

Exploring the Impact of Age on Decision-Making Approaches: a study of causation and effectuation.

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ABSTRACT,

The goal of this paper is to investigate whether age has an impact on the approaches entrepreneurs take (effectuation/causation) in their decision-making process. Interviews were conducted with entrepreneurs from different age categories within incubator programs in the Netherlands. These interviews tried to investigate whether the age of the entrepreneur plays a role in the approaches entrepreneurs take in for example minimizing losses(effectuation) or maximizing profits(causation). The results show that older people are more focused on minimizing losses than maximizing profits. Meaning that in this research older people tend to lean more towards the effectual approach, however considering other principles as well, the results are not that clear as young entrepreneurs prefer using effectuation in some cases. This research shows that every entrepreneur is different and uses different approaches to different situations.

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1. Introduction

1.1 Situation and argumentation

There is no generic definition for entrepreneurship. Literature shows that the term 'entrepreneurship' is difficult to define. Despite the fact that many researchers have tried to give the term one generic definition, in general, the typical theories don't seem to effectively explain entrepreneurship. However, we currently lack well-established or clearly defined alternatives to replace them. Some even argue that it's impossible to find consistent patterns or develop a theory that comprehensively explains wealth creation or entrepreneurship (Venkataraman (2019). Apart from the fact that there is not a clear definition of the bigger term 'entrepreneurship' looking at the individuals and their personal path is possible. Starting a business brings in a lot of challenges, uncertainty is one of the main challenges. Some statements are known to be true; others are known to be false. Most statements are not known to be true or false, these are uncertain. This is not only about statements, but also on everyday life decisions (Kischka & Lindley, 2008). Decisions under uncertainty can involve either known or unknown probabilities. Known probabilities have been referred to as risk and unknown ones as ambiguity (Keller, Taylor & Brunyé, 2020). Although these uncertainties can be vital for starting companies, there are many individuals trying to set up a new company. The number of starter companies in the Netherlands increased to 276.000 in 2023 which is 2% more than in 2022 (KVK, 2024). This means that there is a rising trend in number of companies and thus in the number of starters. According to the U.S. Bureau of Labour, starting-up a business have a 70% failure rate in the long term. This failure rate escalates to 50% by the end of year five and jumps to 70% by year ten (Zhou (2024, April 13). If the numbers of failing starters is so big, why are there so many individuals trying to start their own business and how do they start their decision-making process? Entrepreneurial decision-making is important for keeping companies organized during uncertain times. However, the choice of decision-making approach or tools in such contexts remains a question. Within the entrepreneurship literature, two primary approaches to decision-making emerge: the planning-based approach and the emerging approach (Cristofaro, Sousa, Sánchez-García & Larsson, 2021). When looking at the decision-making approaches we see that there is a planning-based approach on one side for example causation, which is based on planning and control (Mankins & Steele, 2006). The emerging approach to decision making is on the other side, this approach is more focused on speed and adaptability (Buehring & Bishop, 2020), for example effectuation. When starting-up a business individuals will either choose one of the approaches or a combination of these two approaches. The rational planning view suggests that when uncertainty increases, organizations that work harder to carefully analyze and accurately predict changes in their operating environment will perform better than those that don't (Wiltbank, Dew, Read & Sarasvathy, 2006). In a typical planning-based

approach, there are three main components: an initial state, representing the current state of the situation; a goal state, stating the desired outcome; and a description library describing all possible actions within the situation. (Young, Ware, Cassell, & Robertson, 2013). Making plans supports a business to set important goals. These goals could motivate people to put in extra effort and accomplish them (Steiner, 1979). Planning enables companies to make informed decisions about current actions regarding future opportunities and threats, rather than reacting after events occur (Steiner, 1979). It can be stated in these articles that planning is mainly about predicting the future. Predicting the future in business environments where uncertainty is high is difficult. Because of this in these situations the emerging approach of decision making is used more often. Nutt (1993) stated that being open to new ideas helps people understand the value of innovation. It lets them think differently and try new ways of doing things instead of sticking to the same old methods. Being flexible has lots of benefits. Nutt (1993) argues that managers who are adaptable are less likely to be sidetracked by the uncertainty and ambiguity that come with making strategic decisions. Organizations need managers who can deal with challenges and emerging decisions to succeed in the future (Sharfman & Dean, 1997). Trying to create a single plan that works perfectly in every situation is just not realistic because the real world is so complicated and unpredictable. Instead, using decision procedures that include methods like guessing probabilities or combining planning with action, as they used in that article, gives us a more flexible way to approach things. Even though this approach might not always be perfect, it's still a good way to plan effectively in real-life situations. (Pryor & Collins, 1996). In this paper the focus will be on causation as a planning-based approach and effectuation as a flexible approach of decision-making. The key difference between causation and effectuation lies in the nature of the choices made. In causation, the focus is on selecting the means to achieve a specific effect or goal. On the other hand, in effectuation, the focus shifts to choosing among multiple possible effects or outcomes using a given set of means or resources (Sarasvathy, 2001). Under uncertainty therefore emerging approaches tend to do better and when there is no uncertainty planned based approaches tend to do better. Although there are a lot of different approaches to decision-making, in this research the focus is on causation and effectuation approaches. Several studies on how aging influences decision-making behavior have been done over the past decades. According to the Simons Foundation, older adults typically use simpler strategies, stick to what they already know, and rely more on others when making decisions. Compared to individuals that are younger (Sohn, 2022). The simple answer to the query, "Is entrepreneurship a young person's game?" is a clear "no," according to Zhao, O'Connor, Wu, & Lumpkin (2021). The idea that young people have a higher chance of succeeding in entrepreneurship is rejected by their meta-analysis. The results show that the connection between age and

entrepreneurial success is not only influenced by how long entrepreneurs have been in business, but also by the life stage and gender of the entrepreneur. So, these findings show that decision-making processes are likely to differ among age groups. This is why the main focus of this study will be the influence of age on entrepreneurial decision-making approaches.

1.2 Research Gap

There has been research to the stability of decision making with age before (Kovalchik, Camerer, Grether, Plott, & Allman, 2005). Research about effectuation and causation in uncertain environment (Reymen, Andries, Berends, Maur, Stephan & Van Burg, 2015) and research about the antecedents and consequences of these approaches (Harms & Schiele, 2012). Comparing and studying, these research show that research is mainly done in certain areas, for example the research about effectuation and causation is done in the business area and the impact of age on decision making mainly based on choices in daily life. As with everything in life, people become more experienced with practice and with age. New methods should focus on documenting behaviors associated with effectuation and articulate data in quantifiable terms to enable systematic comparisons across cases (Grégoire & Cherchem, 2019). As seen in this article, further research needs to focus on the influence of quantifiable terms on the different approaches, this is where the research gap is. For example, age and the impact on the effectuation and causation. Because of that in this paper the focus will be on researching the impact of age on the decision-making approaches in uncertain business environment. Focusing the research on an incubator company which helps start-ups in the buildup of their venture creation.

1.3 Research Question

The research gap identified before, has led to the following research question:

- How does age influence the preference for effectuation versus causation decision-making approaches?

The objective of this research is to find out about the impact of age on the type of approach individuals will take when they face uncertainty in their venture creation. The aim is to understand the impact of age on decision making approaches, to explain the differences between the approaches and when to use the different approaches. This research hopes to give entrepreneurs a better idea of the different approaches to the decision-making process and give an idea of the impact of age.

2. Literature

2.1 Causation and Effectuation

As stated by Chandler, DeTienne, McKelvie & Mumford (2011), Sarasvathy (2008) expanded the understanding of the entrepreneurial process by

defining the two main decision-making strategies individuals use when starting new businesses: effectuation and causation. Causation is like following a plan: you find opportunities and make business plans. Effectuation is more about being adaptable. You make decisions that you can live with losing and are able to adjust your plans along the way. While causation seeks for preset goals, effectuation thrives on uncertainty. Effectual framing means changing how you see a problem and turning current situations into new opportunities. Causal framing means finding and using existing opportunities in the given problem (Dew, Read, Sarasvathy & Wiltbank, 2009). These two approaches show different ways of thinking and making decisions as an entrepreneur, each with advantages and disadvantages of their own. Sarasvathy developed principles related to effectuation and causation. 1) Bird-in-hand: Rather than following preset goal, action is motivated by resources that are at hand. Being flexible means having the ability to change your plans and goals when needed. 2) Affordable loss: instead of focusing on expected gains, invest what you can afford to lose. Talking openly about risks is important when going into deals. This means thinking about both potential negative results as well as potential benefits that are unknown to us. 3) Crazy quilt: Let stakeholders choose for themselves instead of letting the already set goals and expected returns influence them. This way stakeholders gain influence over the company's direction and goals and by allowing them to interact the company will stimulate everyone involved. 4) Lemonade: Rather than avoiding unexpected situations such as failures, accept and take advantage of it, failures are part of the process. 5) Pilot-in-the-plane: instead of predicting and following trends, focus on creating and collaborating on new futures (Sarasvathy & Botha, 2022). When someone uses causal logic, they typically have a preset goal, focus on expected returns, emphasize competitive analysis, make decisions based on what is already known, and try to predict an uncertain future. Effectual logic starts with the resources they already have, prioritize a loss that can be afforded and aim to keep control over an uncertain future (Perry, Chandler & Markova, 2012).

2.2 Impact of Age

Researchers have observed that the decision-making behavior of older adults differs from that of younger adults. In situations involving risk, older adults exhibit similar behavior to young adults when prior probabilities are considered. However, differences emerge in situations where statistical probabilities are part of the decision-making process, especially in ambiguous conditions (Sproten, Diener, Fiebach & Schwieren, 2018). Although older adults may say they're less willing to take risks compared to younger people, when we look at actual behavior, studies show that there aren't significant differences in how risky decisions are made across different age groups (Frank & Seaman, 2023). So, in behavioral and psychological research, the influence of age on decision-making behavior has received attention. Research has looked at how people's decision-

making processes change as they age, focusing on differences between younger and older adults. To gain insight into different aspects of decision-making, it is important to understand these age-related differences. The purpose of this paper is to investigate the effects of age on the various types of decision making under uncertainty. In past research the focus was mainly about the impact of age on decision making as a whole concept, this paper will focus on the two different approaches of decision-making considering past research.

2.3 Proposition

Understanding how age influences methods of decision-making is important in today's business world. This proposal looks at the relationship between age and decision-making styles in uncertain business environments. It looks how younger and older entrepreneurs use or planning-based strategies differently. This study aims to give recognition on how age influence entrepreneurs' tendency towards flexibility and goal-oriented planning through an analysis of effectuation and causation.

Proposition 1: Age has the tendency to decrease the risks taken in the decision-making approach that an entrepreneur chooses in uncertain business environments.

Proposition 2: Older entrepreneurs are more likely to adopt emerging strategies that are similar to effectuation principles, whereas younger entrepreneurs are more likely to favor planning-based approaches.

3. Methodology

3.1 Research Design

In this research design the research question stays central, supported by the theoretical framework and the propositions. To possibly give an answer to this research question or to confirm or reject the propositions data is needed. This data was gathered through semi-structured interviews because it is quantitative research. With semi-structured interviews the interviewer has the flexibility to go more into detail and collect all verbal and non-verbal reactions of the participant that can reveal all information needed (Kakilla, 2021)

These Interviews will be performed with entrepreneurs in an incubator program who cover a wide range of industries and age groups, including young adults, middle-aged adults, and older adults. Questions regarding the participants' experiences, approaches, and ways of thinking when making entrepreneurial decisions will be created in advance for the interviews. Specific questions about the ages of the participants and their use of different approaches to decision-making will be made. The goal of this report is to look for any trends in the participants' responses. The study aims to provide valuable information about the relation between decision-making styles and age in entrepreneurship. This research will contribute to already existing research of Jamin (2024) who already did research in different incubator programs about the effectuation and causation decision-making approaches.

3.2 Data collection

3.2.1 Interview information

Before the interview took place, we had to do research within an incubator program with a group of 4 who all had their own variable to research. I started contacting everyone within Novel-t to get as much interviews as possible, to gather as much data as possible. In the end it was much more difficult to get in contact with the entrepreneurs, after sending over 25 emails I had 5 interviews planned. In the end I did use only my own data and the data of one fellow student for my own research. As described in the research design there was already done some research within Incubator programs in the Netherlands (Jamin, 2024), the data that was collected in this research I could use in some parts of my research, but not in answering the research question. So, in total 5 interviews will be conducted by myself, and 5 other interviewed entrepreneurs will be considered, which are done by a fellow student. In total 10 interviews are held by incubator programs, so this information will be used to get a better and more reliable understanding of the results. 4 out of the 5 interviews were held via teams and one of them was done over a phone call, the interviews had an average length of 31 minutes. In this interview the questions that will be used are mainly based on the interview questions used and validated by Jamin (2024), in previous incubator research. The author of this paper has access to the recordings of the interviews, which were made. Every interviewee provided permission for their data to be recorded and used. You can find the interview questions in appendix.

3.2.2 Sample

Interview requests will be made to entrepreneurs taking part in an incubation program from a variety of industries. The selection criteria will be made up of elements like experience, industry, and age. Potential participants will be asked to talk about their approaches in making decisions. Investigating how age affects entrepreneurial decision-making is the goal. In the sample used for this research 3 out of the 10 entrepreneurs are 40+ years old and 7 of them are between the age of 19-32. The work field of the entrepreneurs was very different. Among the 3 older participants there were 2 men and 1 woman and among the 7 young participants there were 6 women and 1 man.

After searching through different articles of past research, one thing was different every time. These were the age groups used in the research. (Sproten, Diener, Fiebach & Schwierien, 2018) used age groups between 19-32 and 58-88. In other articles like the one from (Dror, Katona & Mungur, 1998) there were used different age categories. Since in this research there is a small group of participants namely in the older category. The first category will be the same as described above, so 19-32 to extend the research already done. The second category will be 40+ years old, because there is a limited number of participants.

3.2.3 Analysis

To analyze the data collected from these semi-structured interviews an inductive method to thematic analysis will be used. This is a type of coding where the data will not be put into predetermined coding frames, but rather in self-made codes attached to the data gathered from the interviews (Guest, MacQueen & Namey, 2012). The data was stored into MAXDA to start the coding process and develop specific codes to the answers. After all the codes were made, the next step was to conduct the data using the Gioia Methodology (Magnani & Gioia, 2023). This process involves three main steps to develop data analysis. It starts with creating analytic codes and categories. These codes and categories are then organized into a data structure. This structure comprises first-order codes, which are centered on the informants' perspectives, and second-order themes, which are based on theoretical concepts, along with broader aggregate dimensions that summarize these themes.

4. Results

In this chapter the 1st order concepts, 2nd order themes and the aggregate dimensions are presented. Through qualitative analysis of the semi-structured interviews tables are developed which will be partly shown in the next paragraph of this chapter to give an idea of how the coding is done with the full tables shown in the appendix 10B. The results include quotes out of the interviews taken. To make it clearer the category of 19-32 will be named young and the category of 40+ will be named older. This is the way how coding is done.

This is part of the full table of entrepreneurs 40+

Ist-order concepts	2nd- order themes	Aggregate Dimension
Following personal planning process and risk management	Means Driven Action	Effectual Decision-making
Stay close to your original idea/product		
Using own knowledge to look at projects and the market		
Having a clear long-term goal, but not short ones		

4.1.1 Means Driven Young

The interviews taken within the group of young entrepreneurs, the Bird in hand theory as explained in chapter 2 was emerging. This theory is on the effectual side of the decision-making process and is mostly focused on what resources are available at the time decision must be made. *“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 model, well not business model, but business plan and your strategy, or take on collaborators that you wouldn't have partnered up with otherwise. So, there's definitely times where we adjusted based on the resources that we had around” (E10). Spotting an opportunity based on their own existing knowledge and experience is another concept of the Means Driven theme, acting on the resources available. *“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. So you can go in so many directions with it. We just have to do something with this. Because society might benefit from this. Yes. And that is why we are now working on a start-up”* (E6). Having no clear goal from the start is also something that came across a few times in the interviews, someone stated: *“The goal is the product, and the goal is actually minimal to nothing from the start”* (E4). In another interview the interviewee said: *“Yeah, I think a bit more of let's see where this takes us. The journey is going to be the interesting part. We were all learning so much on the way”* (E5). These statements show that these entrepreneurs are working based on the resources available at the time.

4.1.2 Leveraging contingencies Young

Leveraging contingencies is also on the effectual side of the decision-making process where entrepreneurs have to think about how to deal with opportunities. *“But also, if you suddenly get an opportunity and you are invited to speak somewhere or someone wants to look at their patient samples with you. How are we going to set it up?”* (E6). One of the key points of the leveraging contingencies theme is Being open minded in case of obstacles/unexpectancies. *“So, I actually think that the whole start-up process is a series of unexpected things. And you're never really prepared for anything. So, yes, there can be problems. Yes, you apply, and you are not admitted. Then you suddenly try to think, what just happened? How can I do better next time? But also, if you suddenly get an opportunity and you are invited to speak somewhere, or someone wants to look at their patient samples with you. How are we going to set it up? I actually think, yeah, it doesn't really feel like unexpected events because a start-up is so unexpected, the whole process. You never really know how things are going to go. Every day it is unexpected”* (E6). This quote sums up most of the results the interviews with young entrepreneurs gave. In the start-up phase especially, young entrepreneurs told us that there is so much going on and so much new things happened many of these entrepreneurs have not seen before that it is important to being as much prepared as possible to possible problems and expect the unexpected. *“Yeah, take them as they come. Well, always go back to the team and always, always have these internal discussions and really decide together how to proceed and how this affects us and always be prepared that you cannot control all the*

circumstances. In being prepared, you're going to be able to sort of deal with it" (E10).

4.1.3 Goal Driven Young

On the other side of the effectual decision-making process there is the causal approach where entrepreneurs take a more plan-based approach and are more focused on meeting the predefined clear goals set for the future. "Working with Novel-t, we have a very structured way of working. We have an OQR method. So, we set very, very clear goals for 100 days and then we finish them, re-evaluate and so on. So, the OQR, as I mentioned, is every 100 days. So, for three months, we have these specific goals for different categories. For example, attraction, finals and so on. 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" (E8). Most of the entrepreneurs who use the causal approach will say that these preset goals will influence their decision making. "When we make business decisions, we look, first of all, at our goals and at our resources while keeping in mind the mission and vision we have" (E8). These goals are most of the time seen as guidelines that define company and helps stay on track, these guidelines help young entrepreneurs to stay connected and avoid them to give up after something unexpected happens. "The first thing is making sure that it aligns with our guiding policies. So, we set up, 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. So, it's important for us to create this product that's accessible to people. It's important for us to create something that's easy to use, that's not too expensive. So, any business decisions that we make have to stay within those lines and not steer us away from our original strategy, and those three, four guidelines that really define our company and help us stay on track with whatever decisions we make" (E10).

4.1.4 Market research and competitive analysis Young

The last theme that will be talked about is the theme market research and competitive analysis, this theme is part of the causal dimension as entrepreneurs base their decisions on data from the past. Entrepreneurs who base their decisions on market research and competitive analysis will look at what the markets are doing and they will look for trends and market gaps, these two 1st order concepts were stated in the following quotes, the first one is: "So we're looking at okay, where is the biggest gap in the market? Is there really more demand for something diagnostic to recognize different diseases? Or is there more demand for therapy? And how much should you invest in both directions? So, we try to make a choice about that" (E6). The second one is more focused on the competition and the future: "You always look at what the market is doing. Are there a lot of competitors? What are those competitors doing? What is the innovation doing? What do we think will happen in the coming months or years" (E4)? Considering these things

before making decision will give entrepreneurs a better insight in the market which will give them an advantage in predicting possible outcomes, one of the things entrepreneurs were also considering in the start-up phase was connecting with customers to get feedback (to improve). "We had the opportunity to speak with the people. And connect, for example, with the customers face-to-face. We were able to connect with the customers. That was beneficial for us to get the feedback of the market and something like that" (E7).

4.2.1 Means Driven Older

Most of the findings of the older entrepreneurs showed that they have more experience than the younger entrepreneurs, which is logical in most of the cases. Entrepreneurs above the age of 40 all showed that they followed their own planning process and risk management. "I have my own planning process. And I have my own risk management So I'm not even a big risk taker. But I'm also not a risk avoider. So I think that the most successful entrepreneurs have a neutral risk profile. Then you may have a good balance. Between taking risk and making sure that your risks are well covered. Keep spreading risks, having a very strong incentive to understand where the risks come from and how do you want to take it" (E1). The thing they all had in common was that they all had a clear long-term goal, but the short-term goals were adjustable to the resources they had. "The other thing that is very interesting about technology startups is that you know what you want to be in 1, 2 or 5 years. But it's very difficult to figure out what to do today, tomorrow, and next week to take steps in the right direction" (E1). The last thing that came across in the findings was that they stayed close to their original product and idea they had in mind, there were times these entrepreneurs thought of quitting or changing their product, but they figured things out with the resources available to keep the company on track. "Because when you start and you have to collect money. Then you are going to do everything you can to make money. And then you see that you are going in all directions. Then we got a tip from an old bank director. He said, you are not going to sell ice cream with your company on a sunny day. So stay on your feet. Become very good at what you do. Then the customers have to come to you at some point. Fortunately, we kept that up" (E3).

4.2.2 Leveraging contingencies Older

In the category of entrepreneurs above the age of 40 there was also the theme of leveraging contingencies, these entrepreneurs were really focusing on quickly adapting in the beginning of the start-up phase. "While if you want to make money as a startup, you just have to switch very quickly, you just have to move on quickly and you can't afford to lose a lot of time" (E1). Speaking of time, the next 1st order concept of this theme comes up. This concept is about adjusting things in detail because time demand it. The focus of the entrepreneur was constantly refreshing his team with younger people, because he said that younger people are more

innovative and think more outside the box. *“You adjust things in detail because time demands it and because people change, you have to play along with that. You get a different generation of people with different decision-making processes, and you have to adjust to that”* (E2). Another thing entrepreneurs have to adjust to is the fact that in the start-up phase not everything can be foreseen and be expected, they have to take blind steps in some processes. *“You might know the expression, every journey starts with the first step, but how do those first steps fit into the direction of the company? In other words, you don't take those first steps blindly and if you don't have experience, it's terribly difficult. Because there are a lot of blind steps. So, I would like to characterize those first steps as extremely difficult. These steps are very slow and because you also get relatively little feedback whether you are going in the right direction”* (E1).

4.2.3 Goal driven Older

With the entrepreneurs above the age of 40 there were also things said that show signs that they are goal driven in their decision-making process, one thing they all had in common was that they all had one general goal or pre-set long-term goal where they are working towards to. *“I had a good picture of what I wanted to achieve with this company when I started”* (E2) said one of the entrepreneurs. The focus with one of the other entrepreneurs was more on the first part of the start-up phase, where the company's first goal was to have the right to exist (make profit). *“The first goal was to ensure that you had the right to exist. In other words, make a profit, ensure that you could cover the costs you already had. It is a bit of a disadvantage with a software company, you have to take a lot of costs in advance. You have to build your platform before you can sell it. You can't pre-order and say it will be ready in five years, so you really had to put a lot of money into hiring developers. Develop a platform for one or two customers. So, you had to put a lot of your own money into it. As I just said, focus was very difficult. Because when you start, and you have to collect money. Then you are going to do everything you can to make money”* (E3).

4.2.4 Market Research and competitive analysis Older

When analyzing the results, the main thing that showed up was that everyone in this category of entrepreneurs was using some sort of market research and competitive analysis. In start-ups, especially in start-ups with new products it is difficult to do, but analyzing similar markets is one of the key points they said. *“If you look at, the markets of the sale of white goods or printers you can actually see very well where our market would go 20 years later. And I can tell you that it came out almost one-on-one”* (E2). What they also had in common was that they all described the importance of using data, but not basing the decisions only on the data. *“I use what is available. You really need that, but take decisions on the basis of that data and not through the data* (E3)”. They all agreed on that they had to do this kind of research, because when

starting a company, it will usually take a long time to get feedback from the new market you are in. *“What you definitely need is a lot of perseverance and a lot of startups talk about the perseverance of the entrepreneur, especially technology startups, where the feedback of the market takes a long time. Because with technology you often have a partial solution, while the market can only validate your partial solution when it turns out how valuable your partial solution is to a total solution”* (E1).

4.3 Additional findings

4.3.1 risk differences with age

There were also some additional findings that can contribute to this research. While analyzing the interviews there were some things that stand out besides the original research. Many of the respondents agreed on the fact that young people are likely to take more risks in the start-up process than the category of older entrepreneurs. One of them emphasized the fact that companies need to have younger people in the company to stay innovative. *“When you are young, you have absolute advantages. in the decision. But your challenge is often, that you miss some experience. If you are going to make decisions with old people. You will usually have no more innovative decisions. They make nice decisions, but boring ones, decisions that make sure that tomorrow is just like today”* (E2). From the category of older entrepreneurs, they all said that their risk profile has not changed so much *“That my risk profile was neutral and that it is still fairly neutral”* (E1). It is more that their risk management has become better through experience. *“In general, you need experience to prevent mistakes, but you need young people to come up with new ideas. Because in general, the older people, the older they get, the more often they want to do the same thing they did yesterday. Because they find that new is more exciting, they find it riskier. That's where the advantages and disadvantages are and I don't take less risks, but I take the risks better. Because I used to get in somewhere even faster and now, I have more people around me. Who make sure that I think better. I am someone who goes somewhere fast and takes a risk. So, I know that I need more people around me. Who also look better in detail, and I gained more experience in that myself as you get older”* (E2).

4.3.2 Role of the incubator

Every entrepreneur was very satisfied with the way the incubator helped them, even though the incubator was not used optimal in many of the cases. One thing that was said by many of the participants was that the incubator was used mostly to help their starting company with the connections and partnerships to give the start-up a head start. One of the entrepreneurs said: *“You can work in contact with investors. They have a lot of conferences and events where they want to invite you”* (E5). Another one said: *“I think it's more the connections that they gave us. I think the novelty is very well connected. Our mentor, he was constantly forwarding us to different people”* (E4).

5. Conclusion

After gathering all the data and comparing differences in the decision-making process most of the things in the start-up phase are similar between the groups. One of the things that stand out was the difference in the affordable loss vs expected returns principle, where younger people are willing to take more risks and prefer maximizing profits (expected returns) which is connected to a more causal approach. Older people showed in the interviews that they are more risk neutral and prefer avoiding losses. The main research question to be answered is: *How does age influence the preference for effectuation versus causation decision-making approaches?*

Based on the data gathered from the interviews, the suggestion will be that older entrepreneurs prefer the effectuation approach whereas young entrepreneurs follow a more causal approach. This will be further worked out in the next part about the propositions. But there are limitations to this research which will be further described at the end of this research. After comparing the interview results and counting the number of words related to the different principles, the following results appeared.

Age group 19-32:
Means driven 62%% vs goal driven 38%%
Affordable loss vs expected returns 37,5% vs 62,5%

Age group 40+:
Means driven 60% vs goal driven 40%
Affordable loss 62,5% vs expected returns 37,5%

Comparing all the results based on the 5 principles (Sarasvathy & Botha, 2022). Not all standard principles are used in this conclusion, but only the ones that were clear in the results and were comparable in the way it was done by (Perry, Chandler & Markova, 2012).

5.1. Initial proposition:

Proposition 1: Age has the tendency to decrease the risks taken in the decision-making approach that an entrepreneur chooses in uncertain business environments.

In the additional findings there is stated that younger entrepreneurs in this research are likely to take more risks and that the group of older entrepreneurs will take more time and do more research before making a decision. This has according to their own words to do with the experience they gained through the years. Based on this information it can be stated that age makes a difference in the decision-making approach that an entrepreneur chooses in uncertain business environments. Taking the percentages stated in the conclusion, differences appear. In both categories means driven is favorable in comparison to goals driven in the start-up phase with respectively 60 and 62%, so there is not much of a difference. The main difference can be found in the comparison of affordable loss and expected returns where young

entrepreneurs favor maximizing profits (expected returns) relating to the causation approach which tend to be riskier and older entrepreneurs favor minimizing losses (avoiding losses) which is related to the effectuation approach and brings less risk. What there can be seen from this data is that age has a decreasing effect on the risk taken in an entrepreneurs decision-making approach, so this proposition can be confirmed.

Proposition 2: Older entrepreneurs are more likely to adopt emerging strategies that are similar to effectuation principles, whereas younger entrepreneurs are more likely to favor planning-based approaches.

Comparing all the results from the interviews gave a good insight into the thinking process of these entrepreneurs. The start-up process is a very hectic process where unexpected things happen. "As a startup, I always say you have to be very focused, but also very flexible and if you ask me what is the most difficult thing about a startup, that is, how can you be focused and flexible? Because those two things are actually in conflict with each other". This quotation shows the difficulty of starting-up a business. Looking at the results in the beginning of the conclusion, there can be seen that older entrepreneurs favor the means driven approach with 60% and young entrepreneurs with 62%, this difference is too small to take conclusion out of it. Older entrepreneurs are favoring the affordable loss approach whereas young entrepreneurs favor the expected return one, from this data you can see that older people favor the effectual approach. The remaining principles do not show significant differences, so this proposition cannot be confirmed neither be denied.

6. Discussion & Implications

6.1 Discussion

Based on qualitative semi-structured interviews done mainly at the Novel-T incubator, this research aimed to get a deeper and broader knowledge about the impact of age on the decision-making process and the potential impact of the incubator on the decision-making style (effectuation or causation). This research is done in two different age categories namely 19-32 years old and 40+ years old entrepreneurs, this because the article showed in the literature showed that the risks taken differs the most in the first category and to look if that had impact on the decision-making style this approach was taken.

Interviews were done to gain information of entrepreneurs from different age groups. The results will be weighted according to the themes used in the results and appendix section with a focus on the following comparisons means driven principle weighted against goal driven principle in both age groups and the affordable loss principle against expected returns principle.

Differences appear when comparing the literature and the results from this research, where in the literature the thing that was said was: Although

older adults may say they're less willing to take risks compared to younger people, when we look at actual behavior, studies show that there aren't significant differences in how risky decisions are made across different age groups (Frank, Seaman, 2023). The results of the interviews gave insight on how entrepreneurs perceive risks, and one thing that was notable was that younger people said that they are willing to take more risks because they have more freedom and nobody to take care of financially apart from their themselves. This was not only the case for the young entrepreneurs, also some of the older entrepreneurs said this as one of the reasons younger people are maybe willing to take more risks. So, this can be one of the reasons this research gave these results, not everyone has the same situation they are in. People who are older are more likely to have a family, but would they take more risks if they did not have a family and is this due to the age. There is a significant negative effect of child presence on investment risk tolerance (Chaulk, Johnson & Bulcroft, 2003).

In this research among others the variable of gender can be a point of discussion. We see that men use more effectuation in decisions under uncertainty than women (Frigotto & Della Valle, 2018). This article shows that there are differences in the approaches men and women take under uncertainty, which appears a lot in the start-up phase. Another article states that: There is a gender effect in the frames used in this context, where men take more risks under ambiguity than women (Schubert, Gysler, Brown & Brachinger, 2000). These articles show that there are differences in decision-making between the genders. In this research 7 out of the 10 entrepreneurs are women while only 3 of them are men. This is the reasons that this is a point of discussion, uneven number of participants from both groups can lead to different results if there are differences in the approach between the two groups. Assuming the results of past research done on the effect of gender there can be stated that gender has influence on the decision-making approaches entrepreneurs make and thus there is a possibility that it also influenced the results of this research. Things that can have a potential influence on the results needs to be considered before making official statements.

In this research the word 'risk' comes up often, but what does it have to do with the different approaches' entrepreneurs take? Is taking risk more part of the effectuation or causation approach? Previous research from Welter & Kim (2018) suggest that under risk and uncertainty the effectuation approach outperforms the causation approach in general, only in cases where the predictability is more than 75%. This does not mean that everyone who takes more risk uses the effectuation approach, but it is likely that the amount of risk taken has influence on the approach they take. Risk taken can also be part of the maximizing profits (expected returns) principle which is part of the causal approach. So, future research needs to take into account the amount of risk taken by entrepreneurs.

Out of the analysis of the interviews itself it showed that some of the entrepreneurs made more use of the incubator program than others, the incubator program can provide entrepreneurs with different tools like critical questions, networking and even help them with a planning. So, taken into account that incubators can have a huge impact on the decision-making approaches of these entrepreneurs. It means that the role of the incubator can also plays a role in the results of this research. This research is follow-up research and in previous research the role of the incubator was researched. Incubators and other entrepreneurship educators should encourage a balanced approach to decision-making, emphasizing the benefits of both effectuation and causation. The incubators in this study already support effectuation, often without realizing it, by using Lean Startup methodologies. Incorporating these Lean Startup methods and principles in incubator programs, especially in the early stages, is advisable. This approach helps with quickly testing ideas, adapting based on market feedback, and making necessary changes, all of which align with the effectuation process (Jamin, 2024). This shows that incubator programs influence the type of decision-making approaches entrepreneurs take and prefer a more effectual approach in the decision-making process.

Another factor that is likely to play a role in the results what cannot be measured is the experience people have. Experience is a broad concept which can be influenced from many different things, with age most people gain experience, but younger people can have more entrepreneurial experience than older people. According to the research of Cha, Ruan & Frese, (2020) entrepreneurial experience is positively correlated to causation, this result contrasted with the research done by Wiltbank, Read, Dew & Sarasvathy (2009), where the focus was on the different approach experienced entrepreneurs would take. Affordable loss was preferred over expected returns which shows signs of a favorable effectual approach. Despite the differences in these results one thing is clear, that experience has influence on the decision-making process. Either way, experience show that people make different decisions. This makes room for further research to give a more in-depth view of the impact of experience on the decision-making process and the influence of this impact on whether they prefer to take the effectual or causal approach.

Having only 3 older participants and 7 young participants can influence the results. Since there were more young entrepreneurs participating these results may be over presented and since there were less older entrepreneurs participating these results may be less noticeable. The difference in participants can make the results less accurate.

The last thing, the entrepreneurs participating to this research have a wide range of studies among them, from having no certificate to having a master. All the participants build their own company in their own way. You can expect differences in decisions from this variety of participants. This is not brought

into this research, so there can be differences expected between the types of decision-making approaches among the participants due to their studies. The important thing is to consider the influence of school and different studies. Following research can focus on different groups of studies like business related or technology related and find out if there are differences in the approach entrepreneurs take if they had followed these kinds of studies or no study at all.

6.2 Theoretical implications

This research can give more understanding to the impact of age on the decision-making process of entrepreneurs. The findings that were found in the conclusion as a result of the analysis of the interviews showed that in the group of 19–32-year-old entrepreneurs 62,5% prefer the expected return principle and 37,5% the affordable loss principle. This shows that younger entrepreneurs are willing to take more risks in comparison to older entrepreneurs. This aligns with the theory that younger people are willing to take more risk under ambiguity (Sproten, Diener, Fiebach & Schwieren, 2018).

Coming back to the statement made in the literature, which does not really align with the results of this research. Although older adults may say they're less willing to take risks compared to younger people, when we look at actual behavior, studies show that there aren't significant differences in how risky decisions are made across different age groups (Frank & Seaman, 2023). Behavior in the interviews showed that the older participants tend to be more risk-averse and act more risk-averse. This contrasts with the statement. So, there is still room for further research in this area and to review and update current research.

6.2.1 Practical Implications

The findings of this research on the impact of age on the different decision-making approaches can possibly have practical implications in the field of incubator programs or other educational entrepreneurship programs. Incubators can see the difference in decision-making styles when there are people from different ages. They can maybe provide other methods to help the entrepreneur as much as possible. For example, if taken the results from this research where older entrepreneurs favor to go for a minimizing loss (affordable loss) strategy the incubator can prepare a personalized program to suit the entrepreneurs needs. This does not mean the incubator has to provide only the effectual approach, maybe even the causal approach so that entrepreneurs learn both sides and become a better-balanced entrepreneur. On the other side when young entrepreneurs take part in the incubator program, they can do the same.

7. Limitations & Further Research

While this research can contribute to literature about entrepreneurship there are limitations. Due to the short time frame this thesis had to be done within there is just a small number of interviews. These

interviews gave valuable data for this research and eventually further research, but the validity of this research would be better if the group of entrepreneurs that were interviewed was larger and thus more representative. The second limitation to this research is the fact that the number of participants in both categories of the research group were not even, in the young entrepreneur category there were 7 participants and in the older group of entrepreneurs there were only 3 participants. To add to this, the participants in the younger group of entrepreneurs were predominantly women with 6 out of the 7 participants and in the older group there were 2 men and one woman. To get better and more reliable insights and results the research needs to be done with an evenly spread group of men and women in categories with the same number of participants. Third, this research does only represent entrepreneurs within incubator programs in the Netherlands, so it is possible that in other countries with different cultures the results would be different. Further research on this topic should also consider possible cultural difference as well as some other points for further research named in the past sections. It is important that with all further research larger and better created research groups need to be formed, this to make the research more valid. The focus should also be on considering the different variables which can play a role in the validity of the results. For example, gender, experience, study etc. Additionally, the results find in this research should not be generalized, the sample is too small.

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10. Appendix

Appendix A : Interview questions

Appendix B : Coding

Appendix C : Interviewee data

Interview Questions

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?

What external partnerships has the incubator facilitated for your startup?

Is there anything else you would like to add?

Appendix B

Effectual Table 40+ years old

1st-order concepts	2nd- order themes	Aggregate Dimension
Following personal planning process and risk management	Means Driven Action	Effectual Decision-making
Stay close to your original idea/product		
Using own knowledge to look at projects and the market		
Having a clear long-term goal, but not short ones		
Make sure that costs are covered first	Affordable Loss	
Hard work and sacrificies had to made		
Weighing risks to the yield		
Not borrowing any money from the bank	Leveraging Contingencies	
Quickly adapt to changes in the start-up phase		
Lots of blind steps to be taken		
Adjust details because time demands it	Commitments and Self-selected Partnerships	
Partners participate in decision-making process		
Have good people around you who recognize problems		
Searching for right people with right knowledge		
Investors in start-ups stay close to the money		

Causal Table 40+ years old

1 st -Order Concepts	2 nd Order Themes	Aggregate dimension
Having a clear general goal	Goal Driven Action	Causal Decision-making
First having the standard goal of having the right to exist (make profit)		
Having an own planning process		
Become the best in the branche (goal)		
Analyzing similar markets who did it before	Market research and competitive analysis	
Use different types of analysis available		
Market feedback takes a long time		
Calculating expected financial outcomes	Expected Returns	
Selling shares in return for money		
Invest in a partial solution of a total solution in the technology area		

Effectual Table 19-32 years old

1st-order concepts	2nd- order themes	Aggregate Dimension
No clear initial goal	Means Driven Action	Effectual Decision-making
Make maximum use of resources		
Spotting an opportunity based on their own existing knowledge and experience		
Adjusting to availability of resources		
Getting as much free money as possible	Affordable Loss	
Affordable personal sacrifices		
Seeing what is possible based on cost estimates		
Changing the financing plan from getting investments to bootstrapping		
Very low initial investments		
Considering financial risks	Leveraging Contingencies	
Dealing with unexpected problems		
Expecting the unexpected		
Being open minded in case of obstacles/unexpectancies		
Thinking about what is possible?		
Thinking about how to deal with opportunities		
Getting feedback from customers to incorporate	Commitments and Self-selected Partnerships	
Collaborating with other companies		
Need guidance as a startup		
Personal advice from incubator		
Engaging with stakeholders to create and pursue opportunities together		
Using incubators large network		

Causal Table 19-32 years old

1st-Order Concepts	2nd Order Themes	Aggregate dimension
Decision depends on (financial) risks	Expected returns	Causal Decision-making
Making use of external financing		
Spending money to make money		
Trying to apply for grants because money is always scarce		
Making use of external financing	Market research and competitive analysis	
Looking for trends/market gaps		
Look at what the market is doing		
Connecting with customers to get feedback (to improve)		
Competitor analysis	Goal Driven Action	
Goals have influence on decision making		
Clear goals for the future		
Focus on maximizing profits		
Guidelines that define company and helps stay on track		
Using a method with clear goals		
Having a mission and vision		

Appendix C

Respondent	Position	Data collection
E1	Co-founder	Online
E2	Co-founder	Online
E3	Co-founder	Online
E4	Co-founder	Online
E5	Co-founder	Online
E6	Founder	Online
E7	Founder	Online
E8	Founder	Online
E9	Founder	Online
E10	Founder	Online