

## Identifying the Main Factors Influencing the Formation of Overconfidence Bias in Entrepreneurs: A Qualitative Content Analysis Approach

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**DOI Link:** <http://dx.doi.org/10.6007/IJARBSS/v4-i4/815>

**Published Date:** 16 April 2014

### Abstract

Entrepreneurship plays an exceptionally important role in today's societies by being the main driver of economic development as well as the source of prosperity and wealth creation. Entrepreneurs need to possess some important characteristics and fulfill some important activities to reach their goals. One of the main entrepreneurial activities necessary for their survival in today's tumultuous business environment is decision making. Entrepreneurs need to make decision regarding a lot of factors. The body of research on entrepreneurial decision making is rich and according to it entrepreneurs are prone to decision making biases in their decision making processes. Lots of factors have been identified as the main causes of these biases which, by affecting entrepreneurial decisions, play major roles in the process of managing enterprises and its subsequent success or failure. One of the most common entrepreneurial decision making biases is overconfidence, which has been introduced as a major decision making bias among individuals, as well. Overconfidence is so common among entrepreneurs that some scholars have even hypothesized that entrepreneurs are more overconfident than others. Regarding its roots, it seems that individual factors like cognition, self efficacy and motivation combined with organizational and environmental factors are the main causes of overconfidence among entrepreneurs. Overconfidence impacts entrepreneurial decisions profusely and has dual effects on entrepreneurial enterprises. On one hand, overconfidence leads to entrepreneurial unprepared entry decisions into market

and subsequent failure, on the other hand, in uncertain environments and under time pressure overconfidence could be entrepreneurs' last resort to make decisions. Entrepreneurial overconfidence has been the topic of some papers but there seems to be a lack of a comprehensive study regarding the main causes of this important bias among entrepreneurs. This paper tries to fill this gap by conducting a vast study and using qualitative content analysis. After interviewing 25 Iranian techno-entrepreneurs and coding their narratives, we have come to the conclusion that self-Efficacy; Personal Optimism, Previous Experience, Environmental Pressure, data Limitations and Availability Heuristic are the main causes of overconfidence among entrepreneurs.

**Key words:** Entrepreneur, Decision Making, Bias, Overconfidence, Content Analysis.

### **Introduction**

Entrepreneurial decision making is the result of interaction between entrepreneurs' expectations of the future, information at hand and the evaluation and estimation of the information. In a rational decision making process, decision maker should fully consider all the facts and information available, needed time, market situation, competitors, possible losses and gains to make decisions. This process usually won't happen in the early years of business (Frese et al, 2000). Entrepreneurial decisions are relatively subjective and individual, thus being dependent on the person (Koellinger et al, 2007). Entrepreneurs need to make decisions in uncertain environments and complex situations, thus decision complexity and decision uncertainty are major elements in their decision making processes (Busenitz and Barney, 1997). Entrepreneurs encounter two kinds of problems while making decisions: (Harris, 1998)

- Time pressure, meaning that there is a deadline for a decision to be made.
- Lack of vital resources such as capital, workers and experience.

Baron (1998) in a significant paper shed light on some unique entrepreneurial cognitive characteristics as antecedents of decision biases. According to him, entrepreneurs engage in regretful thinking as well as counterfactual thinking and they are more prone to some biases like escalation of commitment and planning fallacy. Therefore, Baron links some entrepreneurial decision making biases to their cognitive characteristics. In general, under situations like uncertainty, chaos and complexity, and so as to make decisions, Entrepreneurs rely on their intuition and cognition (Kaish and Gilad, 1991), their affects (Baron, 2007) and heuristics (cognitive short-cuts) (Manimala, 1992), all of which under various circumstances may lead to decision making biases. Shefrin (2007) defined biased decisions as decision made while under the influence of an opinion, a belief or a concept. Limitations in information process (Abelson and Levy, 1985), lack of adequate source and time to follow rational decision making models (Simon, 1979), extensive usage of heuristics (Manimala, 1992), and a lot of other factors have been identified as the main determinants of entrepreneurial decision making biases. For entrepreneurs, the decision making biases play major roles in founding new enterprises and discovering and exploiting new business opportunities (Baron, 1998). Tversky and Kahneman (1974) emphasized the importance of studying entrepreneurs' decision making biases because of the need to learn more about entrepreneurial mindset and decision making process. One of the most common entrepreneurial decision making biases is overconfidence. Overconfidence has been defined as the overestimation of one's skills, knowledge and judgment by various scholars. Lots of people show overconfidence in their

decision, therefore overconfidence is common among not only people generally but the entrepreneurs, specifically (Koellinger et al, 2007). As a very influential bias by having direct effects on the enterprises, overconfidence has been identified as the main cause of unprepared entry and subsequent failure (Cooper et al, 1988; Koellinger et al, 2007). By reviewing the vast literature on the entrepreneurial overconfidence, it could be understood that the main causes of overconfidence among entrepreneurs are not clear and apart from Forbes (2005) which did a great job in this regard by dividing the causes of overconfidence into two distinct categories of individual and organizational factors, there are few relevant studies regarding the roots of entrepreneurial overconfidence. In general, most of studies in this regard have tried to measure the effects of overconfidence, mainly its role in entry decisions. This paper tries to shed more lights on the factors influencing the genesis of overconfidence in entrepreneurs. In the following sections, we present literature review, research method and data gathering and data analysis methods, Findings, discussion and implications for future researches, respectively.

### **Literature review**

Overconfidence is a common decision making bias among individuals and groups with a long history of research and debate. Overconfidence has been identified as a major determinant in some crucial decisions leading to important consequences, for example, after initial stunning victories in World War II, Hitler came to the conclusion that the German army could defeat the red army and conquer Russia in a matter of months. His decision proved to be disastrous and lead to his final defeat. Overconfidence is not limited to history and its effects are much more substantial. Overconfidence has been a very popular topic among various fields of science such as psychology and management and a lot of well known scholars have studied it under various situations like uncertainty in various fields (Fischhoff et al, 1977; Russo and Schoemaker, 1989). In the field of psychology, Oskamp (1965) introduced overconfidence as a miscalibration of confidence and accuracy in clinical psychologists' judgments. Following Oskamp, Fischhoff et al (1977) further examined overconfidence as subjective miscalibration of probabilities. In general, in the field of psychology, overconfidence is a difference between accuracy and probability. Psychologist name cognitive, psychological and motivational factors as the main causes of overconfidence (Russo and Schoemaker, 1992). Management is another important field studying overconfidence. For example, Bazerman (1994) defined overconfidence as "the tendency of people to overestimate the correctness of their initial estimations in answering average to difficult questions". According to this definition, overconfidence mainly deals with one's estimation of one's knowledge. By reviewing the literature on overconfidence, one could conclude that overconfidence has various categories of definitions, for example, Koellinger, Minniti and Schade (2007) categorized overconfidence into three categories of overestimations of one's judgment, inaccuracy in judging one's forecast and overestimation of one's skills. Consistent with these categories, Moore and Healy (2008) divide overconfidence into three categories of inaccuracy in precision of judgment, inaccuracy in the judgment of one's skills and abilities and inaccuracy in judging one's knowledge and abilities compared to others. Overconfidence has a long history of research in the field of entrepreneurship. Cooper et al (1988) studied the role of overconfidence in market entry decisions and concluded that overconfidence is one of the most important drivers of entrepreneurs' unprepared market entry and subsequent

failure, Palich and Bagby (1995) concluded that entrepreneurs tend to interpret equivocal situations more favorably than other people, Busenitz and Barney (1997) came to the conclusion that under especial entrepreneurial situations like decision uncertainty and decision complexity, heuristics and biases, especially overconfidence are common in entrepreneurial decisions. Camerer and Lovo (1999) introduced overconfidence as the main cause of entrepreneurial market entry. Simon, Houghton and Aquino (2003) introduced overconfidence as one of the main biases influencing entrepreneurial risk perception and venture creation decisions. Hayward, Shepherd and Griffin (2006) hypothesized that overconfidence affects entrepreneurial decisions to allocate and use resources and could lead to venture failure. Koellinger et al (2007), after corroborating that overconfidence is so common among individuals examined the role of overconfidence in entrepreneurial entry decisions. According to their results, overconfidence plays substantial roles in entry decisions and early stages of enterprises and last but not least Rietveld et al (2013) concluded that entrepreneurs are more overconfident than others. Regarding the main causes of overconfidence, Langer (1975) concluded that previous successful experience as well as the difficulty of the task at hand leads to overconfidence. Forbes (2005) in a comprehensive study came to the conclusion that the entrepreneurs who have founded their ventures by themselves are more overconfident, on the other hand, the younger entrepreneurs and the entrepreneurs higher in self efficacy and the entrepreneurs managing smaller ventures are more overconfident. thus, Forbes divides the main causes of overconfidence into two categories of individual and organizational. Koellinger and Michl (2012) introduce affect, especially joy, as one of the main causes of overconfidence among entrepreneurs. The importance of studying overconfidence for entrepreneurial scholars is apparent, because, not only overconfidence plays major roles in entrepreneurial decisions, it also may lead to other decision making biases like illusion of control, escalation of commitment and planning fallacy, all of which important decision making biases, as well. By reviewing the literature on entrepreneurial overconfidence, we could conclude that though some well-structured studies have been conducted to identify the causes of this bias in entrepreneurs, there is a vacuum in this regard and this paper aims to shed more light on the main factors behind entrepreneurial overconfidence.

#### Research Method and Procedure

In this study we applied qualitative content analysis approach to access entrepreneur's personal narratives of their entrepreneurial experiences as well as understanding and describing the context conditions. The process of qualitative content analysis began during the early stages of data collection. We also established a set of systematic and transparent procedures for processing data to support valid and reliable inferences. This involvement in the analysis phase will help move back and forth between concept development and data collection, and will direct data collection toward sources that are more useful for addressing the research questions (Lincoln and Guba, 1985; Hsieh and Shannon, 2005; Weber, 1990; Miles & Huberman, 1994).

#### Sampling and Data collection

Field observations and in-depth interviews were conducted as data collection techniques and Semi-structured interview technique was adapted. In semi-structured interview, we designed questions so as to gather depth information from the interviewees. Answers were explored with more questions and more explanations were asked by "why" questions.

Iranian high-tech entrepreneurs were the objects of this filed study. Theoretical sampling was used (Eisenhardt, 1989), meaning that the researcher chooses forms of data collections which provide usable text and images for theory development. This means that the sampling was intentional and focus was on the formulation of the theory (Creswell, 2005, p405). Theoretical sampling is data collection process for theory development thereby the analyst simultaneously gathers codes and analyzes data and decides which data to collect in the future to improve his theory and where to find them. The sample size was limited by data gathering (Eisenhardt,1989, p.545).

### **Developing Categories**

Data was transformed into written text before the beginning of the analysis. Main questions from the interview guide were transcribed. We generated an initial list of coding categories from the previous studies, and modified it within the course of the analysis as new categories emerge inductively (Miles & Huberman, 1994). The categories in our coding scheme should be defined in a way that they are internally as homogeneous as possible and externally as heterogeneous as possible (Lincoln & Guba, 1985). For testing the clarity and consistency of category definitions we coded a sample of data. After the sample was coded, the coding consistency was checked, in most cases through an assessment of inter-coder agreement (Schilling, 2006). Coding sample text, checking coding consistency, and revising coding rules are iterative processes that were continued until sufficient coding consistency was achieved (Weber, 1990). When sufficient consistency was achieved, the coding rules were applied to the entire corpus of text. During the coding process, we checked the coding repeatedly, to prevent “drifting into an idiosyncratic sense of what the codes mean” (Schilling, 2006).

After coding the entire data set, we rechecked the consistency of our coding. It is not safe to assume that, if a sample was coded in a consistent and reliable manner, the coding of the whole text is also consistent. Human coders are subject to fatigue and are likely to make more mistakes as the coding proceeds. New codes may have been added since the original consistency check. Also, the coders’ understanding of the categories and coding rules may change subtly over the time, which may lead to greater inconsistency (Miles & Huberman, 1994; Weber, 1990). For all these reasons, we rechecked our coding consistency.

Drawing Conclusions from the Coded Data involves making sense of the themes or categories identified, and their properties. We made inferences and presented our reconstructions of meanings derived from the data. We explored the properties and dimensions of categories, uncovered patterns, against the full range of data (Bradley, 1993).

### **Report Findings**

We reported our analytical procedures and processes as completely and truthfully as possible (Patton, 2002). We established methods to insure the trustworthiness of our study. Qualitative content analysis does not produce counts and statistical significance; instead, it uncovers patterns, themes, and categories important to a social reality. Therefore, presenting research findings from qualitative content analysis is challenging. It is a common practice to use typical quotations to justify conclusions (Schilling, 2006). We strived for a balance between description and interpretation. Description gives your readers background and context and thus needs to be rich and thick (Denzin, 1989). On the other hand Qualitative research is fundamentally interpretive, and interpretation represents our personal and theoretical understanding of the phenomenon under study. An interesting and readable report “provides sufficient description to allow the reader to understand the basis for an

interpretation, and sufficient interpretation to allow the reader to understand the description" (Patton, 2002, p.503-504).

We need to demonstrate the reliability of their instruments and the reliability of the data collected using those instruments to permit replicable and valid inferences to be drawn from data derived from content analysis (Guthrie, 1983; Milne and Adler, 1999). Reliability in this study was achieved by some strategies. We used the multiple coders and discrepancies between the coders were minimal. We selected disclosure categories from well-grounded relevant literature, and clearly defining them. For addressing Validity of our study, relevant documents and research data about the biases were reviewed to provide triangulation of thematic analysis. Member checking was implemented by providing them with a transcript of their own Interview and the matrix of all Interview data. An external audit was implemented where the overall research process and analysis was audited by a third party expert researcher (Creswell, 2003, Creswell, 2005; Weerawardena, and Mort, 2006, Milne and Adler ,1999; Guthrie et al. ,2003).

#### Research Findings

We continued interviews until after 25 interviews the saturation was ensured and no more concepts were added by new interviews. Table 1 shows demographic characteristics of the interviewees. As it shows most of these entrepreneurs are male (84%) and only 16% are female. About half of them (56%) are between 30-44 years old and 28 % are 18-29 years old and 16% are in the 45-64 years old group. The most common degree is bachelor degree (52%) and 10 of them (40%) have master degree and 2 of them (8%) have PhD degree.

Table 1 Demographic characteristics

		No.	Percentage
Gender	Male	21	84.0
	Female	4	16.0
Age	18-29	7	28
	30-44	14	56
	45-64	4	16
Educational Level	Bachelor degree	13	52
	Master degree	10	40
	PhD	2	8
Industry	Textile	2	8
	IT	4	16
	Agriculture	5	20
	Food	5	20
	Chemicals	9	36

After the interviews were transcribed, we read them and Codes were extracted without the interference of our assumptions. During open coding, data were broken into separate codes and categorizing continued until the best explanation for the data was achieved. By using open coding a lot of concepts were generated and frequently compared to find similarities and differences and this process continued until the concepts became available. Then the

events were compared to generated categories to determine the properties of each category. Then in axial coding stage the codes identified in open coding stage were compared and similar categories were merged and finally 6 categories were identified in selective coding (see table 2). Entrepreneurs claimed that self-Efficacy; Personal Optimism, Previous Experience, Environmental Pressure, data Limitations and Availability Heuristic are the main factors influencing the formation of overconfidence among them.

Table 2 Factors influencing the Formation of Overconfidence

factors	Frequency	Percent
Self-Efficacy	12	48.0%
Personal Optimism	14	56.0%
Previous Experience	13	52.0%
Environmental Pressure	18	72.0%
data Limitations	15	60.0%
Availability Heuristic	12	48.0%

#### Category 1: Self-efficacy

Overconfident entrepreneurs place too much emphasis on their personal abilities and expertise when there are not enough cues to make decision. Entrepreneurs having belief in their abilities and skills in face of unforeseen events are high in self-efficacy. So self-efficacy was identified as a factor influencing entrepreneurial overconfidence in making decisions. For example an entrepreneur commented: "I make decisions based on my own judgment and expertise, because, In the face of unforeseen events where there isn't any other resort, I always have belief in myself".

#### Category 2: personal optimism

Somehow overestimating the positive cues and putting too much Hope in the future were other determinants that shaped entrepreneurial overconfidence in decision making, so personal optimism was identified as a factor influential in overconfidence bias. For example one entrepreneur said: "I usually have faith in the future, nobody knows what the future holds, but as an entrepreneur I have always been optimistic regarding the future".

Entrepreneurs also rely on their own judgment optimistically. For example, an entrepreneur observed: "In the initial phases of my career I mostly relied on my own judgment to make decisions because I was an optimist by nature and had faith in my personal abilities. I had enough knowledge about my profession and I tried to get real time data. I thought nothing could stop a determined entrepreneur. But over time I realized that many factors, including luck, are involved."

#### Category 3: Previous Experience

Previous experience provides a cue for being more overconfidence. Experience in related fields especially made some of the interviewees pay less attention to new information and make decisions based on the information they already had. This experience can be positive or negative. For example one of entrepreneurs said: "I trust my experience therefore I do not search for new information after making a decision. There is always newer information than before".

#### Category 4: data Limitations

Data limitation is another condition under which entrepreneurs are prone to the overconfidence bias. By data limitation we mean lack of data as well as excess of it.

“Information Overload” was a common condition entrepreneurs confront in processing the Information. For example one of the interviewees said “All decisions in our firm are made by a professional group which is comprised of experts. When discussing a problem I encounter a lot of information and it is hard to consider all of them. It is impossible to analyze all the data; therefore we are confident in our group’s decision”. Another entrepreneur commented : “My personal judgment has always been my sole guide. Reliance on my judgment and knowledge always is effective especially when I deal with a lot of information”.

Lack of data was another factor under which entrepreneurs’ overconfidence and reliance on their own judgment has been their only guide to make quick decisions. For example one of the interviewees said: “I think that one can’t consider himself to be an entrepreneur without relying on one’s capability. I have always relied on my personal ability and expertise, even in face of adverse environmental conditions. When I do not have enough Data for making a perfect decision I rely on my judgments and it is always a reliable guide to make good decisions”.

#### **Category 5: Environmental Pressure**

Most of the interviewees described their business environment by ambiguity, Uncertainty and Complexity. Therefore environmental pressure was identified as a condition which influences entrepreneurs’ decision making strategies. Under environmental pressure, entrepreneurs need to have faith in their personal decision making abilities and trust their own judgment, thus, they could become more overconfident in their decisions. For example an entrepreneur said: “high-tech environment is full of uncertainty, on the other hand, the rate of change is high. Under these conditions, I usually trust my judgment as the main decision making factor, otherwise, I will always remain hesitant to make decisions.”. Another interviewee said “ I make all the important decisions myself. Most of the time, we have to deal with lots of information, some of which irrelevant, on the other hand, our business environment is so volatile with a lot of ambiguous cues, therefore, according to my experience, I conclude that my personal judgment is the most important factor in my decisions”.

#### **Category 6: Availability Heuristic**

Tversky and Kahneman (1973) introduced availability as a common mental shortcut used by people when making judgments about the probability of events based on how easily relevant cases and examples come to their minds. A lot of scholars have corroborated that entrepreneurs are prone to heuristics. Regarding overconfidence, anchoring heuristic has been hypothesized as one of its major determinants (Bazerman, 1994). According to our findings, availability plays a major role in the genesis of overconfidence in entrepreneurs, as well. Lots of entrepreneurs interviewed in this research tended to highlight their previous successes or favorable cues and examples, even if the number of failures and unfavorable cases were much more. Thus, by highlighting selected cues and cases and neglecting unfavorable ones, they are prone to availability heuristic which makes them overconfident in their decisions. The interviewees tended to make judgments based on information that was available or easier to come to mind. In general, successful experiences were much more highlighted in the entrepreneurs’ mind than unsuccessful ones, making them prone to availability heuristic and overconfidence in making decisions based on availability, respectively.

## **Discussion**

Entrepreneurs are prone to decision making biases in their decision making processes. Overconfidence is one of the most common entrepreneurial decision making biases. A lot of factors have been introduced as the main causes of this bias. In order to shed more lights on the main factors causing this bias among entrepreneurs, this paper conducted a vast qualitative study by interviewing a sample of entrepreneurs and using content analysis to analyze the gathered data. Our study corroborates the hypotheses and findings of Cooper et al (1988) and Koellinger et al (2007) that overconfidence is common among entrepreneurs and plays major roles in entrepreneurial entry decisions. The finding of Forbes (2005) that some individual factors like self-efficacy influence the genesis of overconfidence and the hypothesis of Rietveld et al (2013) that entrepreneurs are more overconfident than others are also corroborated. Our main contribution is concluding that a combination of factors lead to entrepreneurial overconfidence, in other words, personal overconfidence needs some enhancing factors to turn into entrepreneurial overconfidence. According to our findings, previous experience, personal optimism, self efficacy, data limitations, environmental pressure and availability heuristic are the main factors that could result in entrepreneurial overconfidence. Thus, individual factors are the main roots of entrepreneurial overconfidence (as previous researches have corroborated). Environmental pressure leads to overconfidence because in a turbulent environment entrepreneurs do not have lots of cues to make decisions and their reliance on their own judgment increases. The opposite of this hypothesis could be true and environmental pressure could make entrepreneurs more cautious and prudent, but, given the environment of high tech entrepreneurship, its volatility and rate of change as well as severe competition, entrepreneurs need to make decisions rapidly and it seems natural that they rely on their overconfidence more than ever. One of our most novel contributions is introducing availability heuristic as a direct cause of entrepreneurial overconfidence. Though previous researches have proven the relationship between heuristics and biases, no paper has identified availability, one of the most common decision heuristics, as a direct cause of entrepreneurial overconfidence. In general, we conclude that individual factors combined with environmental situation cause entrepreneurial overconfidence.

In contrast to Forbes (2005) the entrepreneur's age and firm size didn't have any significant effects on overconfidence. According to our results, overconfidence influences entrepreneurial decision making processes in various ways, most important of which is that entrepreneurs do not search for extra data and, more importantly, don't spend time to analyze the extra data and information they may acquire after making the decisions. We also come to the conclusion that overconfidence could either result in entrepreneurial failure in some phases and activities like unprepared entry or loss of opportunities as well as sharp decrease in revenues or lead to success in entry into profitable markets or developing prosperous new products and increase in revenues. Our findings did not find any direct relationship between the type of industry or the age of the firm and entrepreneurial overconfidence.

### **Implication for entrepreneurs, managers and future researches**

Our research Findings provide some implications for entrepreneurs and managers as well as researchers. Overconfidence could lead to success or failure in a firm or an organization, thus entrepreneurs and managers must pay more attention to this phenomenon. In this section we contribute our main implication for future researches in this regard.

- This research was conducted among high-tech entrepreneurs. Future researches should explore other types of entrepreneurs so as to provide a more comprehensive theory about the entrepreneurial decision biases generally and overconfidence, specifically.
- Since the aim of this study was to identify factors influencing the formation of overconfidence bias we were not able to determine under which circumstances this bias leads to success and under which leads to failure. Future researches should address this gap.
- Overconfidence is a very common entrepreneurial decision making bias affecting entrepreneurs' decisions and thus influencing the fate of entrepreneurial enterprises. The literature on the effects of entrepreneurial overconfidence is inadequate and needs more studies. Entrepreneurial overconfidence has been studied mostly as the main cause of unprepared entry into markets. The main bulk of studies on the entrepreneurial overconfidence have focused on its effects in entry decisions, while neglecting the influence of overconfidence in other important entrepreneurial activities and decisions like the decision to exploit opportunities and exit. Future studies should try to fill this gap.
- Entrepreneurial cognition plays an important role in the process of entrepreneurial decision making. On the other hand, entrepreneurial affect and the interplay of affect and cognition are also important in entrepreneurial decisions. Future studies must shed more lights on the effects of cognition, affect and their interplay on the entrepreneurial decisions as a whole and overconfidence, especially.
- Overconfidence, like other decision making biases, could emanate from decision making heuristics (cognitive shortcuts that decision makers use to simplify their decision making processes). Major heuristics like representativeness, availability and anchoring and adjustment could contribute to overconfidence, especially in the field of entrepreneurship. This study acknowledged availability as one of the main determinants of entrepreneurial overconfidence. Future researches should shed more lights on the relationship between decision heuristics and decision making biases in the field of entrepreneurship.
- Overconfidence has been studied mainly among individual entrepreneurs. Given the fact that in many entrepreneurial firms decisions are made by a group, future researches must study the relationship between group decision making and overconfidence.
- Entrepreneurs are prone to some other important decision making biases like escalation of commitment, illusion of control and planning fallacy, as well. These biases could contribute to each other or enhance and weaken the effects of each other. For example, overconfidence in one's personal knowledge could make entrepreneurs stick to their decisions even though they receive negative feedbacks, therefore resulting in escalation of commitment, one other common decision making bias. The relationship between entrepreneurial decision making biases and their effects on each other need more studies.

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