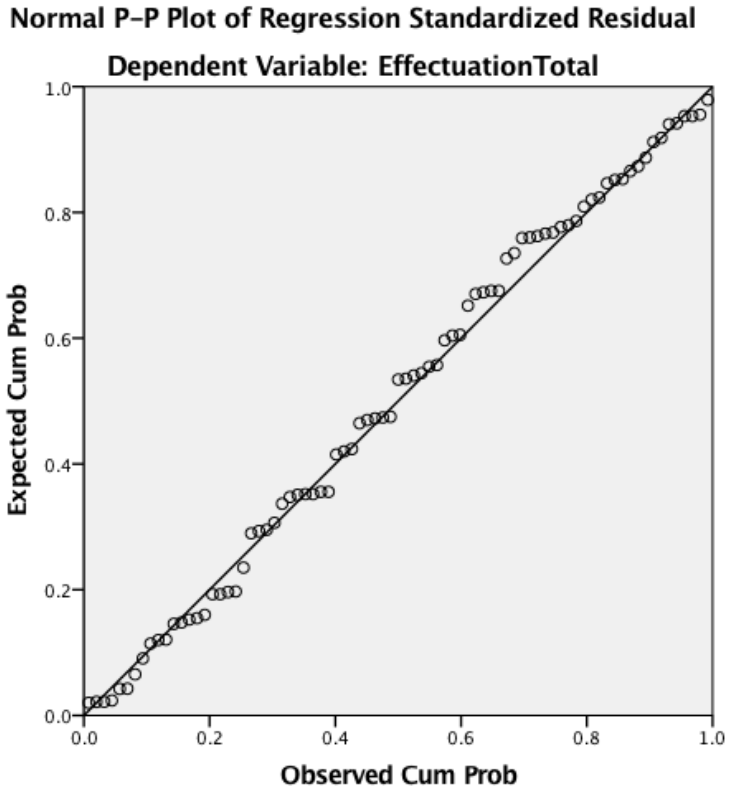
Normal P-P Plot of Regression Standardized Residual
Dependent Variable: EffectuationTotal
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

Table 1: Tests of Normality

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	**Df**	**Sig.**	**Statistic**	**Df**	**Sig.**
Causation Total	.065	81	.200	.986	81	.507
Effectuation Total	.082	81	.200	.980	81	.251
Passion Total	.117	81	.008	.936	81	.001
Uncertainty Total	.091	81	.006	.982	81	.318

Table 2: Effectuation Collinearity Statistics

	Tolerance	**VIF**
PassionINV	.654	1.530
PassionFOUND	.656	1.524
PassionDEV	.697	1.434
UncPA	.703	1.422
UncIA	.632	1.581

Table 3: Causation Collinearity Statistics

	Tolerance	**VIF**
PassionINV	.654	1.530
PassionFOUND	.656	1.524
PassionDEV	.697	1.434
UncPA	.703	1.422
UncIA	.632	1.581

Appendix B: Factor Analysis

Table 4: Factor Analysis Effectuation/Causation
Extraction Method: Principal Component Analysis

	Initial Eigenvalues			Extraction Sums of Squared loadings			Rotation Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	2.785	27.852	27.852	2.785	27.852	27.852	2.175	21.746	21.746
2	1.731	17.315	45.167	1.731	17.315	45.167	1.717	17.167	38.913
3	1.153	11.527	56.694	1.153	11.527	56.694	1.449	14.493	53.406
4	1.037	10.374	67.067	1.037	10.374	67.067	1.366	13.661	67.067
5	.939	9.389	76.457						
6	.635	6.350	82.806						
7	.562	5.624	88.430						
8	.489	4.895	93.325						
9	.348	3.479	96.804						
10	.320	3.196	100.00						

Table 5: Factor Matrix Effectuation/ Causation scale

	Factor 1	**Factor 2**
	Effectuation	**Causation**
Caus1	-.390	**.531**
Caus2	-.072	**.417**
Caus3	-.024	**.550**
Caus4	.402	**.590**
Caus5	.047	**.764**
Effect1	**.723**	-.007
Effect2	**.686**	.063
Effect3	**.725**	-.112
Effect4	**.598**	.137
Effect5	**.765**	-.079

Table 6: Factor Analysis Entrepreneurial Passion
Extraction Method: Principal Component Analysis

	Initial Eigenvalues			Extraction Sums of Squared loadings			Rotation Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	4.586	35.274	35.274	4.586	35.274	35.274	2.963	22.795	22.795
2	1.687	12.977	48.251	1.687	12.977	48.251	2.334	17.951	40.746
3	1.263	9.712	57.964	1.263	9.712	57.964	2.238	17.218	57.964
4	.927	7.131	65.094						
5	.840	6.460	71.554						
6	.798	6.136	77.690						
7	.623	4.793	82.483						
8	.543	4.180	86.663						
9	.489	3.763	90.425						
10	.428	3.296	93.721						
11	.333	2.565	96.286						
12	.304	2.340	98.626						
13	.179	1.374	100.00						

Table 7: Factor Matrix Entrepreneurial Passion

	Factor 1	**Factor 2**	**Factor 3**
	Passion Founding	**Passion Developing**	**Passion Inventing**
PassionInv1	.423	.206	**.425**
PassionInv2	.201	.423	**.588**
PassionInv3	.202	.148	**.744**
PassionInv4	-.113	.048	**.751**
PassionInv5	.351	.185	**.497**
PassionFoun1	**.737**	-.168	.148
PassionFoun2	**.747**	.122	.256
PassionFoun3	**.657**	.310	.204
PassionFoun4	**.742**	.151	.063
PassionDev1	.179	**.651**	.268
PassionDev2	.140	**.889**	.012
PassionDev3	.072	**.749**	.328
PassionDev4	.653	**.341**	-.187

Table 8: Factor Analysis Uncertainty
Extraction Method: Principal Component Analysis

	Initial Eigenvalues			Extraction Sums of Squared loadings			Rotation Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	4.558	37.980	37.980	4.558	37.980	37.980	3.074	25.614	25.614
2	1.494	12.448	50.427	1.494	12.448	50.427	1.921	16.009	41.623
3	1.049	8.740	59.168	1.049	8.740	59.168	1.814	15.117	56.739
4	1.008	8.403	67.570	1.008	8.403	67.570	1.300	10.831	67.570
5	.846	7.046	74.616						
6	.660	5.502	80.119						
7	.568	4.733	84.852						
8	.501	4.174	89.026						
9	.407	3.390	92.416						
10	.371	3.088	95.504						
11	.317	2.644	98.148						
12	.222	1.852	100.00						

Table 9: Factor Matrix Uncertainty

	Factor 1	**Factor 2**
	Inhibitory Anxiety	**Prospective Anxiety**
UncPA1	.370	**.725**
UncPA2	.167	**.713**
UncPA3	-.047	**.780**
UncPA4	.190	**.100**
UncPA5	.213	**.101**
UncPA6	.156	**.130**
UncPA7	.098	**.336**
UncIA1	**.779**	.292
UncIA2	**.851**	.156
UncIA3	**.784**	.074
UncIA4	**.616**	-.033
UncIA5	**.683**	.116

Table 10: Inter-item correlation Causation:

	Item 1	Item 2	Item 3	Item 4	Item 5
Causation 1					
Causation 2	.102				
Causation 3	.336**	.058			
Causation 4	.019	.031	.083		
Causation 5	.142	.258**	.197	.439**	

Table 11: Inter-item correlation Effectuation:

	Item 1	Item 2	Item 3	Item 4	Item 5
Effectuation 1					
Effectuation 2	.386**				
Effectuation 3	.504**	.353**			
Effectuation 4	.129	.363**	.347**		
Effectuation 5	.504**	.446**	.398**	.431**	

Table 12: Inter-item correlation Entrepreneurial passion:

	1	2	3	4	5	6	7	8	9	10	11	12
Passion Inventing 1												
Passion Inventing 2	.362**											
Passion Inventing 3	.318**	.504**										
Passion Inventing 4	.154	.305*	.401**									
Passion Inventing 5	.411**	.329**	.355**	.246*								
Passion Founding 1	.327**	.150	.232*	.082	.189							
Passion Founding 2	.377**	.328**	.319**	.051	.378**	.404**						
Passion Founding 3	.344**	.383**	.257*	.240*	.230*	.474**	.554**					
Passion Founding 4	.224**	.294**	.266*	-.030	.293**	.351**	.604**	.440				
Passion Developing 1	.382**	.436**	.267*	.166	.265*	.097	.330**	.315**	.286**			
Passion Developing 2	.226**	.373**	.209	.135	.177	.104	.116	.420**	.176	.509**		
Passion Developing 3	.278*	.415**	.383**	.229*	.371**	-.031	.341**	.300**	.206	.412**	.598**	
Passion Developing 4	.251*	.144	.126	-.052	.300**	.363**	.333**	.405**	.422**	.137	.409**	.203

Table 13: Inter-item correlation Uncertainty:

	1	2	3	4	5	6	7	8	9	10	11	12
Prospective Anxiety 1												
Prospective Anxiety 2	.461**											
Prospective Anxiety 3	.440**	.375**										
Prospective Anxiety 4	.164	.099	.255*									
Prospective Anxiety 5	.273*	.286**	.243*	.353**								
Prospective Anxiety 6	.396**	.152	.144	.116	.277*							
Prospective Anxiety 7	.423**	.315**	.318**	.187	.467**	.401**						
Inhibitory Anxiety 1	.525**	.234*	.237*	.321**	.237*	.302**	.347**					
Inhibitory Anxiety 2	.436**	.223*	.108	.248*	.327**	.230*	.200	.701**				
Inhibitory Anxiety 3	.330**	.195	.086	.254*	.332**	.123	.204	.537**	.608**			
Inhibitory Anxiety 4	.191	.230*	.099	.134	.300**	.234*	.289**	.487**	.420**	.380**		
Inhibitory Anxiety 5	.400**	.312**	.146	.179	.424**	.369**	.343**	.520**	.554**	.510**	.532**	