

## The Mediating Role of Risk Perception among Cognitive Biases towards Decision to Start a New Venture

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### Abstract

The Objective of the study is to investigate the relationship of overconfidence bias and illusion of control bias towards the start of new venture, with the mediating role of risk perception in context of Pakistan. To understand the relationship, this study developed and tested hypothesis by correlation and regression analysis. This study's sample consisted of 170 students pursuing a Masters of Business Administration. The students' responses to a survey based on a case study regarding a decision to start a venture were examined. This study found illusion of control and risk perceptions have significant effect on decision to start new venture. Conversely, overconfidence bias has insignificant relationship with decision to start new venture. The positive and negative impact of biases and perceiving low levels of risk suggest the importance of exploring the area of venture formation. As this study has incorporated two biases but many other biases should also be considered that effect human decision making process like self-efficacy, availability heuristics, law of small numbers and escalation of commitment.

**Keywords:** Cognitive biases; Risk perception; Decision to start a new venture

### Introduction

Business is full of adventure. Being the main stream line of financial and economic system many businesses shuts down and comes new daily. For sure, such innovation of new businesses is also named as entrepreneurship and its decisions to become in action, is also associated with stakeholder cognition and emotions. Examining venture creation decisions from a perspective of cognitive biases and perceptions of entrepreneurs report the critical role of cognitive biases in entrepreneurial decision making [1]. The nature of entrepreneurial contexts and processes indicates the presence of cognitive biases such as overconfidence among entrepreneurs [2,3] and it is acceptable that new entrepreneurs tend to be overconfident about their expectations [3]. A body of research emphasizes the importance of overconfidence as a significant cognitive construct for entrepreneurial research. Thus, an entrepreneurial cognition perspective emerges as a meaningful extension of cognitive theory [1]. Cognitive theory involves heuristics and cognitive biases, which may cause individuals to involve in less than rational decision-making [2].

As the decision to start a new business involves risk, an individual who has a tendency to take risk would form a new venture as compared to someone who is averse in taking risk [4]. Forlani and Mullins [5] investigated perceived risk in their study and found significant association with biases regarding investors and especially entrepreneurs. When ventures have same levels of investment and the expected values of returns then they are chosen on the basis of differences in risk propensities among entrepreneurs. Thus an individual who is moderate in risk taking and risk averse survives more in business [6]. Conversely, Gartner and Liao [7] argued that individual's risk taking propensity doesn't seem to affect the likelihood that they will successfully start a business. Entrepreneur do take risk but their "risk takers" aspect is not because of the characteristic of their personality.

Kickul, Gundry, Barbosa, and Whitcanack [8] stated that cognitive style plays an important role in involvement of entrepreneurial intentions and the new venture creation process. Further, Carolis and Saporito [9] elaborated that any of the cognitive biases influence an entrepreneur to undervalue the amount of risk linked with a specific new venture creation, so that individuals who are overconfident

treat their assumptions as fact and may believe that certain decisions are less risky than they really are. Therefore, the more overconfident individuals tend to perceive lower risk, and are more inclined to decide to create a new venture relative to the person who is less confident [1].

The illusion of control bias describes the tendency of decision makers to overestimate their control over outcomes of an event; typically the entrepreneurs overemphasize their skills that would increase the performance in situations where chance plays a larger role as a factor in decision making [10]. Entrepreneurs may be more prone to illusion of control than other individuals [11,12]. Individuals exhibiting an illusion of control will underestimate risk associated with a new venture because they believe their skills can prevent negative outcomes [13].

The objective of the study is to investigate the relationship of overconfidence bias and illusion of control bias towards the start of new venture, with the mediating role of risk perception in context of Pakistan. Antonczyk and Salzmann [14] suggested that culture plays an important role in venture capital activity. Some cultures are more encouraging for venture formation as compared to others. Individualisms positively associated with venture capital activity and uncertainty avoidance has negative effect on venture capital.

Individuals in different cultures are subject to different behavioral biases which lead to different risk perceptions. In under developed country, the relationship among cognitive biases to start a new venture with mediator of perceptual risk is less investigated [15]. This study explores, to what extent relationship exists between cognitive biases and perceived risk. Secondly, to what extent perceived risk is

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significant with new venture start. Thirdly, to what extent cognitive biases are insignificant with starting a new venture, as limited literature is available in context of Pakistan.

## Literature Review

### Decision to start a new venture

The initial achievement of a business is its birth [16]. Researchers have examined the impact of numerous factors that influence on venture formation including personality traits [17], culture and gender [18]. Even with the high risk complex situation; thousands of people decide to start ventures. Risks represent the possibility for loss [5]. Researches revealed that entrepreneurs do not have a high risk tendency, that is, a great will to significantly take risks [19].

As stated by Parhankangas and Hellström [20] risk lies at the heart of the entrepreneurial development. Risk preference plays an important role on entrepreneurial intentions to start a new venture [21,22]. Several new ventures are formed in the sleuth of high venture failure rates, overconfident entrepreneurs are motivated to start ventures, and then doing on such confidence when determining by what means to assign possessions in their ventures. Finally, two thirds of high technology entrepreneurs declared they were not taking any risk [23]. Even though these readings dedicated on performing entrepreneurs, it logically surveys that perceiving low levels of risk may influence the individuals' opening decision to start ventures.

**H1:** Perceiving a lower level of risk is associated with the decision to start a venture.

### Overconfidence bias

Overconfidence bias is more common among entrepreneurs as compared to the others. Entrepreneurial over confidence bias is caused when individual factors (previous experience, personal optimism, self-efficacy, data limitations, environmental pressure and availability heuristic) combined with environmental situation [24]. Entrepreneurs are more intuitive as compared to non-entrepreneurs. Cognitive heuristics facilitate fast decision making which reduces risk perception which enables entrepreneur to follow their risky idea. Analytical cognitive style increases the chance of the enterprise success but decreases the likelihood of creating a business [21].

However, Forbes [25] narrated that decision comprehensiveness increases overconfidence. In decision making situations individuals get confident by considering more information but that more information does not guarantee decision accuracy. Overconfidence is someone's prediction related to the event with excessive certainty. Further Simon and Houghton [26] stated that, managers who are overconfident that they will achieve certain success introduce pioneering rather than incremental products. Overconfidence takes place in actual strategic decision situations that are ill-structured. In the risky situations the chances of making decisions on the basis of overconfidence increases. Zacharakis and Shepherd [27] analyzed that due to overconfidence bias venture capitalists rely on limited information and do not hunt for more information which results in making wrong investment decisions and losing available opportunities which should be grasped. In order to increase the decision accuracy the use of counterfactual thinking, the humbling effect and decision aids techniques can be used which reduces overconfidence bias. This bias diminishes an individual's perception towards the level of risk associated with new venture formation [9,12,27]. Therefore, it is hypothesized that:

**H<sub>2</sub>:** Overconfidence bias is positively associated with decision to start a new venture.

### Illusion of control bias

Sometimes underestimating the chance of controlling a situation results in incurring more costs than overestimating that chance. Illusion of control arises where people incorrectly assign control to events in which outcomes result from chance, but the attribution is based on rational processes [28]. Both situational (personal involvement, familiarity, foreknowledge of the desired outcome and success at the task) and person-based factors (mood and need for control) influence whether or not people will overestimate their control [29]. Emotive reactions play an important role on the cognitive process during decision making under risky situation. Joy and happiness encourages people's perception of sense of security and control over the environment, prepare them to adopt risky decisions [30]. A study by Meissner and Wulf [31] pointed out that, in strategic decisions under uncertainty external advice seeking reduces the illusion of control bias, as compared to internal advice seeking. External advisors provide more information to decision makers whereas; internal advice increases certainty in one's own decisions which results in undervaluation of alternative perspectives. More cost is incurred in order to seek external advice whereas; internal advice can easily be accessed. Proper cost-benefit considerations of seeking advices from these two sources can reduce the illusion of control and positively affect organizational performance. Fellner [32] stated that illusion of control results in underestimation of risk while making investment decisions. An illusion of control bias is negatively associated with the risk perception in order to start a new venture [12,33]. Hence it is hypothesized that:

**H<sub>3</sub>:** Illusion of control bias is positively associated with decision to start a new venture

### Mediating role of risk perception

The study also originates differences among the individuals in starting the venture yet they evaluated the identical venture. It is due to the influence of cognitive biases on risk perception as well as new venture creation. It indicates that take in a lower level of risk is associated with the new venture decision. Entrepreneur when develops positive attitude towards his business future they underestimate environmental uncertainty. Which decrease their risk perception related to the new venture formation [13,24,34,35]. Risk perceptions mediates the relationship between cognitive biases and venture creation decisions [1,12,33,36]. Thus, it is stated that:

**H<sub>4</sub>:** The relationship between overconfidence and the decision to start a venture is fully mediated by risk perception.

**H<sub>5</sub>:** The relationship between illusion of control and the decision to start a venture is fully mediated by risk perception.

## Theoretical Framework

Theoretical framework is shown in Figure 1.

## Research Methodology

### Instrumentation

Primary data was collected through the structured close ended questionnaire adopted from "Cognitive Biases, Risk Perception, and Venture formation: How individuals decide to start companies" by Mark Simon, Susan M. Houghton and Karl Aquino.

There are total 15 questions in the questionnaire. The questionnaire

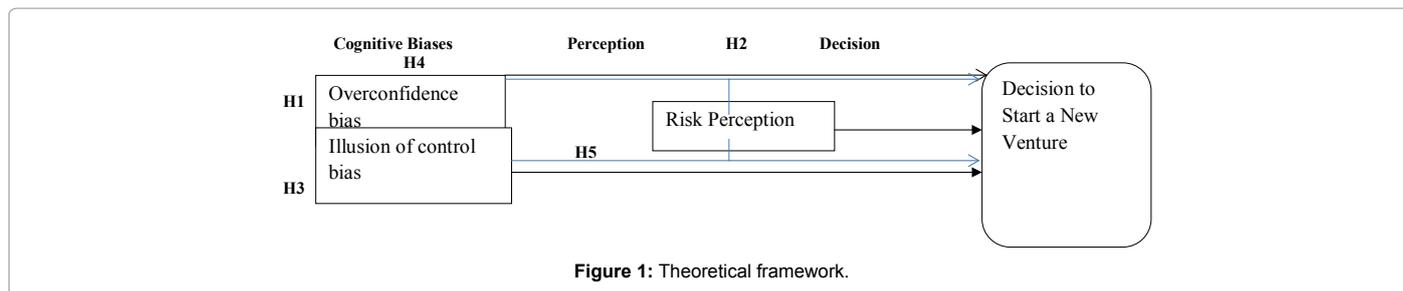


Figure 1: Theoretical framework.

	Mean	SD	1	2	3
Decision to start a venture	3.38	1.09			
Risk perception	3.11	0.68	-0.58**		
Overconfidence	6.49	2.85	-0.02	0.03	
Ill. of control	3.10	0.74	0.28**	0.20**	0.10

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Table 1: Means, standard deviations and correlations among measures of biases, risk, and the decision to start a venture.

comprised of two sections. First section collected the respondents' demographic data, such as gender, age and education level. The second part gathered data from the respondents about the Decision to start a new venture.

### Population and sample size

Convenience sampling technique has been used for the collection of data because of time constraint. The data was collected from Islamabad and Rawalpindi, by means of personal and online distribution of questionnaires.

The sample was consisting of decision to start a new venture by students. Total of 250 was questionnaires were distributed out of 250 only 180 are received, from which 170 are useable. Hence response rate 68%. The respondents consist of 44.4% (80) male and females (80) 55.5%. The mean age of respondents was 18-35. Education level ranges from MBA, PHIL and PHDs Students. From which with 8.6% of the respondents was having PHDs degree, 50% MS/M.PHIL level, 41.4% MBAs.

### Measurement of variables

All items scale of the variable was adopted from prior studies where they had been tested for reliability.7 validity. A 5 point like scale having a range from strongly disagrees to strongly agree was used.

### Analysis

We used two regression analyses to test the direct effects suggested in Hypotheses 1-3. Model 1 tested H1 by regressing the decision to start a new venture on risk perception. Model 2 examined H2 and H3 by regressing risk perception on the cognitive biases. To prove Hypotheses 4 and 5, the analysis had to meet the four conditions needed to establish that a mediated relationship exists [2].

Regression model 2, which tested Hypotheses 2 and 3, also tested the first of these mediation conditions, namely, that the independent variables affected the mediator. We used a third regression model to examine if the independent variables affected the dependent variable, which is the second condition needed to establish mediation. In other words, the effect of cognitive biases on the decision to start a new venture must decrease when risk perception is included in the equation.

Table 1 presents the means, standard deviations, and correlations

	Model 1 Decision to start new venture	Model 2 Risk Perception	Model 3 Decision to start new venture
Risk perception	-0.58*** (-9.60)		
Overconfidence		-0.01 (-0.13)	0.00 (0.00)
Ill. of control		-0.19** (-2.63)	0.29*** (3.81)
F statistic	23.27***	0.63***	4.97***
R2	0.33	0.10	0.15
Adj. R2	0.32	0.09	0.12

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Table 2: Results of regressions: The relationships among biases, risk-taking, and the decision to start a venture.

among the study variables. Table 2 contains the results of the four regression models used to test Hypotheses 1-5. The results of model 1 ( $R^2=0.33, p < 0.001$ ) support Hypothesis 1. There is a significant negative relationship between risk perception and the new venture decision ( $\beta = -0.58, p < 0.001$ ). Model 2 which tested Hypotheses 2 and 3, found that mutually the biases described a significant ratio of the variance in risk perception ( $R^2=0.10, p < 0.001$ ). Hypotheses 3, the illusion of control ( $\beta = -0.19, p < 0.01$ ) lowered risk perception. Hypotheses 2 was not supported, conversely, as there was no significant relationship between overconfidence and risk perception ( $\beta = -0.01, NS$ ). Hypotheses 2 and 3 discovered whether risk perception mediated the effects of cognitive biases on the decision to start a venture. In calculation to testing Hypotheses 2 and 3, model 2 also tested the first mediation condition: a significant relationship between the mediator and the independent variables. As stated, the illusion of control lowered risk perception. In compare overconfidence did not lower risk perception so it cannot affect the decision to start a new venture indirectly through risk perception. Model 3 accounts the results for the second condition, a relationship between the independent variables and the decision to start a new venture. The overall equation was significant ( $R^2=0.15, p < 0.001$ ), and the illusion of control ( $\beta = 0.29, p < 0.001$ ). But overconfidence bias was not significantly related to the decision to start a new venture ( $\beta = 0.00, NS$ ).

As a result, Hypotheses 3 only partially supported. The analysis provided no support for Hypothesis 2 because overconfidence was not significant in any of the equations.

### Conclusion

This study has incorporated the perceptions related to the overconfidence, illusion of control, risk perception and decision to start a new venture in Asian context. The results of the study are supported by the cognitive theory. As risk is involved in order to start any venture and entrepreneurs do not invest in risky ventures with their will. Entrepreneur when develops positive attitude towards his business future, they underestimate environmental uncertainty. Which decrease their risk perception related to the new venture creation.

Cognitive biases help in reducing this risk perception. Our study has showed strong influence of illusion of control as compared to the overconfidence bias on new venture formation. Illusion of control arises in venture formation where people incorrectly assign control to the success of business, whereas, outcomes result from chance. This may be due to the reason entrepreneur don't consider competitors 'response or either competitors are outside their control domain [37]. Overconfidence bias doesn't directly affect decision to start a new venture. cognitive biases influence an entrepreneur to undervalue the amount of risk linked with a specific new venture creation, so that individuals who are overconfident treat their assumptions as fact and may believe that certain decisions are less risky than they really are. Our results are in accordance to the Simon et al., and Kannadhasan et al. [12,33].

Practical implication of the study is that in decision making process risk perception should be given very importance. During the decision making process counterfactual thinking, humbling effect and group decision making process can facilitate reducing cognitive biases and correct estimation of risk [27].

### Limitation

As this study has incorporated two biases but many other biases should also be considered that effect human decision making process like self-efficacy, availability heuristics, law of small numbers and escalation of commitment. Future researches should introduce additional factors that may directly or indirectly affect risk perception in predicting the decision to start a venture as exposure to role models. The future studies may incorporate the impact of culture [14], gender [18] and economy on venture formation [15].

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