

The gendered effect of the usage of the effectuation and/or causation decision-making style in the entrepreneurial process

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ABSTRACT,

In recent years, a lot of research has been conducted on entrepreneurial decision-making. On the one hand, there is a more planning-based causation approach, and on the other hand, there is the effectuation approach which is more adaptive and flexible. A lot of antecedents have already been explored, however, the influence of the antecedent ‘gender’ has received less attention. Researching the gendered effect of the use of the causation and/or effectuation decision-making style will give an understanding to the role of gender and can enhance the accuracy and relevance of entrepreneurial theories and practices. Interviews were conducted to receive data from male and female entrepreneurs to get an understanding of their thinking and behavior in their entrepreneurial process and to see if they rely more on the effectuation or causation approach. The results showed that females do tend to rely more on the effectuation framework when considering the affordable loss and bird in hand principles. However, for males the use of the different decision-making styles is more balanced compared to their female counterparts, indicating a greater flexibility in their decision-making styles. The study also contributes to academic discourse by questioning the idea that decision-making styles are separate. It highlights the importance of combining distinctive styles and considering the context in future research.

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Keywords

Entrepreneurship, gender, decision-making styles, effectuation, causation

1. INTRODUCTION

Studies indicate a growth in entrepreneurship in Small and Medium Enterprises (SMEs) (Brindley, 2005). A lot of definitions of entrepreneurship exist. Some people see entrepreneurship as a process of successful organization, while others view it as a process of building skills and mindset (Diandra & Azmy, 2020).

Entrepreneurship can be seen from different viewpoints. Some studies define entrepreneurship as something that starts with action and creating a new organization (Barot, 2015). Other studies argue that entrepreneurship involves experimentation because people realize that success cannot be determined in advance from existing principles (Kerr et al., 2014). However, the final aim of the definition of entrepreneurship is to stimulate job creation which in turn fosters economic growth (Barot, 2015).

In today's business world, the role of decision-making in the entrepreneurial process has become important (Jamin, 2024). In the turbulent environment of a venture's startup phase, many challenges exist (Araújo et al., 2021). Understanding how entrepreneurs act and behave in their entrepreneurial process is essential. Therefore, it is also important to understand how to deal with the challenges in the early turbulent stages of the process (Araújo et al., 2021; Ehsani & Osiyevskyy, 2022). One of these challenges is uncertainty, which heavily influences entrepreneurial decision-making.

For new ventures, it is important to make informed decisions about things like creating opportunities and entering new markets (Buccieri et al., 2023). Research into decision-making styles in entrepreneurship has been growing, showing that there are differences between experts and beginning entrepreneurs (Perry et al., 2012).

Studies on entrepreneurial decision-making distinguish between planned and emergent strategies. According to Mintzberg and Westley (2001), strategy-making as a planning task can be seen as an approach that is rational ("think first") and the emergent strategy can be seen as action-oriented ("doing first").

According to Brinckman et al. (2010), prior research suggests that a planning-based approach improves venture performance. However, he also mentions that this is less significant for newer businesses, who are in the early uncertain stages of their process. Decision-making and acting in uncertain situations is part of the creation of a new venture (Jamin, 2024). These uncertain situations influence entrepreneurship (Townsend et al., 2018) and thus decision-making in the entrepreneurial process.

The planning-based approach relies on prediction. Planning is used to predict the future and prepare for the challenges of the future (Blatstein, 2012). Planning-based approaches specify goals and write down steps to achieve these specified goals (Delmar & Shane, 2003). This means that planning gives firms more control over how to achieve the goals. The planning-based approach can be seen as the causal decision-making approach.

On the other hand, there is the emergent or flexible approach, which can be seen as the effectual decision-making approach. Contrary to the causal approach, the effectual approach does not use a predefined plan which is followed (Sarasvathy, 2001). Maine et al. (2015) mention that previous research suggests that effectuation is associated with creating opportunities in situations where the venture's future is uncertain.

Sarasvathy (2001) argues that expert entrepreneurs navigate uncertainty by employing an emergent decision-making approach known as the effectuation approach, particularly during

the unpredictable early stages of starting a business. Effectuation involves starting with available resources, forming partnerships, taking calculated risks, and leveraging contingencies. This approach contrasts with causation, the traditional method used by managers in established organizations, which relies on predetermined goals and existing knowledge. While causation focuses on controlling the future through prediction, effectuation challenges this by following a non-predictive method.

While both women and men can engage in entrepreneurship, scholars assume that men and women are inherently different from each other (Ahl, 2006). Gender shapes the entrepreneurs' perceptions (Shinnar et al., 2012), which in turn affects the entrepreneurial process. Crow et al. (1991) and their results also suggest that there are gender-related differences in certain aspects like value systems, weights of decision issues, and final decisions. This means that gender influences decision-making processes.

Furthermore, Yang et al. (2020, p.2) mention that "*results show that the entrepreneurs' gender influence the mediated effect of causation and effectuation.*" Yang et al. (2020, p.2) also mention that "*Female entrepreneurs enhance the positive effect of effectuation, while male entrepreneurs weaken the negative effect of causation.*" This means that the gender of an entrepreneur can influence the effectiveness of the decision-making approaches (effectuation and causation) in achieving success and thus that gender influences their use of the approaches.

Many studies have seen that entrepreneurs not only use one of the approaches but also often mix the effectuation and causation decision-making styles. However, we do not always understand why they do this. Grégoire and Cherchem (2020) pointed out that in their extensive review of effectuation theory, there is lack of direct evidence or clear ways to measure the exact processes that explain these phenomena. They argue that, mentioned by Arend et al. (2015), future research should progress beyond simply describing what expert entrepreneurs do in uncertain situations and instead focus on explaining why their decisions and actions are effective, efficient, and superior to alternatives. Grégoire and Cherchem (2020) emphasize the need for thorough investigation into the antecedents and consequences of effectuation (and causation). This gap makes the observations less reliable and less useful for theory. It shows the importance of having better explanations about the situations and reasons why entrepreneurs choose one decision-making style over another. Even though various antecedents affecting entrepreneurial decision-making have already been explored, the influence of the antecedent "gender" on this process has received notably less attention.

According to Cowden et al. (2023), future research is called for to engage in a more fine-grained investigation into how gender influences the effect of each of the effectuation components on performance. Therefore, future research can provide much greater detail to the gendered effect of effectuation (or causation) by looking at gender as a spectrum and by measuring feminine and masculine tendencies. Based on these future research suggestions this study aims to investigate the following research question: "*What is the gendered effect of the usage of the effectuation and/or causal decision-making style in the entrepreneurial process?*"

When researching how gender affects decision-making styles in entrepreneurship, it is crucial to understand the biological differences between males and females. These differences have played a big role in shaping how society sees and expects men and women to behave. In this study, it is important to mention that nowadays, people recognize that gender is not just male or

female, but there are also non-binary identities. However, for this research, the focus lay on the difference between males and females based on biology because this allowed for more targeted exploration of the research question.

The research question created an understanding of the role of gender in entrepreneurial decision-making. In this way, valuable insights were created into the decision-making process and approaches of both male and female entrepreneurs in their entrepreneurial decision-making process.

2. THEORETICAL FRAMEWORK

2.1 Effectuation and causation

As explained, two decision-making approaches exist. These are called effectuation and causation. The planning-based approach can be seen as the causal decision-making approach. Causation, the traditional approach, is action oriented. Defined goals determine the subsequent actions, and the choice of which people will be involved in the entrepreneurial process (Frigotto & Della Valle, 2018). Also, in this approach, predictive tools are used to predict future events and consequently prevent uncertainties. Causal models assume that the state of affairs can be somehow predicted (Frigotto & Della Valle, 2018).

On the contrary, the effectuation model is an approach that models decision-making under ignorance (Frigotto & Della Valle, 2018). The effectuation approach emphasizes the behavioral strategies people use to act in situations of uncertainty. In this research there is awareness of the idea that effectuation is not really seen as a theory, because as described by for example Grégoire and Cherchem (2020), effectuation would be rather seen as a mode of action. Also, as cited by Grégoire and Cherchem (2020), Sarasvathy (2008, p. 61-62) sees effectuation as a ‘*pragmatic logic for acting upon the world rather than as a positivist theory to be tested and proved to be true or false.*’

Effectuation focuses on what can be controlled in an uncertain future. It suggests that if you can control a situation, you don't need to predict it (Sarasvathy, 2008). This reduces the reliance on predictive data. Because effectuation is flexible in nature, the entrepreneur can shape and adjust goals over time (Pfeffer & Khan, 2018).

According to Mäkimurto-Koivumaa and Puhakka (2013), uncertain situations are not solved by causation-based forecasting but based on the effectuation approach which tries to control the present. Because new ventures operate in uncertain situations (Loch et al., 2007), the effectual approach is especially used during the uncertain and unpredictable stages of the new venture process.

The processes can be comprehended through five principles:

Bird in Hand: Effectuation starts with its existing means and focuses on the creation of one or more possible outcomes with these means (Sarasvathy, 2001). Entrepreneurs are means driven. This means they use what is already available rather than aiming for what is out of reach. Entrepreneurs have an open and flexible mindset, considering different possibilities (Mäkimurto-Koivumaa & Puhakka, 2013). On the other hand, causation processes choose a predetermined goal and then focus on choosing between means to achieve that goal (Sarasvathy, 2001). The goal determines the actions and who to involve in the process (Frigotto & Della Valle, 2018).

Affordable Loss: Entrepreneurs manage risk by investing only what they can afford to lose rather than focusing on potential gains (Sarasvathy, 2008). Decisions are guided based on

minimizing downside rather than maximizing upside (minimax criterion). Entrepreneurs focus on affordable loss by considering low-cost strategies to face potential worst-case scenarios, rather than only pursuing strategies that will bring the highest expected returns, on which the causation approach focuses (Frigotto & Della Valle, 2018).

Lemonade: Entrepreneurs see unexpected events as opportunities to come up with new ideas and to exercise control of the emergent situation (Sarasvathy, 2008). This means that entrepreneurs control the state space, rather than estimating it. Controlling the state space is done by creating collaborative action (Mäkimurto-Koivumaa & Puhakka, 2013). Contrary, the causal approach believes that the future can be understood as a natural continuation of the past, where patterns and trends from previous experience can help us predict what happens in the future (Frigotto & Della Valle, 2018). Also, as explained by Brettel et al. (2012), unexpected events are avoided to quickly reach their predetermined goals.

Crazy Quilt: Entrepreneurs foster partnerships and increasing networks to help create future opportunities (Frigotto & Della Valle, 2018). Frigotto and Della Valle (2018) also mention that entrepreneurs establish pre-commitments with a wide range of stakeholders, relying on the natural self-selection of those who will become partners or competitors. Uncertainty will then be reduced (Brettel et al., 2012). Contrarily, the causal approach only establishes relationships with stakeholders if it is necessary (Frigotto & Della Valle, 2018) and uncertainty is avoided through analyzing the market and competitors (Brettel et al., 2012). This means that entrepreneurs using the causal approach, use competitive advantages and try to refuse outsiders as much as possible (Sarasvathy, 2001).

Pilot in the Plane: Entrepreneurs focus on the actions they can control and guide their businesses towards achievable goals and new opportunities (Sarasvathy, 2008). In uncertain environments, new opportunities are developed (Banu & Md. Uddin, 2023). The effectuation approach believes “*that if the future is in control, then there is no need for prediction*” (Banu & Md. Uddin, 2023, p.82). On the contrary, causation focuses on controlling the future through prediction (Sarasvathy, 2008).

2.2 Gender

Studies show that male and female entrepreneurs may differ in their entrepreneurial activities. These differences result from for example differential access to resources and support (Powell & Eddleston, 2013). Female entrepreneurs have a lack of access to human, financial and social resources and this encourages them to pursue work-family synergies, from which they benefit (Powell & Eddleston, 2013).

According to Brindley (2005), evidence shows that in the last decades, entrepreneurship is growing. Today, the term ‘entrepreneur’ is no longer primarily associated with males. Nowadays, women are free to express their ideas and dissatisfactions which is different from a long time ago where women were only seen as a mother who had to take care of the kids and the household (Narayanasamy et al., 2011). Women's growing power and autonomy are noticeable across different areas in life, including entrepreneurship (McClelland et al., 2005). However, there is still uncertainty in women's capabilities as successful entrepreneurs (McClelland et al., 2005). There is more interest in gender differences in business decision-making under risk due to the increased participation of females in the workforce (Powell & Ansic, 1997).

Gender plays a significant role in shaping entrepreneurs' perceptions, and it affects the entrepreneurial process (Shinnar et

al., 2012). Gender biases make it more difficult for women to succeed in business because the business world mostly focuses on men. This hinders women trying to start and grow their own businesses (Marlow & McAdam, 2013). Scholars have researched the role of gender in creating new ventures, highlighting the diverse barriers women face in starting the process of creating a business (Hentrich, 2022), which have always been a popular topic in women's entrepreneurship research (Wu et al., 2019). Motherhood is one of the barriers and it affects the involvement of women in entrepreneurship by shaping their family and household situation (Brush et al., 2009). Researchers mention that females still follow some feminized working patterns, because they try to balance their work with their family responsibilities (McAdam, 2013). Due to this, many think that this lowers the value and growth potential of the businesses of women.

Also, as mentioned by Wu et al. (2019), data from World Development Report 2012 show that in many societies, women are usually expected to take care of household and children more than men, leading them to do more housework and take care of family members. Consequently, they experience work-family conflicts because the time spent on family related activities cannot be spent on activities within work (Greenhaus et al., 1985). Despite the startup environment being challenging for mothers (Startbase, 2021), the conflicts between work and family responsibilities motivate women to begin their own businesses. This is because women see the flexibility and need to take care of their children as motivators (McGowan, 2012).

Another thing that can be seen as a barrier for females is their entrepreneurial finance. Entrepreneurial finance is a matchmaking process where entrepreneurs present their business ideas and investors choose the best ones to fund and support (Denis, 2004). A study conducted by Díez-Martín et al. (2016) shows that having access to finance for entrepreneurship is very important. However, there are still some resource providers such as venture capitalists and bank officers who have masculinized images of successful entrepreneurs (Nelson et al., 2009). This disadvantages women entrepreneurs who are seeking business finance. This thus means that women face big challenges in getting venture capital funding. Research by Brush et al. (2014) shows that only 2.7% of companies in the USA who have a female CEO, received venture capital funding. Adding to this, women face other disadvantages such as higher loan denials and higher interest rates than men (Muravyev et al., 2009).

Studies show that male and female entrepreneurs may differ in their entrepreneurial activities. These differences result from for example the already mentioned differential access to resources and support (Powell & Eddleston 2013).

When entrepreneurs use the effectuation approach to grow their businesses by combining resources, research suggests that female entrepreneurs tend to make more efficient use of their existing resources compared to males, which enhances the positive impact of effectuation indirectly (Yang et al., 2020).

Conversely, research has showed that male entrepreneurs who typically have access to larger resource pools than females (Kanze et al., 2018), seek to diminish the negative impact of causation (Yang et al., 2020). To counteract these negative effects of causation, they strive to introduce more novelty into their resource combination activities than women.

Another example in which male and females differ is their approaches to risk (Cliff, 1998). Prior research has suggested that there are differences in entrepreneurs' perceptions between women and men when evaluating risk (Karmarkar, 2023). Gender differences in risk attitudes can help understand why they behave differently in social situations and achieve different

economic outcomes (Dohmen et al., 2011). According to Dohmen et al. (2011), female entrepreneurs have a greater sensitivity towards risk than men. The fact that women are more sensitive to risk than men, is reflected in all aspects of their decision-making, like the choice of profession, their investment decisions, and their decisions about what products they buy (Eckel & Grossman, 2008).

Gender differences in attitudes towards uncertainty are also observed in decision framing (Karmarkar, 2023). Various studies explore the reasons behind these differences to gain a deeper understanding of how gender influences entrepreneurial decisions. Fehr-Duda et al. (2006) noted gender differences in decisions about financial domains, as well as the decisions which involve gains and losses with varying probabilities. Powell and Ansic (1997) found that women exhibit lower tolerance for financial risk than men, regardless of familiarity, ambiguity, or framing. They also found that men are more likely to utilize external information sources like financing (Coleman, 2000). The heightened risk aversion in women may stem from their tendency to experience emotions more intensely (Brebner, 2003). Fujita et al. (1991) also mention that women have more negative effects than men because women have a greater effect intensity than men. As a result, when faced with risky decisions, women tend to overweigh the probability of losses, making them more risk averse. Women tend to be more risk-prone toward losses and men tend to be more risk-prone towards gains (Schubert et al., 1999). Also, women will less likely invest in more resources than is affordable. They limit costs because they are alert to potential risks. This strengthens the impact of the effectuation approach (Yang et al., 2020).

2.3 Propositions

Research on the use of effectuation/causation and its antecedent 'gender' already exists. Examples are the research conducted by Yang et al. (2020), who conclude that females enhance the positive impact of effectuation and that males, in opposition, seek to diminish the negative effect of causation. Adding to this, they also conclude that women who are alert to risks enhance the influence of the effectuation approach, which means they would rely more on that approach.

However, there is limited existing research on this topic that can give a real answer to the research question. Looking at the already existing knowledge on the decision-making approaches effectuation and causation and the antecedent gender in the entrepreneurial process, some propositions regarding the research question were made. These show the tendencies of men and women to choose one approach over the other and its reasons.

In the literature, there is debate about if there are really five principles within the effectuation and causation approach. For example, Brettel et al. (2012) indicate that there are only four principles that are important to use. Investigating the differences between male and female entrepreneurs revealed significant differences in their processes. As mentioned, literature highlights challenges for women, which lead to different behaviors and strategies compared to men. Literature showed key differences between male and female which include access to external (financial) resources, approaches to risk and attitudes toward uncertainty.

The "bird in hand" approach aligns with women's tendency to rely more on their existing resources due to fewer available resources (Brush et al., 2009) (McAdam, 2013) (Kanze et al., 2018). Similarly, the "affordable loss" principle corresponds to women's greater financial risk aversion (Powell & Ansic, 1997) and men's preference for using external information sources like financing (Coleman, 2000).

Given that these are the key differences according to literature and that these differences align with the “bird in hand” and “affordable loss” principles, this study focused only on these two principles. These principles best explained the gender-specific differences in decision-making. It provided a clear understanding of how male and female entrepreneurs make decisions. Other effectuation principles, while valuable, did not directly address these core gender differences.

According to Dohmen et al. (2011), female entrepreneurs are more risk averse than men and women have limited access to resources compared to male entrepreneurs (Kanze et al., 2018). Female entrepreneurs are more likely to manage risk by focusing on minimizing potential losses rather than maximizing potential gains as a means of managing risk effectively (Schubert et al., 1999). This cautious approach is particularly evident in their decision-making process, where they are more likely to invest only what they can afford to lose. Thus, research suggests that women are more attuned to the financial implications of their decisions and are less willing to take on excessive risk. Therefore, the affordable loss principle aligns closely with their risk management and resource constraints.

Proposition 1a: Female entrepreneurs tend to rely more on the effectuation framework when considering the affordable loss principle of the effectuation model.

With typically larger resources pools compared to female entrepreneurs (Kanze et al., 2018), and a higher tolerance for financial risk than women (Powell & Ansic, 1997), men tend to pursue strategies that aim for the highest potential returns (Sarasvathy, 2001), which is consistent with the expected returns principle of the causation framework. Unlike female entrepreneurs who prioritize minimizing potential losses, male entrepreneurs are more focused on maximizing potential gains and are willing to take on greater risks to achieve their objectives. This preference for high-risk, high-reward strategies is often driven by their confidence in their ability to navigate uncertainties and take advantage of opportunities (Sarasvathy, 2001). Therefore, their tendency for taking risks aligns with the causation principle related to maximizing upside potential and thus taking actions to get the highest expected returns.

Proposition 1b: Male entrepreneurs tend to rely more on the causation framework when considering the expected returns principle.

According to Brush et al. (2014) and Muravyey et al. (2009), women are faced with challenges in accessing external resources and financing. The challenge of motherhood introduces additional responsibilities and time constraints in women entrepreneurship (Brush et al., 2009) (McAdam, 2013). Due to these challenges women entrepreneurs tend to prioritize leveraging existing resources, such as their skills, networks, and personal savings to start and grow their business. By emphasizing the utilization of existing means to create opportunities, women entrepreneurs can overcome resource constraints, adapt to uncertain environments, and balance their family responsibilities effectively. Therefore, the bird in hand principle closely aligns with the challenges of females.

2a: Female entrepreneurs tend to rely more on the effectuation framework when considering the bird in hand principle of the effectuation framework

On the other hand, men may be more inclined to pursue predetermined goals and seek external resources to achieve them. This preference is influenced by their greater access to resources and financing compared to female entrepreneurs (Kanze et al., 2018) (Nelson et al., 2009), without facing the same level of challenges related to balancing work and family responsibilities

(McAdam, 2013). Therefore, the principle of choosing a predetermined goal and then focusing on selecting between means to achieve that goal aligns with the causation framework.

2b: Male entrepreneurs tend to rely more on the causation framework when considering the goal-driven principle.

3. METHODOLOGY

3.1 Research design

The research design is shaped by the research question, supported by the theoretical framework and propositions. In line with recommendations and suggestions for future research, this research followed a qualitative research design, particularly semi-structured interviews, to gain richer insights by examining the dynamics of the role of gender, thus providing a more comprehensive understanding of the entrepreneurial process of both male and female. The semi-structured interview gave clear instructions and helped provide reliable and comparable data (Stuckey, 2013). This allowed for in-depth exploration of the gendered effect of the usage of the effectuation and/or causation decision-making styles of entrepreneurs.

Since the topic focused on relatively new and less explored areas, the approach involved inductive qualitative research. This method involved generating fresh data, analyzing it, and reflecting on the emerging themes suggested by the data (Saunders et al., 2019). Therewith this research includes primary data collection, of which ethical approval was requested at the ethics committee BMS of the University of Twente.

The dual aim of the study is to explore and to explain. Initially, the research question needs exploring how gender influences the use of the effectuation or the causation approach. Then, there is explanatory focus which involves analyzing insights to explain the role of gender in influencing the use of the decision-making style aiming to explain the effect of gender in this.

This research contributes to already existing research. This existing research is bigger research about the effectuation and causation decision-making styles of entrepreneurs within an incubator program. The work of Jamin (2024), who also did research on this topic, also contributes to the bigger picture, and gave a lot of inspiration to this research. This also means that some of the data in this research has been cited from his work. Me, and some other students from the bachelor study IBA 2024 now also added to this research by investigating some new topics within the bigger topic, which is in this case, the role of gender in the use of effectuation and/or causation in the entrepreneurial process.

3.2 Sampling

For the sampling method, a nonprobability sampling technique is used. This means that the probability of each individual being chosen for the sample is unknown and a focus needs to be used in selecting the sample (Makwana et al., 2023). Purposive sampling was used to choose individuals based on their relevance to the research (Makwana et al., 2023). As mentioned, bigger research in this field is already going on. The work of Jamin (2024), which contributes to broader research, already consists of a lot of data regarding male entrepreneurs. That is the reason why in this research, only female entrepreneurs from the Netherlands were interviewed. Adding to this, these female entrepreneurs are from different companies. This, to receive data from different angles and perspectives. The already existing research and the work of Jamin, to which this research adds, also considers the impact of incubators in the decision-making process. That is why also in this research there was focus on interviewing female entrepreneurs who are in an incubator program.

The first time, around fifteen female entrepreneurs within an incubator program were contacted. Only four responded, of which two wanted to participate and two did not want to participate. Around a week later, a gentle reminder was sent to the ones not responding to ask again if they wanted to participate. Still not everyone responded. However, one more female wanted to contribute to the research. Then, a second round of contacting female entrepreneurs took place. Also, in this round it was hard to find participants. After mailing some gentle reminders to these females, there were some responses. Finally, after contacting about 35 females in total, there were five females that wanted to contribute to this research by participating in the interview.

As mentioned, me and some other students contributed together to the already existing research. That means that this research also used data collected by others. In this research it was aimed to create a balanced sample of men and female which resulted in a sample that consisted of seven females and 11 males. Among the females, the majority were notably young, with two of them around 40 years old and the rest of them were between 20 and 25 years old. They were active in different fields such as fashion, biochemistry, healthcare/medical technology, and technology sectors.

The male entrepreneurs also had businesses within different branches including medical technology, IT sectors and cultural sectors. Like their female counterparts, the majority of males were younger, aged between 20 and 35 years old and the rest was older than this. Because there was no opportunity to get all the exact ages of every respondent (partly because data emerged from the interviews Jamin (2024) did), some of the ages were determined by checking their LinkedIn profiles. Data related to the participants can be found in table 1 in Appendix 10.2.

3.3 Data collection

To gain information and insights, semi-structured interviews were conducted. Semi-structured interviews can be defined as “interviews that consist of a dialogue between the researcher and interviewee, guided by a flexible interview protocol and supplemented by follow up questions, probes and comments” (DeJonckheere et al., 2019, p.1).

The interview questions are inspired by the work of Jamin. The interview protocol of Jamin consists of some different parts. These consist of the idea phase, the pre-startup phase, the startup phase, and the post-startup phase. Every phase has some specific questions. Also, questions based on the effectuation theory are included.

To investigate the mentioned research question, some specific questions about the variable gender were added to the already existing interview questions of Jamin. Questions to see how gender intersects with the entrepreneurial process and decision-making, were asked. This research went along with the idea of Grégoire and Cherchem (2020), that effectuation can be seen as a mode of action and not as a theory. Because of this, the added questions gave an understanding of the actions of entrepreneurs. Are their actions more planning-based (causation) or more “go with the flow” (effectuation)? That is where the added questions are based on. The interview questions used in the interviews can be found in Appendix 10.1.

The interviews were conducted online or in real life, depending on what suited the best. The interviews took about 30 minutes to an hour and were recorded with the consent of the people being interviewed. The recordings were used to code and analyze the interviews afterwards and then to compare men and women in their decision-making processes.

3.4 Data analyzing

The study used an inductive method to thematic analysis to analyze the data collected from the semi-structured interviews. Inductive coding, a part of thematic analysis, involved analyzing the data without trying to fit it into predetermined coding frames (Braun & Clark, 2006). Thematic analysis was used to analyze and report patterns of the gendered effect of the usage of the effectuation and/or causation approach.

With the consent of the people being interviewed, the interviews were recorded so that the analysis was based on correct and reliable data. The data was written down and then the data was analyzed. This written data was uploaded to MAXQDA software to conduct the thematic analysis. The data was conducted using the Gioia method. This is a qualitative method for developing grounded theory which meets the standards of rigor required by top-tier journals (Magnani & Gioia, 2023). The data gave an understanding of the experiences and behaviors of the entrepreneurs. This involved looking for themes and patterns. The Gioia method allowed for a structured and clear way to show the data. The approach involved developing data analysis in a structured way of deriving inductive 1st order (informant-based) codes, abductive 2nd order (researcher-based) themes and 3rd order aggregate dimensions (Magnani & Gioia, 2023). These dimensions contributed to the theory of effectuation/causation.

4. RESULTS

4.1 Female entrepreneurs

The following discusses the results emerged from the interviews with female entrepreneurs. Both the means driven/bird in hand (vs goal driven) principle and the affordable loss (vs expected returns) principle emerged from the interviews.

4.1.1 Female entrepreneurs; means driven (bird in hand)

The bird in hand principle emerged from the female interviewees. It shows the use of existing resources and turning the existing resources into a business goal or outcome. First, the entrepreneurs **adjusted a lot to the availability of resources**. They had to adjust based on the resources at hand and that means they focus on steps they can take with what they already possess. “*But we got a lot of advice to try to get as much free money as possible. Subsidies and grants, and usually those do come with strings attached. So, you have to sort of either pivot a little bit in your business plan and your strategy or take on collaborators that you would not have partnered up with otherwise. So, there's definitely times where we adjusted based on the available resources that we had around.*” (F1). **Making maximum use of resources** is another thing where the focus was laid on. It emphasizes the leveraging of existing means and resources to create opportunities. “*So, I sort of adopted this mentality that no help is more expensive than help. So, we sort of within our team pride ourselves in not knowing much but knowing who to ask for help from. And really putting in the pieces of the puzzle and using as many resources from our environment as possible.*” (F5). Founders also **spotted opportunities based on existing knowledge and experience**, which shows them relying on their existing means. “*And when we found out, we thought, well, this is so unique, and this can contribute to both research and drug development in so many ways. Because if you can recognize and bind something, you can both assess the status of the disease, but you could also develop it as a therapy. We just have to do something with this. Because society might benefit from this. And that is why we are now working on a start-up*” (F1). Lastly, female entrepreneurs were **seeing where it would end** and were thus going with the flow, which aligns with the effectuation

approach. “But over the years, you have to adjust your proposition. You have to tune in very well to the market where you are asked. But we did all of that on the fly. I can't say that from day one, our tip on the horizon was already determined.” (F7). Remarkable here is there was **no clear goal** from the beginning. They were flexible, kept their options open and were going with the flow.

Table 1: Data structure; female entrepreneurs

1 st order codes	2 nd order themes	3 rd order dimension
Adjust to availability of resources	Means driven (bird in hand)	Effectual decision-making
Being flexible		
Make maximum use of resources		
Seeing where it would end		
Spotting an opportunity based on existing knowledge/resources		
No clear initial goal		
Idea about future is not ready yet		

This table was made and used for the 2nd order theme “means driven (bird in hand)”. It shows what first order codes belong to this theme and to what 3rd order dimension the theme belongs. For the other themes, a similar approach was applied. The complete tables of both male and female which includes all the other themes too can be found in Appendix 10.3 and Appendix 10.4.

4.1.2 Female entrepreneurs; affordable loss

Also, the affordable loss dimension emerged from the data from the female interviewees. It explains their view of risk and resources. Entrepreneurs were **using financial support** to invest in their business. Examples are using awards and grants. “So, because money is always scarce, you would first set up very small mini tests with people in other research groups. And if you get some data from that, you can apply for grants. So, then you are not dealing with individual investors or large groups who have a lot of money and have to give away a lot of shares.” (F1). They are thus focusing on only investing what they can afford to lose rather than taking on high risks. Adding to this, entrepreneurs were **trying to get as much free money as possible** which shows their consideration of low-cost strategies. This involves using grants to which they apply for and using awards they won from challenges. “So, we were always not pushed, but we got a lot of advice to try to get as much free money as possible. Subsidies and grants, and usually those do come with strings attached.” (F5). Something noticeable was that a lot of the interviewees were **willing to make affordable personal sacrifices**. This shows their willingness to face temporary personal and financial difficulties to achieve the long-term success of their ventures. It involves investing personal savings, hard work without immediate compensation and making sacrifices. “And in the end, luckily, it's just about hard work and doing smart things. Hard work has increased the turnover. But it really took us the first ten years of this company to cover costs.” (F7). “And we also invested ourselves, me and my co-founder, with our personal money so we can keep going.” (F3). Lastly, the interviewees focused on their costs and expenses. They were **considering**

their finances. “But in terms of how I managed the finances of the company, it really helped me sort of be more cost effective and more conscious about managing our burn rates. And always making sure that there is a plan B, well, a plan B to the plan B to the plan B. And just be conscious of the fact that money does run out and you have to be careful how you focus on the spending zone.” (F5). This contributes to the use of low-cost strategies of the affordable loss principle and them being attuned to the financial implications of their decisions. Some of the interviewees who had an interest in getting funding **had difficulties in getting this funding** because they could not meet the requirements. As a consequence, they were relying more on the affordable loss principle. “Well, we were aware that as a startup, you don't have funding and it's very, very hard to get funding. Even after three years, we still didn't get any funding and we are working on it, but it's very difficult. We won some awards to get some financial support because, yes, we won the prizes. So, we made use of that amount of money. And we also invested ourselves, me, and my co-founder, with our personal money so we can keep going.” (F3).

4.1.3 Female entrepreneurs; goal driven

Contrary to the bird in hand principle, there is the goal driven approach which aligns with causation. Also, this came out of the interviews. First of all, some of the entrepreneurs had a **clear initial goal** from the start and **used methods with clear goals** “So, the OQR, as I mentioned, is every 100 days. So, for three months, we have these specific goals for different categories. And we try to achieve those goals. We set very specific tasks, deadlines and so on. So, every three months, we re-evaluate the method.” (F3). Some of them also had **clear goals for the future**, so they had clear goals for the following years. “And generally speaking, what we want is that within two or three years to be able to expand to other countries besides the Netherlands. So, in five years' time, the goal is to be established on the Dutch and German markets, as well as other smaller markets like Switzerland, Belgium, but also in the UK.” (F5). Lastly, **decisions are based on business guidelines**. They mentioned that these business guidelines define the company and help them stay on track. “The first thing is making sure that it aligns with our guiding policies. So, together with the whole team, the co-founders, and our advisor, we sort of created this guideline framework in which we operate as a company. And those three, four guidelines really define our company and help us stay on track with whatever decisions we make.” (F5). This shows them following a process of selecting means to achieve the goal and basing decisions on that.

4.1.4 Female entrepreneurs; expected returns

On the other hand, female entrepreneurs also made decisions which are more based on the expected returns principle. This behavior focuses on expected benefits from their actions. Entrepreneurs make **use of external financing**. By using and relying on external financing they try to get the highest expected returns and not only invest what they can afford to lose. Examples were bank loans and borrowing money from the university. “Currently we have two CLAs. One we got earlier on in our journey. And last year, at the end of the year, we also secured a bigger CLA through the innovation funds North Holland of 300,000 euros. And now we are actually running a bridge round between our pre-seed and our seed for another 200,000 to 300,000.” (F5). Some entrepreneurs were **spending money to make money**. This shows that they were not afraid to spend money if in return they could get high expected returns. “I was never sort of afraid to spend money if I knew it was going to have a big impact.” (F3). Another thing that some entrepreneurs did was **making decisions based on financial risks**. They also **used a risk formula** for that. By using this formula, they focus

on assessing potential gains against the risks involved, aiming to maximize the expected returns. *“And for every decision making, you have risk. And you should consider that we have a special formula that you can consider in every situation of the risk assessment, that we should consider the probability of that risk and the effect of that risk, you know? You should multiply all of these. So, we should consider all these items.”* (F2).

4.2 Male entrepreneurs

The following discusses the results emerged from the interviews with male entrepreneurs. Both the means driven/bird in hand (vs goal driven) principle and the affordable loss (vs expected returns) principle emerged from the interviews.

4.2.1 Male entrepreneurs; goal driven

Some interesting things came out of the data of the male entrepreneurs. The most notable and most common finding was them having a **clear goal/plan** in mind. Most of the males set a clear goal with a plan to achieve it. They were very strict on the process of achieving the goal and put everything aside to achieve the goal. *“I think the biggest thing is that you have to be very clear about your goals. We're very strict about it. We make new goals every month and every week. But we still also have a six-month goal. We put everything aside to achieve that goal. And that also means that there are quite drastic choices that need to be made to achieve that goal.”* (M10). Entrepreneurs were **defining a clear direction and emphasizing its need**. The entrepreneurs knew their goals and had a clear plan with a well-defined direction and purpose. *“Well, we have a clear point now, we know exactly how that no-code platform at the back is completely drawn. So, what we want to build is really on paper now.”* (M7). On top of this, founders were **searching and selecting partners based on predefined plans** and planned a growth path. *“So, we are now really looking at which larger, long-term projects with strategic partners we should undertake to achieve sustainable growth for the future. Growth costs a lot of money, so that means you need to find strategic assignments, partners, and things to prepare for that.”* (M4).

4.2.2 Male entrepreneurs; expected returns

Also, the expected returns principle emerged from the data which shows them pursuing strategies to get the highest expected returns. Entrepreneurs were **borrowing money** to invest in their business with the expectation that the returns on the borrowed capital would outweigh the costs of generating higher returns. *“I recently borrowed money. So, my thoughts have always been simple. You can make a lot of money. And I went to that man. We agreed on the amount. And we made it happen a few weeks later.”* (M9). Additionally, male entrepreneurs focused on **calculating expected financial outcomes/returns**. This involves assessing the financial impact of business decisions to ensure that investments and resource use align with expected returns. *“And so many choices depend on that, if we are unsure whether we are going to hire a new software developer or whether we are going to hire a sales manager or marketing, or I don't know what? Then we always calculate this first to see whether we can handle that without needing new loans or investments or so on.”* (M2). When plans are established, an obvious next step is **searching for stakeholders to commit the amounts necessary for the execution of the plan**. Interviewees showed that they were trying to secure financial resources essential for their startups' growth. They also mentioned the importance of having a plan with prepared data before approaching investors. *“So, we were able to demonstrate that there are really parties that want to work with us, but we still have to take a few steps. In addition, we also raised the Rabo innovation loan at the time, which was 150.000 euros.”* (M7).

4.2.3 Male entrepreneurs; means driven (bird in hand)

As explained, a lot of the males interviewed had clear goals and a plan to achieve the predetermined goals. However, there were also some entrepreneurs who are acting more based on the bird in hand principle and were focusing on their available means. A lot of the founders were **using their own knowledge base to make decisions**. They used their own understandings of the market and technology to make decisions without the need for external sources. *“And then we sit down every week to simply evaluate where we stand as a company, what we should and shouldn't do. And then we spar with each other to see if we still feel on the same page or are we drifting a bit. And we now actually do that completely independently. So, we don't need coaching or input from the Gas Factory anymore.”* (M4). Interviewees were **leveraging existing skills and resources at hand**. *“I am a business Administration commercial, with entrepreneurial experience. Person x is an industrial engineer, so he was very good at explaining and writing down those processes and is quite blunt, so he also gets straight to the point in customer conversations.”* (M1). This also meant that they sometimes had to **adjust to their available resources**, which shows them relying on their existing resources. Entrepreneurs were **defining only rough visions while leaving the details open**. Founders defined rough visions based on their broad market trends and aspirations, but they recognized that it was necessary that the path to achieving these visions remains flexible. *“And that changes the whole plan also. I think we can of course put a point on the we also have horizons. We want to build a no-code platform. Just draw the whole way out makes no sense.”* (M7). Entrepreneurs were also **actively leveraging existing networks for opportunity creation & identification**, which involved using existing contacts to share knowledge and obtaining access to important resources or potential clients. *“He has an extremely large network through his father, but also built up through his studies, which allowed us to sit at the table with interesting parties.”* (M1).

4.2.4 Male entrepreneurs; affordable loss

Evident from the data, male entrepreneurs also act based on the affordable loss principle. They were **willing to make affordable personal sacrifices**. Examples are investing personal savings, long working hours and accepting lower standards of living to reinvest in the business. *“So, we simply kept our salaries very low for four years to reinvest everything in the growth of the company.”* (M4). There were also **deferred financial expectations**. They seemed less focused on prioritizing expected profits, being more willing to give up short-term financial gains in favor of building a more substantial, long-lasting business. *“So, in the beginning, we had no idea what the revenues would be from the company before we started.”* (M6). At the beginning phase of the startup, entrepreneurs were **investing limited, small amounts of money, time, and effort** to minimize the costs, and focus on activities that enhance business growth and development. *“But in the beginning, buy a container of gloves, yes or no. That kind of thing, that's how we started.”* (M6). Adding to this, entrepreneurs seemed resourceful as they were actively **finding unused resources in the local environment**. *“Eventually, we received a subsidy, which saved us. Otherwise, we couldn't afford it.”* (M6).

4.3 Additional findings

Some interesting additional findings were noticed that can contribute to this research. Female entrepreneurs were **collaborating with other companies** which shows them having partnerships. *“Yes, we have some partnerships with some service providers. We have partnership with three companies and for*

sharing the customers” (F2). Female founders also **engage with customers to get feedback** and improve their products. “*And for the customer, we even went a bit further. Meaning that we had interviews with the target group. And now, we are planning user testing with the minimum viable product that we have to make sure that the features we provide are necessary and of enough value for the people that will use it.*” (F3). Engaging and collaborating with others helps create future opportunities. **Looking for guidance** as a startup, which all the entrepreneurs did, also helps in increasing networks as entrepreneurs **leveraged incubators’ large networks**. “*Novel-t, helped us with preparing the opportunity of connecting with the investors, with the organizations, with the people, mentors, something like that.*” (F2). Adding to this, some female entrepreneurs were **analyzing competitors** and did use **market analysis** to see what the market trends were. “*So we’re looking at okay, where is the biggest gap in the market?*” (F1). Lastly, entrepreneurs were **expecting the unexpected**. “*Yeah, we have kind of a motto that we use, expect the unexpected. Because being an entrepreneur, you are never 100% ready for everything that will come. And also, if you wait for the perfect moment, the perfect moment will never come.*” (F3). This shows them relying on the crazy quilt principle which aligns with effectuation.

The findings of the male entrepreneurs brought some interesting additional data too. **Carrying out market research** to assess the viability and potential of their business idea within the market was something that some male entrepreneurs did. “*So, at first, I wanted to make sure that this is a good business case, not in terms of validating, but just to see what is out there. Do some market research, do some competitor analysis.*” (M5). Entrepreneurs were also **co-creating businesses with customers** and were **engaging with stakeholders to create and pursue opportunities**. This refers to interacting with market players to look for opportunities together. “*Look, it’s just nice to have people around you, to have partners around you, to have collaborations around you. And also, collaborations that can get you somewhere.*” (M3). Entrepreneurs were **embracing unforeseen developments and opportunities** and were **adapting plans to accommodate unforeseen events**. “*We had been building the whole thing for almost a year, and nobody could do it. Then I simply made the choice, I saw that hand tracking was being released. It was super experimental at that time. No idea if it would work well enough. I thought those controllers, that’s definitely not going to be it. We had previously thought, well, everyone can do that. Turns out that’s not the case, so then you have to switch.*” (M7). This shows them being flexible and seeing unexpected events as opportunities.

Lastly, also all male entrepreneurs were part of an incubator program which means they were **seeking guidance** as a startup. **Incubators especially helped in connecting** with others and gave advice and recommendations. “*They guided the way to investors. I did all kinds of advice work for investors and startups.*” (M11).

4.4 Remaining results

Some codes did not necessarily fit into a 2nd order theme but were interesting for the research. There were some contractionary results regarding keeping relationships/balancing personal life and work. On the one hand, females **had difficulties in keeping relationships** when being a founder which may show the need for time management and support mechanisms to address it. But, contractionary, some other females’ **relationships did not suffer**. “*But it’s not that my personal relationships suffer or anything.*” (F4) “*And yeah, the effect that it has on my relationship with them is that I get to see them less than I would like to. Obviously, it’s hard to balance.*” (F5).

The use of an incubator which provides valuable networking, gives advice, and educates were also important outcomes from the interviews for both male and female as discussed earlier in the “additional findings” section. It can lead to collaborations and helps entrepreneurs make better decisions. “*So, the incubators are good people, and they bring you into contact with a lot of other people.*” (F1). “*So, they were always there to ask us critical questions so we could make the right decisions.*” (F3).

Someone also mentioned a “**no female-friendly world**”. This suggests that female entrepreneurs might face additional challenges compared to their male counterparts, impacting their decision-making processes. “*What I was also told, and these are the figures from a few years ago, is that only 2% of female founders get funded. So, 2% of the founders who are women get money. So that’s an alarmingly low number. I have to say that that was also something that shocked me for a moment. I had this shock of, what am I getting myself into?*” (F1).

Younger entrepreneurs often have fewer obligations and more flexibility, allowing them to take risks more freely and see everything as an opportunity. “*I think it just allowed me to be more free with my decisions and to not, well, you can experiment a lot when you’re in your 20s. I think it really allowed me to take everything on as an opportunity and not as a fight necessarily.*” (F5).

5. CONCLUSION

The research question “*What is the gendered effect of the usage of the effectuation and/or causal decision-making style in the entrepreneurial process?*” is directly addressed by the study’s findings. The findings of this study suggest a slight gendered influence on the use of effectuation and causal decision-making styles in the entrepreneurial process. Weighing the use of the affordable loss principle against the expected returns principle and weighing the use of the means driven (bird in hand) vs the goal driven principle has the following results.

Female entrepreneurs: 1) affordable loss vs. expected returns: 70% vs. 30% and 2) means driven (bird in hand) vs. goal driven: 65% vs. 35%.

Male entrepreneurs: 1) affordable loss vs. expected returns: 55% vs. 45% and 2) means driven (bird in hand) vs. goal driven: 57% vs. 43%.

The data supports proposition 1a: Female entrepreneurs tend to rely more on the effectuation framework when considering the affordable loss principle of the effectuation model, as 70% of female entrepreneurs favor the affordable loss principle, which aligns with effectuation. The data does not fully support proposition 1b: Male entrepreneurs tend to rely more on the causation framework when considering the expected returns principle. Although a considerable proportion of male entrepreneurs favor expected returns (45%), it is not a majority. Instead, 55% favor affordable loss, indicating a preference towards effectuation.

The data does support proposition 2a: Female entrepreneurs tend to rely more on the effectuation framework when considering the bird in hand principle of the effectuation framework, with 65% of female entrepreneurs relying on the means driven (bird in hand) principle, which aligns with effectuation. The data does not fully support proposition 2b: Male entrepreneurs tend to rely more on the causation framework when considering the goal driven principle. Although 42% of male entrepreneurs favor the goal-driven principle, it is not a majority. Instead, 58% favor the means driven (bird in hand) principle, also indicating a preference towards effectuation.

Overall, the findings suggest that while female entrepreneurs lean more heavily towards effectuation, the findings show a more nuanced picture for male entrepreneurs. Female entrepreneurs who are more consistently aligned with the effectuation framework, emphasize risk minimization, and leverage existing resources which is likely due to their greater risk aversion and resource constraints. On the contrary, male entrepreneurs show a more balanced approach between effectuation and causation, showing a greater flexibility in their decision-making styles. This balance reflects their relatively higher risk tolerance and better access to resources compared to females. This nuanced understanding highlights that both genders value risk management and resource use, although the degree and manner differ. The gap in decision-making styles between genders may be smaller than previously reported, emphasizing the importance of recognizing these subtle differences in entrepreneurial practices. The study also contributes to academic discourse by questioning the idea that decision-making styles are separate. It highlights the importance of combining different styles and considering the context in future research.

6. DISCUSSION

6.1 Discussion

Interviews were done to gather data from entrepreneurs that explain the gendered effect on the use of the effectuation and/or causation decision-making style in the entrepreneurial process. As mentioned in the conclusion, there are some considerable results. These results, shown as percentages, show the differences between the use of the causation or effectuation approach between male and female.

In chapter two, according to literature, the role of gender has an effect on the entrepreneurial process and their decision-making. Male and female entrepreneurs have different tendencies towards the use of a decision-making style. On the one hand, the results align with the literature saying that female entrepreneurs tend to rely more on the effectuation approach considering the affordable loss principle (Schubert et al., 1999). In addition, the results align with the proposition suggesting female entrepreneurs tend to rely more on the effectuation framework considering the means driven principle based on them having more challenges in accessing external resources and financing (Brush et al., 2014) (Muravyev et al., 2009). However, the result that male entrepreneurs also rely slightly more on the effectuation framework shows a contradiction with the literature that mentions that male entrepreneurs rely more on the causation framework considering the expected returns principle (Sarasvathy, 2001). It also shows a contradiction with the proposition suggesting male entrepreneurs tend to rely more on causation considering the goal driven principle based on their greater access to resources (Kanze et al., 2018) and them having less challenges related to balancing life and work (McAdam et al., 2013).

The fact that there are contradictions with the literature means that the reliability of the findings might be influenced by (additional) variables. These variables should have some attention as they might have played a role in what the outcomes are of this research. The factors that could have had an influence on the outcomes and need attention are discussed below.

At first, based on the literature and propositions, there was only focus on the affordable loss (vs expected returns) and bird in hand (vs goal driven) principle. However, the data from the interviews also shows that for both male and female entrepreneurs the principles crazy quilt (partnership) and

lemonade (leveraging contingencies) emerged which could have had an influence on their use of the affordable loss and bird in hand principles and consequently on their decision-making styles. An example is that there were a lot of female entrepreneurs that collaborated with other companies which shows them having partnerships. This could have had impact on the outcomes as having partnerships may reduce risks (affordable loss) and make them rely on their existing resources (bird in hand). This means that future research should consider incorporating these other principles in the analysis too. Focus should lay not only on the affordable loss and bird in hand principles but also on the crazy quilt and lemonade principles as they might have influenced the outcomes. This will give insights into how these principles affect the decision-making process of entrepreneurs.

It is very likely that the incubator played a big role in the decisions that entrepreneurs make. As mentioned by the interviewed entrepreneurs, the incubators make the entrepreneurs leverage their network and help them in connecting with others which makes them rely more on the effectuation framework considering the crazy quilt principle. Incubators provide a lot of mentorships. It not only consists of theoretical advice but also contains practical skill development. Mentors provide insights into how to solve problems and into how to make decisions (Awonuga et al., 2024). Analyzing the interviews it also showed that some of the entrepreneurs made more use of the incubator program than others. This means the incubator's role might have influenced the outcomes. Future researchers should thus take being part of an incubator program into consideration as a control variable when researching the role of gender in their decision-making styles.

Adding to this, age can impact decision-making styles too. Studies indicate that older people are less likely to take risks compared to their younger counterparts (Frank & Seaman, 2023). They thus might be more cautious in their decision-making and prefer to make decisions that are more safe and less risky. This means that age may have affected the outcomes and this control variable needs attention in future research.

Another thing which could be important to consider is that the entrepreneurs were active within different branches. It could be possible that branches influence decision-making as each industry has unique challenges, requirements, and environments. Therefore these elements should be addressed as they might have had an influence on the outcomes. Lastly, the findings that on the one hand, relationships didn't suffer for some interviewees and on the other hand, some interviewees had difficulties in keeping relationships because of being a founder may need more attention. It shows differences in stress factors and time management. These factors could have also played a role in their decision-making processes. It should be addressed more to get a better understanding of the influence of other factors like this on the decision-making of entrepreneurs.

6.2 Theoretical contribution

This research can give more understanding on the gendered effect of the use of decision-making styles in the entrepreneurial process. The finding that female entrepreneurs favor the affordable loss principle aligns with and supports existing literature stating that women are more risk-averse (Dohmen et al., 2011) and prefer minimizing potential losses (Schubert et al., 1999) and thus rely more on the effectuation framework. These findings contribute to the existing literature as it reinforces literature by providing empirical evidence that women focus more on minimizing potential losses as a means of managing risk effectively (Schubert et al., 1999). This

reinforces the idea that women are thus more inclined to use the effectuation framework as a risk management strategy.

The finding that males also tend to use the affordable loss principle (55%) adds complexity to the literature that suggests male focus more on expected returns (Sarasvathy, 2001). It shows that while they might be less risk-averse than females (Powell & Ansic, 1997), they still consider risk management important, which challenges and refines existing literature. The findings of this research shows that future research should need to review and update current ideas about how male entrepreneurs take risks.

The results show that both females (65%) and males (57%) prefer the means driven approach. This suggests that leveraging existing resources is a common strategy across genders. This finding is on one hand consistent with literature emphasizing women's use of personal skills and networks due to resource constraints (Brush et al., 2009), which thus supports existing theories about women's entrepreneurial strategies. But the findings also show that men, despite having better access to resources (Kanze et al., 2018), still value using existing resources. This adds nuance to the literature and shows some contrast with them relying more on the causation framework because of their larger access to resources (Kanze et al., 2018) and because they face the same challenges related to balancing work and family responsibilities (McAdam, 2013). It shows that they do not prioritize this principle as much. This contradiction highlights the need to potentially update current theories about male entrepreneurial behaviors.

6.3 Practical implications

While gender differences in entrepreneurial decision-making slightly exist, the gap might be smaller than previously reported by literature, with both genders valuing risk management and resource utilization. This insight can influence how entrepreneurial support programs are designed, suggesting that risk management training and resource leveraging should be emphasized for both men and women. Recognizing the different needs and decision-making styles of male and female entrepreneurs can help incubators tailor their support services more effectively. Specifically, incubators can provide targeted training and mentorship that focuses on both effectuation and causation principles, preparing entrepreneurs to adopt a balanced approach. By doing this, incubators can help entrepreneurs manage the challenges of the entrepreneurial process successfully.

7. FUTURE RESEARCH AND LIMITATIONS

First, the plan was to get data with a group of people. But due to circumstances that were out of control, it was not possible to get all the desired data from this group. As a consequence, the data used was limited to a number of entrepreneurs that were interviewed. Also, the short time frame of this research contributed to the limited number of interviewees. The small number of interviews still gave in-depth and quality data. Another thing that can be seen as a limitation is the fact that these interviews were held with entrepreneurs in only the Netherlands. To address these limitations, future researchers could contribute to this research by including more entrepreneurs from different countries to get a more diverse and bigger database which is more accurate and more validated.

Also, looking at what is discussed in the discussion, future research should explore the influence of other principles, such as the lemonade principle (leveraging contingencies) and the crazy quilt principle (forming partnerships) too. This would provide a fuller picture of how different aspects of effectuation/causation

influence entrepreneurial behavior. Also, the other additional factors discussed such as the use of an incubator program, age and the branches they are active in, should be taken into consideration in future research.

Looking at the theoretical contribution, the results indicate that future research should review and update current ideas about how male entrepreneurs take risks, as the findings suggest that they might also prioritize risk management more than previously thought.

By addressing these limitations and exploring these future research avenues, researchers can build on the insights provided by this study and contribute to a more nuanced understanding of the role of gender in entrepreneurial decision-making.

8. ACKNOWLEDGEMENTS

I would like to thank the entrepreneurs that participated/contributed to this research. Their passion and creativity inspired me a lot. I would also like to thank my supervisors Dr. Martin Stienstra and Dr. Igors Skute for the guidance during the research, which helped me and taught me a lot through my process.

9. REFERENCES AND CITATIONS

Ahl, H. (2006). "Why Research on Women Entrepreneurs Needs New Directions," *Entrepreneurship Theory and Practice* 30(5): 595-621.

Araújo, M., Reis, L., & Morais, I. (2021, September). Innovation strategies for adaptation of organizations in a VUCA world. In *Proceedings of the 16th European Conference on Innovation and Entrepreneurship (ECIE) (Vol. 2, pp. 1245-1253)*.

Arend, R. J., Sarooghi, H., & Burkemper, A. (2015). Effectuation as ineffectual? Applying the 3E theory-assessment framework to a proposed new theory of entrepreneurship. *Academy of Management Review*, 40(4), 630–651.

Awonuga, N. K. F., Mhlongo, N. N. Z., Olatoye, N. F. O., Ibeh, N. C. V., Elufioye, N. O. A., & Asuzu, N. O. F. (2024). Business incubators and their impact on startup success: A review in the USA. *International Journal of Science and Research Archive*, 11(1), 1418–1432. <https://doi.org/10.30574/ijrsra.2024.11.1.0234>

Banu, S., & Md. Uddin, M. (2023). Trajectory of the internationalisation of Small and Medium Enterprises and Effectuation Theory. Department of Management University of Dhaka. <https://doi.org/10.57240/DUJMBK05>

Barot, H., (2015). Entrepreneurship - A Key to Success. *The International Journal of Business and Management*, Vol.3, No.1, January 2015; 163-165.

Bergek, A., & Normman, C. (2008). Incubator best practice: A framework. *Technovation*, 28(1–2), 20–28. <https://doi.org/10.1016/j.technovation.2007.07.008>

Blatstein, I. (2012). Strategic planning: Predicting or shaping the future? *Organization Development Journal*.

https://www.researchgate.net/publication/286853522_Strategic_planning_Predicting_or_shaping_the_future

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.

<https://doi.org/10.1191/1478088706qp063oa>

Brebner, J. B. (2003). Gender and emotions. *Personality And Individual Differences*, 34(3), 387–394. [https://doi.org/10.1016/s0191-8869\(02\)00059-4](https://doi.org/10.1016/s0191-8869(02)00059-4)

Brettel, M., Mauer, R., Engelen, A., & Küpper, D. (2012). Corporate effectuation: Entrepreneurial action and its impact on

- R&D project performance. *Journal Of Business Venturing*, 27(2), 167–184 <https://doi.org/10.1016/j.jbusvent.2011.01.001>
- Brinckmann, J., Grichnik, D., & Kapsa, D. (2010). Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning–performance relationship in small firms. *Journal of Business Venturing*, 25(1), 24–40. <https://doi.org/10.1016/j.jbusvent.2008.10.007>
- Brindley, C. (2005). Barriers to women achieving their entrepreneurial potential." *International Journal of Entrepreneurial Behaviour & Research* 11(2): 144-161.
- Brush, C. G., De Bruin, A., & Welter, F. (2009). A gender-aware framework for women's entrepreneurship. *International Journal Of Gender And Entrepreneurship*, 1(1), 8–24. <https://doi.org/10.1108/17566260910942318>
- Brush, C., Greene, P. G., Balachandra, L., Davis, A. E., Arthur M. Blank Center for Entrepreneurship, Diana Report, The authors thank the Arthur M. Blank Center for Entrepreneurship at Babson College, Diane Mulcahy, Myra Hart, Catherine Portner, Pranjali Hegde, Alyssa Rimsa, Susan Duffy, Mitchell Manning, Fyllis Berg-Elton, Kelly Lynch, & Linda Woods Curtin. (2014). *Women Entrepreneurs 2014: Bridging the Gender Gap in Venture Capital*. In Diana Project. <https://www.babson.edu/media/babson/site-assets/content-assets/about/academics/centres-and-institutes/blank-institute/global-research/diana-project/diana-project-executive-summary-2014.pdf>
- Buccieri, D., Javalgi, R. G., & Çavuşgil, E. (2023). Role of opportunity creation between reconfiguration and innovation: Insights from emerging market international new ventures. *International Business Review*, 32(4), 102100. <https://doi.org/10.1016/j.ibusrev.2022.102100>
- Cliff, J. E. (1998). Does one size fit all? Exploring the relationship between attitudes towards growth, gender, and business size. *Journal of business venturing*, 13(6), 523-542.
- Coleman, S. (2000) Access to Capital and Terms of Credit A Comparison of Men and Women-Owned Small Businesses. *Journal of Small Business Management*, 38, 37-52. - References - Scientific Research Publishing. (n.d.). <https://www.scirp.org/reference/ReferencesPapers?ReferenceID=1323088>
- Crow, S. M., Fok, L. Y., Hartman, S. J., & Payne, D. (1991). Gender and values: What is the impact on decision making? *Sex Roles*, 25–25(3–4), 255–268. <https://doi.org/10.1007/bf00289858>
- Cowden, B. J., Karami, M., Tang, J., Ye, W., & Adomako, S. (2023). The gendered effects of effectuation. *Journal Of Business Research*, 155, 113403. <https://doi.org/10.1016/j.jbusres.2022.113403>
- Diandra, D., & Azmy, A. (2020c). Understanding Definition of Entrepreneurship. ResearchGate. https://www.researchgate.net/publication/343853006_Understanding_Definition_of_Entrepreneurship
- Díez-Martín, F., Blanco-González, A., & Prado-Román, C. (2016). Explaining nation-wide differences in entrepreneurial activity: a legitimacy perspective. *International Entrepreneurship And Management Journal*, 12(4), 1079–1102. <https://doi.org/10.1007/s11365-015-0381-4>
- DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: a balance of relationship and rigour. *Family Medicine and Community Health (Print)*, 7(2), e000057. <https://doi.org/10.1136/fmch-2018-000057>
- Delmar, F., & Shane, S. (2003). Does business planning facilitate the development of new ventures? *Strategic Management Journal*, 24(12), 1165–1185. <https://doi.org/10.1002/smj.349>
- Denis, D. J. (2004). Entrepreneurial finance: an overview of the issues and evidence. *Journal Of Corporate Finance*, 10(2), 301–326. [https://doi.org/10.1016/s0929-1199\(03\)00059-2](https://doi.org/10.1016/s0929-1199(03)00059-2)
- Dohmen, T., A. Falk, D. Huffman, U. Sunde, J. Schupp, and G. G. Wagner (2011). "Individual Risk Attitudes: Measurement, Determinants, and Behavioral Consequences," *Journal of the European Economic Association* 9(3): 522-550.
- D. Sarasvathy, S. (2008). Effectuation: elements of entrepreneurial expertise. In Google Books. Edward Elgar Publishing Ltd. <https://doi.org/10.4337/9781839102585>
- Eckel, C., & Grossman, P. J. (2008). Men, Women and Risk Aversion: Experimental Evidence. ResearchGate. https://www.researchgate.net/publication/23525819_Men_Women_and_Risk_Aversion_Experimental_Evidence
- Ehsani, M., & Osiyevskyy, O. (2022). Entrepreneurial Strategies for Navigating the VUCA World. *Rutgers Business Review*, 7(3), 237–249.
- Frank, C. C., & Seaman, K. L. (2023). Aging, uncertainty, and decision making—A review. *Cognitive, Affective & Behavioral Neuroscience*, 23(3), 773–787. <https://doi.org/10.3758/s13415-023-01064-w>
- Frigotto, M. L., & Della Valle, N. (2018). Gender and the structuring of the entrepreneurial venture: an effectuation approach. In University of Trento & University of Trento, Int. J. Entrepreneurial Venturing (Vol. 10, Nummer 4). <https://iris.unitn.it/bitstream/11572/157567/7/Gender%20and%20the%20structuring.pdf>
- Fujita, F., Diener, E., & Sandvik, E. (1991). Gender differences in negative affect and well-being: The case for emotional intensity. *Journal of Personality and Social Psychology*, 61(3), 427–434. <https://doi.org/10.1037/0022-3514.61.3.427>
- Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, 10(1), 76–88.
- Grégoire, D. A., & Cherchem, N. (2020). A structured literature review and suggestions for future effectuation research. *Small Business Economics*, 54(3), 621–639. <https://doi.org/10.1007/s11187-019-00158-5>
- Gysler, M. and Kruse, J.B. (2002) Ambiguity and Gender Differences in Financial Decision Making: An Experimental Examination of Competence and Confidence Effects, Swiss Federal Institute of Technology, Center for Economic Research.
- Hentrich, E. (2022). Decision-Making of Female Entrepreneurs – a Perspective on Motherhood [Bachelorscriptie, Universiteit Twente]. https://essay.utwente.nl/91201/1/Hentrich_BA_BMS.pdf
- Jamin, M. C. (2024). The Role of Business Incubation in Shaping Decision-Making Styles of Novice Entrepreneurs: A Study on Effectuation and Causation (Master's thesis, University of Twente).
- Kanze, D., L. Huang, M. A. Conley, and E. T. Higgins (2018). "We Ask Men to Win and Women Not to Lose: Closing the Gender Gap in Startup Funding," *Academy of Management Journal*, 61(2): 586-614.
- Karmarkar, U. R. (2023). Gender differences in "optimistic" information processing in uncertain decisions. *Cognitive, Affective & Behavioral Neuroscience (Print)*, 23(3), 827–837. <https://doi.org/10.3758/s13415-023-01075-7>

- Kerr, W. R., Nanda, R., & Rhodes-Kropf, M. (2014). Entrepreneurship as Experimentation. *The Journal Of Economic Perspectives*, 28(3), 25–48. <https://doi.org/10.1257/jep.28.3.25>
- Loch, C. H., Solt, M. E., & Bailey, E. (2007). Diagnosing unforeseeable uncertainty in a new venture*. *The Journal of Product Innovation Management*, 25(1), 28–46. <https://doi.org/10.1111/j.1540-5885.2007.00281.x>
- Lochmiller, C. R. (2021). Conducting Thematic Analysis with Qualitative Data. NSUWorks. <https://nsuworks.nova.edu/tqr/vol26/iss6/19/>
- Magnani, G., & Gioia, D. (2023). Using the Gioia Methodology in international business and entrepreneurship research. *International Business Review*, 32(2), 102097. <https://doi.org/10.1016/j.ibusrev.2022.102097>
- Maine, E., Soh, P., & Santos, N. D. (2015). The role of entrepreneurial decision-making in opportunity creation and recognition. *Technovation*, 39–40, 53–72. <https://doi.org/10.1016/j.technovation.2014.02.007>
- Mäkimurto-Koivumaa, S. and Puhakka, V. (2013) 'Effectuation and causation in entrepreneurship education', *International Journal of Entrepreneurial Venturing*, Vol. 5, No. 1, pp.68–83.
- Makwana, D., Engineer, P., Dabhi, A., & Hardik, C. (2023). Sampling Methods in Research: a review. ResearchGate. https://www.researchgate.net/publication/371985656_Sampling_Methods_in_Research_A_Review
- Marlow, S., & McAdam, M. (2013). Gender and entrepreneurship. *International Journal Of Entrepreneurial Behaviour & Research*, 19(1), 114–124. <https://doi.org/10.1108/13552551311299288>
- McAdam, M. (2013). Female entrepreneurship. In Routledge eBooks <https://doi.org/10.4324/9780203075487> <https://researchspace.auckland.ac.nz/handle/2292/28493>
- McClelland, E., Swail, J., Bell, J., & Ibbotson, P. (2005). Following the pathway of female entrepreneurs: A six-country investigation. <https://researchspace.auckland.ac.nz/handle/2292/28493>
- McGowan, P., Redeker, C. L., Cooper, S., & Greenan, K. (2012). Female entrepreneurship and the management of business and domestic roles: Motivations, expectations and realities. *Entrepreneurship And Regional Development/Entrepreneurship & Regional Development*, 24(1–2), 53–72. <https://doi.org/10.1080/08985626.2012.637351>
- Muravyev, A., Talavera, O., & Schäfer, D. (2009). Entrepreneurs' gender and financial constraints: Evidence from international data. *Journal Of Comparative Economics*, 37(2), 270–286. <https://doi.org/10.1016/j.jce.2008.12.001>
- Mintzberg, H., & Westley, F. (2001). Decision making: it's not what you think: sometimes decisions defy purely step-by-step logic. To be effective, companies also should embrace intuitive or action-oriented forms of decision making. *MIT Sloan Management Review*, 42(3), 89+. <https://link.gale.com/apps/doc/A109946778/AONE?u=anon~1c554f19&sid=googleScholar&xid=c100a6df>
- Narayananamy, K., Rasiah, D., & Jacobs, C. J. (2011). An Empirical Study Of Factors Influencing Gender Differences In Entrepreneurship. *International Business & Economics Research Journal (IBER)*, 10(10), 17–30. <https://doi.org/10.19030/iber.v10i10.5976>
- Nelson, T., Maxfield, S., & Kolb, D. M. (2009). Women entrepreneurs and venture capital: managing the shadow negotiation. *International Journal Of Gender And Entrepreneurship*, 1(1), 57–76. <https://doi.org/10.1108/17566260910942345>
- Perry, J. T., Chandler, G. N., & Markova, G. (2012). Entrepreneurial Effectuation: A Review and Suggestions for Future Research. *Entrepreneurship Theory And Practice*, 36(4), 837–861. <https://doi.org/10.1111/j.1540-6520.2010.00435.x>
- Pfeffer, L., & Khan, M. S. (2018). Causation and Effectuation: An Exploratory Study of New Zealand Entrepreneurs. *Journal Of Technology Management & Innovation*, 13(1), 27–37. <https://doi.org/10.4067/s0718-27242018000100027>
- Powell, M., & Ansic, D. (1997). Gender differences in risk behaviour in financial decision-making: An experimental analysis. *Journal Of Economic Psychology*, 18(6), 605–628. [https://doi.org/10.1016/s0167-4870\(97\)00026-3](https://doi.org/10.1016/s0167-4870(97)00026-3)
- Powell, G. N., and K. A. Eddleston (2013). "Linking Family-To-Business Enrichment and Support to Entrepreneurial Success: Do Female and Male Entrepreneurs Experience Different Outcomes?" *Journal of Business Venturing* 28(2): 261-280.
- Sarasvathy, S. D. (2001). Causation and Effectuation: Toward a Theoretical Shift from Economic Inevitability to Entrepreneurial Contingency. *Academy of Management Review*, 26(2), 243–263. <https://doi.org/10.5465/amr.2001.4378020>
- Saunders, M. N., Lewis, P., Thornhill, A., & Bristow, A. (2019). "Research Methods for Business Students" Chapter 4: Understanding research philosophy and approaches to. https://www.researchgate.net/publication/330760964_Research_Methods_for_Business_Students_Chapter_4_Understanding_research_philosophy_and_approaches_to_theory_development
- Schubert, R., Brown, M., Gysler, M. and Brachinger, H.W. (1999) 'Financial decision-making: are women really more risk-averse?', *American Economic Review*, pp.381–385.
- Schubert, R., Gysler, M., Brown, M. G., & Brachinger, H. W. (2000). Gender specific attitudes towards risk and ambiguity. *Gender Specific Attitudes Towards Risk And Ambiguity: An Experimental Investigation*, 2000(17). <https://doi.org/10.3929/ethz-a-004106791>
- Shinnar, R. S., Giacomini, O., & Janssen, F. (2012). Entrepreneurial Perceptions and Intentions: The Role of Gender and Culture. *Entrepreneurship Theory And Practice*, 36(3), 465–493. <https://doi.org/10.1111/j.1540-6520.2012.00509.x>
- Startbase. (2021). Female Founders Report 2021. Frauen in der deutschen Start-up Szene: Antiquierte Rollenbilder oder neuer Schwung? V. B.-W. W. e.V.
- Stuckey, H. L. (2013). Three types of interviews: Qualitative research methods in social health. *Journal of Social Health and Diabetes*, 01(02), 056–059. <https://doi.org/10.4103/2321-0656.115294>
- Townsend, D. M., Hunt, R. A., McMullen, J. S., & Sarasvathy, S. D. (2018). Uncertainty, Knowledge Problems, and Entrepreneurial Action. *The Academy Of Management Annals*, 12(2), 659–687. <https://doi.org/10.5465/annals.2016.0109>
- Wu, J., Li, Y., & Zhang, D. (2019). Identifying women's entrepreneurial barriers and empowering female entrepreneurship worldwide: a fuzzy-set QCA approach. *International Entrepreneurship And Management Journal*, 15(3), 905–928. <https://doi.org/10.1007/s11365-019-00570-z>

Yang, T., Hughes, K. D., & Zhao, W. (2020). Resource combination activities and new venture growth: Exploring the role of effectuation, causation, and entrepreneurs' gender. *Journal Of Small Business Management*, 59(sup1), S73–S101. <https://doi.org/10.1080/00472778.2020.1790292>

10. APPENDIX

Appendix 10.1

Interview Questions

Introduction

I am a student in the bachelors program in Business Administration at the University of Twente. For the completion of my bachelor degree, I am conducting research on the gendered effect of the usage of the causation and/or effectuation decision making style of entrepreneurs.

The interview consists of a number of open questions and will take about 30-60 minutes. There are no wrong answers and you can always ask for clarification if something is not clear. With your permission, I will make an audio recording of the interview so that I can transcribe it later. To ensure anonymity, names that may be mentioned will be removed from the research report and the transcript of the interview. Do you have any questions before I begin the interview?

Introduction of Entrepreneur and Company:

- Can you briefly describe your entrepreneurial background and the company you are currently working on within the incubator? (Age, education, work experience, industry/core business, founding year, current entrepreneurial phase, etc.)
- When did you first come in contact with the incubator?

Idea & Pre-startup Phases:

- Was the initial goal clear from the start, or was it more like "see where this is going to end"?
- What role did the incubator play in the assessment of the opportunity?
- How did your financial background influence your initial resource planning when starting your business?
- Have you ever adjusted your business goals or objectives based on the resources available to you at the time? If so, how did you approach this decision-making process?

Startup & Post-startup Phases:

- What did the process of starting the company look like?

- What were you considering when you made business decisions?
- How do you make decisions when it comes to potential risks and returns?
- How much reliance did you place on predictive models (for example, market analysis, competitive analysis, and customer analysis)?
- How did partnerships influence your business or decision-making? For what purposes are they used? Do you have any specific examples?
- How did you deal with unexpected problems or events? Can you think of any examples?
- To what extent did you have a clear goal for the future? What did this look like?
- How did finances shape your approach to developing your business?
- How did your financial situation when you started influence your use of the incubator's resources?
- Can you share your experience in accessing external financing for your business, including any -challenges or advantages you have encountered in securing funding from investors or financial institutions?
- How do you manage financial risks? Do you tend to focus more on avoiding potential losses or more on maximizing potential gains?
- How do you balance your family responsibilities with the demands of running a business? Have these responsibilities influenced your decision-making process in any way? If so, in what ways?
- How has your age affected your decision-making process when starting your business, especially in terms of how you weigh risks and what decision-making strategies (effectuation/ causation) you have adopted?

Influence of the Incubator:

- To what extent did you use a planning process (business plan/model) throughout the development of the startup? Can you explain to me to what extent the incubator program imposed that on you.
- How do you evaluate the role of the incubator during the startup process?
- Can you cite specific instances where the incubator's guidance, resources, or mentorship influenced your decision-making.
- What was the most pivotal moment of influence by the incubator in your view?

- Can you reflect on how satisfied you are overall with your experience with the incubator? (Was it supportive, or neutral or did you feel hindered in certain instances? Can you illustrate this with examples?)
- Can you provide examples of how the incubator's support has been tailored to your financial needs?
- Is there anything else you would like to add?
- What external partnerships has the incubator facilitated for your startup?
- How has being part of the incubator connected you to the broader entrepreneurial ecosystem?
- Looking back, how do you think the institutional context of the incubator has overall influenced your decision-making style?
- What aspects of the incubator's support and connections do you feel were most pivotal in shaping your approach to business decisions?

Finalization

- Thank the entrepreneur for cooperating.
- Tell him/her he will receive the transcript in a few days.
- Ask if the entrepreneur is interested in receiving a (digital) copy of the thesis once finished.

Appendix 10.2

Table 1: Interview participants

Respondent	Position	Data collection
F1	Co-founder	Online videocall
F2	Co-founder	Online videocall
F3	Founder	Online videocall
F4	Founder	Online videocall
F5	Co-founder	Online videocall
F6	Co-founder	Online videocall
F7	Co-founder	Online videocall
M1	Founder	Online videocall
M2	Founder	Online videocall

M3	Founder	In-person
M4	Founder	In-person
M5	Founder	In-person
M6	Founder	In-person
M7	Founder	In-person
M8	Founder	In-person
M9	Co-founder	Online videocall
M10	Co-founder	Online videocall
M11	Co-founder	Online videocall

Appendix 10.3

Table 2: Data structure; female entrepreneurs

1st order codes	2nd order themes	3rd dimensions
Getting as much free money as possible	Affordable loss	Effectual decision making
Willing to make affordable personal sacrifices		
Using financial support		
Considering the finances		
Changing the financing plan from getting investments to bootstrapping		
Can't avoid losses		
Conscious about burn rates		
Very low initial investment		
Difficulty to get external financing		
Adjusting to availability of resources	Means driven (bird in hand)	
Being flexible		
Idea about the future is not ready yet		
Make maximum use of resources		
Seeing where it would end		
Spotting an opportunity based on their own existing knowledge and experience		
No clear initial goal		
Collaborating with other companies		

Engaging with customers	Commitments and self-selected partnerships (crazy quilt)	
Incubator helps you connecting with others		
Using incubators large network		
Seeking guidance		
Engaging with stakeholders to create and pursue opportunities together		
Learning from something unexpected	Leveraging contingencies (lemonade)	
Expecting the unexpected		
Being open minded in case of obstacles		
Gathering and incorporating customer feedback		
Making use of external financing	Expected returns	
Trying to apply for grants because money is always scarce		
Spending money to make money		
Using a risk formula		
Making decisions based on financial risks		
Business guidelines has influence on decision making	Goal driven	
Goal is clear		
Goals have influence on decision making		
Clear goals for the future		
Having a mission and vision		
Using a method with clear goals		
Guidelines that define company and helps stay on track		
Competitor analysis	Market research and competitive analysis	
Using predictive models		
Looking for trends/market gaps		
Market analysis to see the potential		

Appendix 10.4

Table 3: Data structure; male entrepreneurs

1 st order codes	2 nd order themes	3 rd order dimensions
Being willing to make affordable personal sacrifices	Affordable loss	Effectual decision making
Deferred financial expectations		
Investing limited, small amounts of money, time and effort		
Finding unused resources in the local environment		
Limiting stakeholders' commitments to levels that are uncritical to them		
Not borrowing any money from the bank		
Using their knowledge base to make decisions	Means driven (bird in hand)	
Spotting an opportunity based on their existing knowledge and experience		
Leveraging existing skills and resources at hand		
Defining only rough visions while leaving the details open		
Leveraging existing networks for opportunity creation and identification		
Adjust to the availability of resources		
Seeking guidance from an incubator	Commitments and self-selected partnerships (crazy quilt)	
Engaging with potential clients to identify opportunities		
Exposing MVP to potential clients early on		
Co-creating business with customers		
Engaging with stakeholders to create and pursue opportunities together		
Co-creating business with stakeholders		
Trust-based flexible stakeholder agreements and commitments		

Searching for right people with right knowledge		
Partners participate in decision-making process		
Strategic flexibility in response to market uncertainty	Leveraging contingencies (lemonade)	
Accepting/gathering and incorporating unforeseen customer feedback		
Adapting plans to accommodate unforeseen events		
Actively exposing the company to outside influences		
Embracing unforeseen developments and opportunities		
Learning along the way		
Defining a clear direction and emphasizing its need	Goal driven	Causal decision-making
Basing actions upon expectations and predictions		
Searching and selecting partners based on predefined plans		
Defining and satisfying organizational needs		
Developing an extensive business plan		
Always having a plan to not operate under critical situations		
Having a clear general goal		
Analyzing financial viability	Expected returns	
Searching for stakeholders to commit the amounts necessary for the execution of the plan		
Calculating expected financial outcomes/returns		
Borrowing money		
Carrying out non-systematic competitor and competitive positioning analysis	Market research and competitive analysis	
Carrying out market research		
Acquiring resources through market contract-based agreements		

