“Bats are blind?” Cognitive Biases in Risk Perception of Entrepreneurs

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Abstract

In general, it could be said that bats are blind but they have high quality senses of smelling and hearing in order to survive. Similarly, entrepreneurs can look at the business world with different eyes and survive. This affects their cognitive biases in risk perception. The aim of this study was to analysis how entrepreneurs’ cognitive biases affect their opportunity exploitation and risk perception. In this study, self-efficacy, locus of control, overconfidence and optimism as dimensions of cognition were evaluated. Results show that cognitive biases of entrepreneurs lead them to perceive less risk when evaluating a new venture idea. Each of the biases has different effect on risk perception. It was also found that even if an entrepreneur has lack of one of the biases, the other biases impact on risk perception. Thus our results show that entrepreneurs do not need to have all of the biases at the same time for perceiving less risk for seeing opportunity.

Keywords: risk perception, self-efficacy, locus of control, optimism, overconfidence

Introduction

Contrary to popular belief, bats can see with their specific abilities. Most microbat bat species have eyes that are small and poorly developed, leading to poor visual acuity. Some species of bats have been shown to be able to detect ultraviolet light. They also have high-quality senses of smell and hearing (Wikipedia). But, it is generally known that “bats are blind”! Like bats, entrepreneurs, with their ability, look at the market through different eyes, see the future better than others do, see opportunities that others do not see, do not see the risk that others do see [1]. However, the question still remains; uncertainties in marketplace is the same for every individual; so why do individuals decide to start companies even though it is very risky? We believe that the answer to the question includes stock of information and expectations.

Expectancy theory states that a behaviour will be undertaken when individuals believe that they are able to perform at the required level, that successful performance will lead to certain

outcomes, and that these outcomes have direct positive value or will lead to other valued outcomes [2]. In the same way, Renko et al. [3] argued that entrepreneurs, who believe in their skills and abilities, are motivated to exert necessary effort. Whenever individuals are uncertain about their ability and expectancies for outcome of activities, they perceive risk and cannot take necessary actions. Thus, both entrepreneurs' own abilities and expectancies affect risk perception [4]. In other words, the belief of whether or not one is able to put required actions into practice (self-efficacy) and the belief of whether or not one's outcomes depend mainly on one's own actions or on factors not under one's control (locus of control) to determine one's risk perception [4]. Moreover, self-efficacy and internal locus of control leads entrepreneurs to optimism, which the expectations that good things will happen, it is an individual perception of odds. Thus, optimism is also closely related to the perception of risk [5].

Regarding stock of information, human beings all possess different stocks of information, and these stocks of information influence their ability to recognize particular opportunities [6]. The cognitive perspective emphasizes the fact that everything we think, say, or do is influenced by mental processes—the cognitive mechanisms through which we acquire store, transform, and use information [7]. Specifically, on the subject of entrepreneurship, Mitchell et al. [8] define entrepreneurial cognitions as "the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth" (p. 97). Moreover, Busenitz and Barney [9] pointed out that entrepreneurs also use decision-making biases and heuristics which simplifying strategies that individuals use to make decisions, especially in uncertain and complex conditions. Because cognitive biases, such as overconfidence, influence the information that individuals notice and how they interpret that information, biases may affect risk perception [10]. Thus, individuals' decision process, particularly a greater susceptibility to cognitive biases, may lower their perception of risk [11].

Based on discussion above, it can be argued that because of perceiving value of opportunity [6] and processing of information [9], entrepreneurs often underestimate risks and overestimate the likelihood of success [12]. Thus even if entrepreneurs and non-entrepreneurs have similar risk preferences, entrepreneurs may perceive less risk for given opportunity [4].

Therefore, the aim of the study is to improve our understanding of how entrepreneurs' cognitive biases affect their risk perception and opportunity exploitation. Based on the research objective, the following research question is proposed; how do entrepreneurs' self-efficacy, locus of control, optimism and overconfidence influence their risk perception. Since majority studies Based on the research question, qualitative research was conducted with 4 entrepreneurs in Turkey.

Literature and Research Questions

There are two major research streams to understand risk perception of entrepreneurs; trait approach and cognition approach: As Keh et al. [13] pointed out the trait approach asserts that entrepreneurs can be recognized by traits such as risk propensity, need for achievement, and locus of control [14]. The cognitive approach is concerned with the entrepreneur's preferred way of gathering, processing, and evaluating information. The two approaches also use different

perspective; risk propensity as the tendency to take or avoid risk and risk perception as the assessment of risk inherent in a situation [15].

The results of trait approach studies do not provide clear evidence for the risk-taking propensity of entrepreneurs being greater than managers and others [e.g. 16, 17]. Even though most definitions of an "entrepreneur" emphasize the risk propensity of these unique individuals, they did not perceive themselves as being any more predisposed to taking risks than non-entrepreneurs [14].

The other approach view or explanation of risk behaviour of entrepreneurs is that they perceive less risk than others (e.g. 7, 9, 11, 14, 18, 19]. Research on risk perception differences between entrepreneurs and non-entrepreneurs also focus on entrepreneurs' positively-biased perceptions in decision-making [9, 20].

As Simon et al. [11] emphasized that research on behavioural decision-making indicated that because of cognitive capacity limitation, individuals employ cognitive biases. Since entrepreneurs are capable to biased, they unintentionally simplify their information processing to diminish the stress and ambiguity associated with risk perception. One of commonly used biases is overconfidence. Overconfidence is excessive certainty about one's prediction [21]. Overconfidence can occur because individuals base their certainty on the ease with which they can recall reasons for confidence. They do not revise their initial estimates after receiving new data due to their initial overconfidence, and have a tendency to seek supporting evidence instead of disconfirming evidence [13]. Simon et al. [11] stated that because entrepreneurs exhibiting overconfidence treat their assumptions as facts, they may not see the uncertainty associated with conclusions stemming from those assumptions. Moreover Busenitz and Barney [9] found that entrepreneurs do manifest more overconfidence than managers in large organizations. Koellinger et al. [22], in their study using a large sample obtained from population surveys conducted in 18 countries, suggest that some countries exhibit relatively high rates of start-up activity because their inhabitants are more (over)confident than in other countries. They, therefore, may erroneously conclude that a certain action is not risky. Thus, we proposed that

RQ1: Entrepreneurs exhibiting higher overconfidence will perceive less risk

Palich and Babgy [14] emphasized that entrepreneurs may not necessarily prefer to engage in more risky behaviour; instead, their behaviour may be the result of framing a given situation more positively than negatively, thereby focusing on the high probability for favourable outcomes and responding according to these perceptions. Focusing on favourable outcomes lead us optimism. Optimists are defined as "people who tend to hold positive expectancies for their future [23]". When entrepreneurs are optimists, this disposition enables them to downplay uncertainty or setback and focus on what is good in a situation. When entrepreneurs evaluate situations they tend to magnify the strengths and opportunities and relegate the importance of weaknesses and threats [23]. Since optimism describes the expectations that good things will happen, it is an individual perception of odds. As such, it is closely related to the perception of risk [5]. Likewise, the optimistic bias is defined as judging one's own risk as less than the risk of others [24]. Therefore, following research questions is proposed.

RQ2: Optimism enable entrepreneurs to perceive less risk for given opportunity.

As Urbig and Menson [5] mentioned, the reason of being more optimistic is related to locus of control and self-efficacy. Likewise, expectancy theory stated that expectancies about the outcomes of an entrepreneurial activity include the probabilistic estimates of outcomes and the controllability of outcome achievement [4]. Moreover, Simon et al. [11] emphasised individuals convince themselves that they can control and accurately predict the outcome of uncertain future events. Thus, the perception that outcomes depend on one's own behaviour or one's own characteristics, leads to dispositional optimism [5]. Similarly Krueger and Dixon [25] argued that believe in own ability affects risk taking through changing situational perception of opportunity and treat. Since self-efficacy refers to individuals' conscious belief in their own ability to bring about desired results in the performance of a particular task [26], self-efficacy influence risk perception. Moreover, since opportunity refers to future situation that the decision makers deem personally desirable and feasible (i.e., within their control and competence) [13], opportunity perception and correspondingly risk perception are influenced by self-efficacy of entrepreneurs. Therefore, we proposed the following research questions;

RQ3: Locus of control lead optimism and affect risk perception

RQ4: Self-efficacy has impact on risk perception.

Method

From the foregoing it would appear that self-efficacy, overconfidence, optimism, and locus of control will reduce the perception of risk and this risk perception will lead to exploitation of an opportunity that was already recognized.

In this study, a multiple case study approach was adopted in conformity with Yin's [27] approach. This type of approach is generally preferred when "how" or "why" questions are posed [27]. Moreover, qualitative data allows researchers to find richer explanation and a deeper insight into phenomena [28]. Multiple cases enable the researcher to use both literal replication and theoretical replication. Purposeful sampling will be employed for the research. Different from theoretical sampling, purposeful sampling involves the predetermination of the number and properties of the cases. In the study, four cases were chosen on the bases of literal replication. In other words, cases were selected for extending existing theories by being typical representatives of the population rather than selected randomly [28, 29].

In order to increase the reliability of the study, before entering the field, a case study protocol was prepared according to Yin's [27] suggestion. Semi-structured deep interview with founders of four Turkish SMEs were conducted. The interviews took between 40 and 60 minutes. The interviews were recorded and database was created to maintain the prepared case study protocol. In addition to the deep interviews, additional information about the firms from a variety of sources was collected, which increased the construct validity of the study. In order to ensure reliability and validity, two additional researchers accompanied the primary researcher during the interviews and after the evolution of the categories. After each interview, researchers discussed and interpreted the topics that arose during the interviews. After that discussion, one more

meeting will be held with another researcher who does not attend to the interviews but joins in the second discussion sessions [29].

In order to ascertain the risk taking dimensions of the cases, Keh et al. [13]'s approach was applied. For 'self-efficacy', the work of Baughn et al. [30], Markman, Balkin, and Baron [31], Chen, Gully and Eden [32], De Noble, Jung, and Ehrlich [33], and Chen, Greene and Crick [34] were used ; for overconfidence, the work of Busenitz and Barney [9]; for 'optimism' that of Monsen and Urbig [4] and for 'locus of control' Muller and Thomas [35]'s scale. In this study, respondents were selected in family companies from among different industries (see Table 1). These companies employed between 13 and 144 employees.

Table 1: Description of sample

Case	Year of Founding	Generation	Age	Number of Employees	Industry
A	2003	2	45	144	Flour Milling and Food Manufacturer
B	1961 (1990)	2	36	30	Coach Company and Petrol Station
C	1991	2	48	74	Hospital Equipment Manufacturer
D	1960	3	47	13	Machine Manufacturer

Table 1: Description of the Sample

Findings

All cases reflect entrepreneurial optimism in exploiting opportunities. They usually expect positive outcomes in their life and economy and feel their performance will improve next year. For example, 'A' said: "you have to invest in your business in today's competitive environment, but in order to find new opportunities and exploit it, you must be hopeful and optimistic". Some negative conditions do not influence their optimism. 'B' mentioned: "Even if the economy is not going well, I believe that there will be various opportunities in my sector. And I will exploit them." 'D' also said: "Even though bad things happen in my business time to time, I have a strong belief that we will see good things at the end."

In parallel, the overconfidence scale scores showed that three respondents are overconfident except one. In other words there entrepreneurs relied on their own decisions. Their high level of personal confidence seems to influence other cognitive biases of respondents.

Regarding entrepreneurial self-efficacy, the respondents believe that when facing difficult tasks, they are certain that they will accomplish them. Self-efficacy appears to play a vital role in exploiting an opportunity. 'C' said "I have not failed in my business life until now. I feel that I am capable of doing business in my sector. Simply because I have enough knowledge and experiences". In line with this another, 'B' said: "I am confident that I can perform effectively on many different tasks. I have experience because I have carried on many sectors". Contrary to

this, ‘A’, non-overconfident, said: “I do not believe that I am very different from others. There could be situations which I fail to satisfy”.

Another important bias of entrepreneurial behaviour related to overconfidence and self-efficacy is their locus of control. All cases mentioned that the results obtained from their business and life are not related directly to bad or good luck, accidental events and, influences of people more powerful than them. For example, ‘C’ said: “I see myself as a leader because I am not under the influence of anyone, especially powerful ones, and I make my own decisions;” and ‘B’ said: “Powerful people cannot determine my life as much as my business does. May be, they can just delay finalization of my plans. That’s all.” Similarly**,** D said that “I believe that I don’t need anyone or any supporter in my both personal and business life and I can overcome many obstacles as long as I am healthy.”

Regarding their risk perception, this research would indicate that self-efficacy and locus of control have critical roles. Although optimism is important for opportunity exploitation, their optimistic behaviour does not affect their risk perception. ‘D’ said "as long as I believe that I can do that, I do not hesitate to start"

Table 2 Summary of Findings

Overconfidence	Optimism	Self-Efficacy	Locus of Control
B, C and D are overconfident A is non-overconfident according to overconfidence scale score.	Being hopeful and optimistic is inevitable (A and D) There will be opportunities to be exploited (B)	Being capable to perform effectively and to be successful (B, C and D) Failure is always a possibility (A)	Being a leader and making their own decisions without considering even the powerful people (C and B) Dealing with the problem on their own (D)

Conclusion

The findings of this research show that four cognitive biases (locus of control, self-efficacy, optimism, and overconfidence) have a significant relationship with opportunity exploitation. However, self-efficacy and locus of control are the only two dimensions that mediated by risk perception. This result is consistent with Krueger [36], Simon et al. [11], and Keh et al. [13]. Although Travelyan [23] and Ucbasaran et al. [37] found that optimism influences risk perception, this research did not that to be the case. Moreover, the findings show that besides cognitive biases, prior sectoral knowledge and having experience in their sector will also have a significant relationship with both opportunity exploitation and risk perception. The findings of

this research contrasts with those of Busenitz and Barney [9] who found that entrepreneurs are less likely to have access to historical trends, past performance, and other information to reduce the level of uncertainty at a relatively low cost. However this research found that with prior knowledge and experience, entrepreneurs build a mental model of the market condition by their cognitive biases. Therefore as the findings of this study point out, although entrepreneurial cognition has impact on risk perception and this leads to exploiting opportunities, entrepreneurial cognition cannot be studied separately from the features of environment and human capital such as experience and prior knowledge.

A practical implication of the finding is that because entrepreneurs' opportunity exploitation and risk perception are influenced by cognitive biases, government agencies and other organizations that support entrepreneurs should focus on entrepreneurs who have high levels of self-efficacy and locus of control in order to create successful businesses with the consequential benefit to society and the economy. Moreover entrepreneurial education should play a critical role in how to cope with risk and reduce the danger of ignorance of risk. As Douglas [1] point out that entrepreneurial education will serve to enhance entrepreneurial alertness (opportunity recognition skills) and viability screening skills. Accordingly, it builds entrepreneurial self-efficacy.

Scientific approaches classify categorically the species considering only genetic characteristics. Bats, people and other mammals are defined and classified easily with respect to genetic aspects.

Unique abilities like using vision to navigate, especially for long distances when beyond the range of echolocation of bats provide important advantage for them. Similarly in some situations to understand the differences between people's behavior, there is a need to analyze psychological characteristics and cognitive factors.

This study presents a different perspective that strives to achieve another understanding of "Entrepreneurs and why they decide to start companies even though it is very risky." The source of this perspective is based on perceived cognitive biases of entrepreneurs that make them different from others in exploiting opportunities. All these biases as cognitive factors of entrepreneurs lead to exploiting opportunities that they had already recognized.

Like bats that have unique abilities derived from genetic characteristics, similarly, entrepreneurs have social capital such as experience and prior knowledge which forms their cognitive biases and leads them to perceive less risk when evaluating a new venture idea.

Prior research appears to have treated entrepreneurial cognition separately and mainly focused either on risk perception or opportunity recognition. However their joint effect has not been studied. Therefore the main contribution of this research consists in the examination of the role of entrepreneurial cognition on both opportunity exploitation and risk perception together. As Keh et a [13] point out, while using cognitive processes to understand opportunity evaluation has been shown to be a valid approach, future studies can incorporate other non-cognitive factors, such as skills [38], social skills [39] and knowledge acquisition and learning [40] into the model. Moreover as Thomas and Muller [35] argued that cognitive biases are directly influenced by cultural factors. Therefore cultural factors should also be examined for understanding how entrepreneurial cognition affects risk perception and opportunity exploitation.

The limitation of this study is that it was focused only on a small group of Turkish entrepreneurs. Therefore, in order to generalize, there is certainly a need for research in other countries and or cultures. Moreover, since purposeful sampling was used, further research is needed with different and/or larger samples.

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