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## Article

# Do behavioural biases impact corporate entrepreneurship, agency cost and firm performance: Evidence from developed and developing economies?

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# **Do Behavioural Biases Impact Corporate Entrepreneurship, Agency Cost and Firm Performance: Evidence from Developed and Developing Economies?**

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## **Abstract**

The study aims to extend the relationship of corporate entrepreneurship and agency cost to firm performance, in the presence of behavioral biases to address the behavioral finance approach and validate it in developed (USA) and developing (Pakistan) economies, in order to generalize the study. Behavioral biases might be different across economies, particularly infers the diverse cultures. The validated construct has been adopted to measure the corporate entrepreneurship, behavioral biases and risk perception of USA and Pakistani non-financial sector companies listed on the New York Stock Exchange (NYSE) and the Karachi Stock Exchange (KSE), respectively. The data for firm performance and agency cost has been taken from Balance Sheets Analyses (SBP Report) for Pakistani companies and from annual reports of the USA companies on three yearly average bases (2009, 2010 and 2011). Data has been collected from 257 USA companies and 175 Pakistani Companies listed at NYSE and KSE respectively. The finding shows that behavioral biases don't impact the entrepreneurial orientation. The executives perform entrepreneurial activities differently, varies from individual to individual.

## **1. Introduction**

Since last decade, research on Corporate Entrepreneurship has fostered rapidly, and it has been seen that the Corporate Entrepreneurship leads to enhanced financial performance (Zahra, 1993). Prior literature demonstrates that corporate entrepreneurship facilitates new ventures to exploit innovative market prospects (Wiklund and Shepherd, 2003); enhances firm performance (Ireland, et al., 2003); and allows firms to prosper in a competitive environment (Lumpkin and Dess, 2001; Shane and Venkataraman, 2000). Corporate entrepreneurship promotes the development and execution of innovative ideas within organizations (Hornsby et al., 2002), which might be fundamental element of successful enterprises (Kanter, 1984). Corporate Entrepreneurship heightens the shareholder's value by constructing the work environment, so that it props up individual

and corporate growth, conferring upon employees an opportunity to exploit their creative skills and to fabricate the organizational culture that enhances the market performance of a company (Zahra, 1991). However, sometimes agency problems arise between the shareholders and managers that weaken the firm's performance (Xiao, 2008). It might be a snag to execute the Corporate Entrepreneurship and financial firm performance. Therefore, Corporate Entrepreneurship can be helpful in reducing agency cost within the organization (Bhutta and Shah, 2011) that may lead to high financial performance.

Most studies scrutinized the positive relationship between Corporate Entrepreneurship and firm performance in western economies, like Canada (Knight, 1997), United States, New Zealand, The Netherlands, Argentina, Republic of Croatia, and Russia (McDougall and Oviatt, 2000), like the United States, the United Kingdom (Gartner and Birley, 2002) as well as in emerging economies like China (Luo et al., 2005; Yang et al., 2007); like Slovenia (Antoncic and Hisrich, 2001); and like Thailand (Lekmat and Selvarajah, 2008). Mostly, corporate entrepreneurial activities have been conducted in developed nations (Zahra and Covin 1995; Gartner and Birley, 2002; Knight, 1997; McDougall and Oviatt, 2000; Fitzsimmons et al. 2005). However, very little awareness about the importance of corporate entrepreneurial activities and its outcomes exists in developing countries. Therefore, there is a need for generalization of entrepreneurial research outcomes in developing countries (Lekmat and Selvarajah, 2008). To eradicate the shortfall in entrepreneurial research, this study has been conducted in one of the developing countries i.e. Pakistan, and compare it with developed economy like USA, in order to fill in the gaps in corporate entrepreneurship. Through identifying the behavioural styles of USA entrepreneurs, which can be best guide for Pakistan entrepreneurs may be helpful for entrepreneurial activities.

How the behavioral finance will emerge? This answer to this query has been explained through the following diagram quoted by Ricciardi and Simon (2000). If fundamental aspects of psychology and sociology have been considered in standard finance theories, standard finance will turn to behavioral finance. Briefly, we can say that standard finance is a father of behavioral finance. Therefore, for overall acquaintance of behavioral finance principles, a person must have a clear understanding of psychology, sociology and finance concepts. Behavioral finance is well developed regarding human behavior, generally it is involved with the emotional attributes of individuals who affect the entrepreneurial process. Behavioral finance provides justification of three basic queries like the what, how and why of investing through considering the human perspective, however, it does not remain at the individual level but it also considers the group and organizational levels. (Ricciardi and Simon, 2000). Behavioral finance is defined as the "interaction of psychology with financial actions and performance of practitioners". Moreover, people should be aware of their "investment mistakes" as well as "error of judgment" of others because one's mistake can turn to the other's profit (Shefrin, 2000).

People in behavioral finance are normal, not rational. Normal people are confused by frames and cognitive biases, feel pain of regret and lapses of self-control. Behavioral finance deals well with afore-mentioned puzzles of finance. Therefore, Behavioral finance may facilitate finance professional and institutional investors; like finance professionals who realize behavioral finance will improve their decision-making through understanding their own behavior. However, institutional investors who understand behavioral finance will better serve and educate them through understanding the motives

and beliefs of their clients.(Statman,1999). Briefly, Behavioral finance endeavors to forecast the systematic behavior of people to make efficient entrepreneurial activities (Olsen, 1998).This study aims to investigate the above nexus in the presence of behavioral biases, in order to address the difference in entrepreneurial activities due to behavioral biases.

Developed and Developing Economies: Schøtt and Jenson (2008) compared Entrepreneurial activity and policy across the developed and developing economies. They investigated that entrepreneurial policy and activity are generally lower in developing economies compared to developed economies. This is attributable to experiences of developed countries which have not been applied to developing countries yet, and developing economies have been internally inconsistent due to lack of resources. Cognitive biases are different across developed and developing economies, attributable to social orientation (Varnum et al. 2009). Based on this justification, this study is investigated across the developed and developing economies.

Research Questions of Study: Q1. Does behavioural biases affect the relationship among Corporate Entrepreneurship, agency cost and firm performance?

Q3. Does the relationship among Corporate Entrepreneurship, agency cost and firm performance differ across developed and developing economies?

Objectives: The objective of our study is to investigate the relationship among corporate entrepreneurship- agency cost and firm performance in the context of behavioural finance. Secondly, it would investigate this relationship into developed and developing economies for its generalization.

Main Contribution/Significance of the Study: The present study is expected to contribute to the literature on Corporate Entrepreneurship in many ways. Firstly, it is an endeavour to further enhance a significant relationship of Corporate Entrepreneurship and Agency Cost (Bhutta and Shah, 2011) by introducing firm performance in this link, and further investigate in the presence of behavioural biases, particularly address to behavioural finance approach. This study investigates that whether behavioural biases may impact the entrepreneurial activities or not. If yes, then what is the key difference in behavioural styles between USA entrepreneurs and Pakistan entrepreneurs while executing entrepreneurial activities?. Through identifying these styles of USA entrepreneurs, which can be best guide for Pakistan entrepreneurs for entrepreneurial activities. So, the speciality of the study is to explore and gain the attention of the academicians and practitioners towards this omission in literature. Secondly, academicians and practitioners promote corporate entrepreneurship in firms to enhance the firm performance, and this study has been conducted at USA (Developed) and Pakistan (Developing) economies; now all economies need these activities to achieve their competitive positions in the global environment. Moreover, it also contributes the other factor that may impact the entrepreneurial activities, irrespective of behavioural styles. Thirdly, this study investigates the relationship among different economies.

## **2. Literature Review**

### *2.1 Theoretical Support*

The theoretical support of this study has been presented in ensuing paragraphs:

#### 2.1.1 Theory of Corporate Entrepreneurship (TCENT)

According to the theory of corporate entrepreneurship, three factors are involved in creation of new business, namely 'business environment', 'organizational culture', 'top managers including corporate executives, divisional general managers and division and its top management team'. (Sathe, 2003). Moreover, the theory of corporate entrepreneurship provided a direct and indirect influence of the top manager on business creation (Drucker, 1970).

#### 2.1.2 Agency Theory (AGT)

Developed in the 1970s as a response to the problems that arise when one party, the principal, delegates work to another party, innate to the public corporation. (Jensen and Meckling, 1976). Based on the self-interest of managers, they make decisions which may harm the organization and owner's wealth. Thus, moral hazards and conflicts arise, which may diminish the firm profitability as well as other investment decisions. Some researchers suggest that to pay fixed salaries along with some bonuses may be able to reduce the agency problems within organizations. (Jensen and Murphy, 1990). The other alternative for reducing agency problems is to involve the corporate entrepreneurship activities (Bhutta & Shah, 2011).

#### 2.1.3 Resource-Based Theory (RBT)

According to this theory, firms have tangible and intangible capabilities and resources. (Wernerfelt, 1984). This basically seeks to explain why firms succeed? Regarding current literature of corporate entrepreneurship, much attention has been given towards the combination of resources and their management in order to pursue opportunities for new business (Castrogiovanni et al. 2011). Generally, firms must secure the right type of resources. Successful companies must concentrate on the acquisition and enhancement of those resources that are scarce and valuable to customer now and in the near future (Olavarrieta and Ellinger, 1997). To hold unique and rare resources are mainly attributable to firm profitability and competitive advantage. (Barney 1991).

#### 2.1.4 Probabilistic Mental Models (PMM) Theory

In this theory, Gigerenzer, et, al (1991) highlighted the individual's behavior regarding overconfidence in decisions and judgments. According to this theory, "individuals performed two alternative tasks. The first task is to construct local mental model and then solve the problem through long-term memory. However, if the problem could not be handled with first tools, then probabilistic mental models have been used through using probabilistic information taken from long-term memory. It implies that executives can make entrepreneurial orientation activities through incorporating inductive interference. Moreover, it explains the overconfidence bias in those scenarios in which the overconfidence bias appears or disappears. It introduces a new concept i.e. confidence-frequency that explores the systematic difference between judgment of confidence in a single event and judgment of correct answers in the long run (Gigerenzer et.al., 1991).

#### 2.1.5 Illusion of Control Theory (ICT)

Ellen Langer firstly presented the theory of illusion of control in 1975 as "*an expectancy of a personal success probability that exceeds the objective probability of the outcome*". It happens when an event is determined by some factors that result in under skill-based scenarios like response familiarity, choice familiarity, active and passive involvement,

particularly leading to perceived control of individuals over the situation and unrealistic success outcomes. However, the illusion of control can be more attributable to skill and chance scenarios, shows that skill factors may attribute the success. Moreover, non-skilled factors like foreknowledge, degree of correspondence and outcome sequence also contribute towards the perceived control of individuals over the situation. (Kahai et al., 1998; Langer and Roth, 1975 and Presson and Benassi, 1996).

#### 2.1.6 Representativeness Theory (RT)

Kahnman and Tversky (1972) defined the representativeness theory as the “tendency for people to think something is more likely to happen because of stereotype”. Basically, it reflects the sample of the whole population; it explains concrete thinking, the importance of task characteristics and the difficulty of a priori specifications of the salient features with respect to which representativeness is assessed. (Chester, 1976). Thus, it implies that individuals can make decisions on the basis of a representative sample for incorporating entrepreneurial orientations.

#### 2.1.7 Preference Theory (PT)

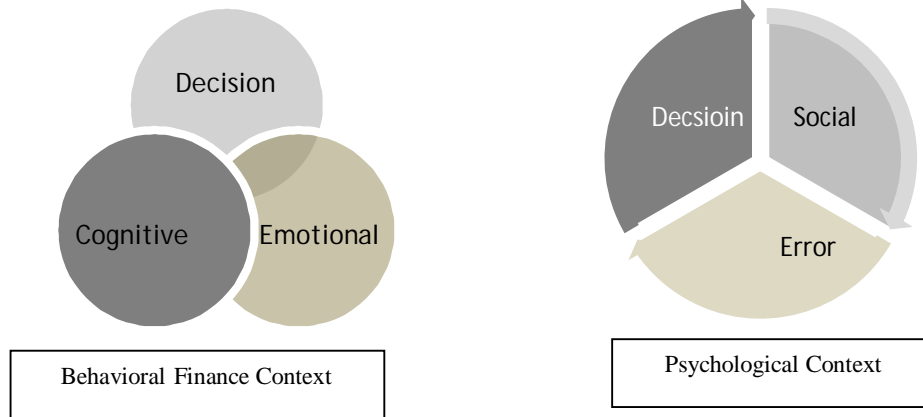
Kenneth (1958) defined the preference theory as “a set of assumptions relating to ordering some options, based on the extent of happiness, satisfaction, enjoyment, or utility, which leads to optimal outcomes”. It would assign a special role to the status quo, giving up some standard assumptions of stability, symmetry and reversibility which the data have shown to be false. But the task is manageable. The generalization of preference theory to indifference curves that are indexed to reference level is straightforward (Tversky and Kahneman, 1991).

### 2.2 *Behavioral Biases*

Behavioral biases are the heuristics to think differently. They can lead to systematic deviation from standard outcomes. Moreover, Behavioral biases are mental shortcuts used to make judgments (Simon et al., 1999), which help in effective decision making (Busenitz and Barney, 1997). Thus decisions can be made quickly by using these mental rules.

#### 2.2.1 Background of Behavioral Biases

Behavioral biases are purely based on psychological background. Behavioral biases can be divided into decisional, social and error biases in psychological context (Baron, 2007; Kahneman and Tversky, 1972), whereas, the biases related to corporate entrepreneurial orientation are decisional biases. Moreover, decisional biases can be further divided into cognitive and emotional biases (Maccoun, 1998; Nickerson, 1998).



Under the behavioral finance context, the basic rules or mental shortcuts that the brain uses while making decisions are decisional biases that can be cognitive or emotional, based on the cold and hot nature of information respectively. If the decisional biases have cold information or results from motivation, then these are called cognitive biases, such as if a thief wears a police uniform to pass the security check. The policeman at the check post thinks that he is real policeman. This is cognitive bias. However, those decisional biases, having hot and regretful information, are called emotional biases such as if a person bought a house and it burned. When he will buy a house in the future, he may feel regret. Thus, it can be inferred that this decision can be based upon feelings, irrespective of facts (Parker, 2013).

#### 2.2.2 Types of Behavioral Biases

A list of decisional biases with complete description has been presented by researchers, which has been presented in pursuing table.

**Table 1: List of Decisional Biases**

<b>Name</b>	<b>Description</b>
<b>Ambiguity effect</b>	<i>“The tendency to avoid options for which makes the information seem "unknown”. (Baron,1994)</i>
<b>Anchoring bias</b>	<i>“The tendency to "anchor," on a piece of information while making decision” . (Zhang, et, al,2007; Iverson,et, al,2008)</i>
<b>Attentional bias</b>	<i>“The tendency of perception to be influenced by recurring ideas”. (Bar-Haim.2007)</i>
<b>Availability heuristic</b>	<i>The tendency to overestimate the likelihood of events due to recent "availability" in memory. (Bless,1991)</i>
<b>Availability cascade</b>	<i>A self-reinforcing process in which "repeat something frequently that will become true" .( Kuran,1998)</i>
<b>Base rate fallacy</b>	<i>“The tendency to focus on specific information while ignoring base rate information. (Baron,1994)</i>
<b>Bias blind spot</b>	<i>“The tendency to identify more cognitive biases in others irrespective of individual.” (Pronin,2007)</i>
<b>Cheerleader effect</b>	<i>“The tendency for people to appear more attractive in a group than in isolation.” (Walker,2013)</i>
<b>Choice-supportive bias</b>	<i>“The tendency to remember one's choices”. (Mather,2000)</i>
<b>Confirmation bias</b>	<i>“The extent to focus on information in a way that confirms one's previous beliefs. “(Oswald,2004)</i>
<b>Conjunction fallacy</b>	<i>“The extent to consider that specific information is more feasible than general ones”. (Fish,2004)</i>
<b>Conservatism bias</b>	<i>“A state of mind where high likelihoods are overestimated however, low likelihoods is underestimated.” (Martin,2012)</i>
<b>Distinction bias</b>	<i>“The degree to see two choices are more distinct while considering them simultaneously than separately”.( Hsee, 2004)</i>
<b>Endowment effect</b>	<i>“People demand much more to give up an object through paying less. (Kahneman,et, al, 1991)</i>
<b>Expectation bias</b>	<i>“The tendency to certify, and publish data which agree with their expectations for the results. (Jeng,2006)</i>
<b>Focusing effect</b>	<i>“The tendency to much focus on one aspect of an event”. (Kahneman,2006)</i>
<b>Framing effect</b>	<i>“Drawing different outcomes from the same information, depending on presentation of information”. (Plous,1993)</i>
<b>Gambler's fallacy</b>	<i>“The extent to think that future probabilities are altered by past events, however they are unchanged in real”( Lehrer,2009)</i>
<b>Hindsight bias</b>	<i>“ the extent to see past events as being predictable while</i>



	<i>happening those events”(Pohl, 2004)</i>
<b>Hot-hand fallacy</b>	<i>“extent to experienced success having a greater chance of further success while making additional attempts”.( Raab, et,al, 2011)</i>
<b>Illusion of control</b>	<i>“The extent to overestimate one's degree of influence over situation”. (Thompson,1999)</i>
<b>Loss aversion</b>	<i>"the fear of failure is greater than the gain through acquiring it"( Kahneman, et, al, 1991)</i>
<b>Omission bias</b>	<i>“The extent to judge harmful actions as worse. (Baron,1994)</i>
<b>Optimism bias</b>	<i>“The tendency to overestimate the pleasing outcomes” (Hardman,2009)</i>
<b>Outcome bias</b>	<i>“The tendency to judge a decision on the basis of eventual outcome irrespective of quality of the decision”.( Francesca,et,al, 2009)</i>
<b>Overconfidence effect</b>	<i>“Excessive confidence in one's own answers to questions.( Martin,2012)</i>
<b>Pessimism bias</b>	<i>“The tendency to overestimate the likelihood of negative events”( Edelman,2010)</i>
<b>Status quo bias</b>	<i>“The tendency to like things to stay relatively the same”( Kahneman, et,al, 1991)</i>

### 2.3 How Behavioral Biases Impact on Corporate Entrepreneurial Orientation

Cognition plays a crucial role while considering corporate entrepreneurial activities because it emphasizes how the entrepreneurs think differently, in order to use their knowledge for opportunity- seeking. (Barron, 1998; Ardichivillie, et al, 2003). Entrepreneurs first think about resources and capabilities which are essential to entrepreneurial tasks, irrespective of nationalities (Mitchell, 2000). Moreover, entrepreneurs use more cognitive biases in corporate entrepreneurial orientation because they are essential for seeking opportunities, as compared to managers (Busenitz and Barney, 1997). These behavioral biases are consistent across different economies (Mitchell, 2000). He developed a theory of entrepreneurial cognition in FY 2002, which states that the cognitive style of an individual has a direct attitude on entrepreneurship. Furthermore, he defined the concept of entrepreneurial cognitions as, *“these are knowledge structures which people normally use to make decisions and assessments regarding opportunity evaluation and venture creation”*.

The other factor that could be helpful is the environment in which individual behaves, because environment has a direct effect on individual's cognitive styles. Entrepreneurs use their skills and knowledge on the base of information they derive while interacting with other people in their environment; however, this is moderated by operational learning via four distinct processes, namely attentional, motivational, representational and behavioral production processes. Environment can facilitate and constrain the entrepreneurial behavior through the effects of these four factors. Thus, it can be inferred that cognition biases as well as environment may impact the behavior of entrepreneurs

while making corporate entrepreneurial decisions, and they use their knowledge and skills differently in response to opportunity seeking activities (Bandura, 1986).

From previous literature (Bulut, 2008) the four cognitive biases that affect corporate entrepreneurship have been presented in the following paragraphs:

## 2.4 *Cognitive Biases*

### 2.4.1 Overconfidence

Overconfidence is a mental fault in which somebody is unable to find the exact limit of his knowledge (Russo and Schoemaker, 1992). Overconfident persons attribute their suppositions as real, that is, why entrepreneurs are more confident than managers (De Carolis and Saporito, 2006). Busenitz and Barney (1997) depicted that entrepreneurs exhibited a greater reliance on the overconfidence bias. Overconfidence bias is associated to both individual and contextual factors like individual age, firm decision comprehensiveness and external equity. (Forbes, 2005). However, Baron (1998) argued that individual factors are not attributable to cognition bias in entrepreneurial behavior but instead entrepreneurs take cognitive bias as a response to organizational tasks like information overload, high uncertainty and high time pressure. Overconfident bias not only impacts entrepreneurial behavior but it may affect other managerial behavior that mostly entrepreneurs perform since the origin event to date (Willard et al., 1992) like forecasting (Hogarth and Makridakis, 1981) and negotiation (Bazerman and Neale, 1982).

### 2.4.2 Illusion of Control

Illusion of control is the second cognitive bias which is the tendency for people to overestimate their ability to control events (Langer, 1975). Entrepreneurs that seem to have control over people and situations (Keh, et. al, 2002). Simon, et.al (1999) showed differences between overconfidence and illusion of control bias; as overconfidence relates to an overestimation of one's certainty regarding current "facts" (i.e., information), while the illusion of control refers to an overestimation of one's skills and, consequently, his or her ability to cope with and predict future events. Managers having illusion of control bias may lead to risky decisions through performing overly optimistic estimates (Duhaime and Schwenk, 1985).

### 2.4.3 Representativeness

Representativeness is a third cognitive bias that means judging probabilities on the basis of resemblance (Tversky, et.al, 1974; Grether, 1980). Wickham (2003) investigated the representativeness bias in the entrepreneurial context. Representativeness bias encourages overestimation of the probability of low likelihood events, it hinders the quality of managerial decision making especially for new ventures. Entrepreneurs consider much more representativeness than managers (Busenitz and Barney, 1997) Representativeness bias has considerable implications to investment decision making (Chen, et. al, 2007). Investors may misattribute product quality, high expected growth and capable managers, as a good sign of investment, which generate cognitive bias. These attributes may be quality products, capable managers, high expected growth. Lakonishok, et.al (1994) also concluded this stereotype as "glamour" companies normally perform poor investment.

#### 2.4.4 Status Quo bias

Status Quo bias is the fourth cognitive bias that defines the tendency to like things to stay relatively the same (Kahneman, et.al,1991). This bias may affect entrepreneurs because they are very inclined to status quo bias in their efficient decision making (Aldrich, 2001). This bias describes a behavioral tendency to decide for a status quo option disproportionately more often (Samuelson and Zeckhauser, 1988). Status quo bias is consistent with reference dependence together with loss aversion according to prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1991).

### 3. Justification of the Study

The above literature posits the gap in literature among four concepts i.e. corporate entrepreneurship, agency cost, firm performance and cognitive biases. So the purpose of the study is to explore this gap in literature, also to scrutinize the nexus between Corporate Entrepreneurship, agency cost and firm performance according to fundamental and behavioral approaches.

#### 3.1 Behavioral Approach

A better understanding of how behavioural intentions impact the nexus between Corporate Entrepreneurship, agency cost and firm performance is presented in the following paragraphs

#### 3.2 Relationship of Cognitive Biases and Corporate Entrepreneurship

Cognitive biases might affect the entrepreneurial behavior but with the mediation of risk perception (De Carolis and Saparito, 2006). Risk perception is the subjective judgment that people make about the characteristics and severity of a risk (Douglas, 1985).

##### 3.2.1 Overconfidence and Risk Perception

Simon et al. (1999) firstly proved the relationship between overconfidence and risk perception that explains that overconfident persons treat the initial assumption as fact and make future decisions on this initial judgment and ignore future uncertainties. That is why overconfident entrepreneurs were less risk perceptive (Keh et al., 2002).

##### 3.2.2 Illusion of Control Bias and Risk Perception

In the illusion of control bias, people overestimate their skills and seem to think that they have control over situations and peoples (Langer, 1975). Due to this optimistic behavior, entrepreneurs who perceive less risk believe that their skills can prevent negative events. (Keh et al., 2002).

##### 3.2.3 Representativeness bias and Risk Perception

Representativeness bias means judging probabilities on the basis of resemblance (Tversky, et.al, 1974). Generally, a person, who considers a random sample which is representative of a whole population, entertains a higher possibility of certainty. Entrepreneurs need some prerequisites of considerable importance that show representativeness while making quick decisions (Busenitz and Barney, 1997). Therefore, entrepreneurs, who show less risk perception, may underestimate the possible losses or outcomes (Simon et al., 1999).

### 3.2.4 Status Quo Bias and Risk Perception

Status Quo bias defines the tendency to like things to stay relatively the same (Kahneman, et.al, 1991). Entrepreneurs rely on initial decisions while considering other alternatives. No additional energy was invested while making earlier decisions (Kahneman et al., 1991); however, ignoring new information for particular scenarios may oversee the possible loss associated with that situation (Burmeister and Schade, 2007).

Therefore, proposed hypotheses on the basis of above discussion would be:

- **H<sub>1</sub> (a):** Entrepreneurs who exhibit higher level of overconfidence perceive less risk
- **H<sub>1</sub> (b):** Entrepreneurs who exhibit a stronger illusion of control perceive less risk
- **H<sub>1</sub>(c):** Entrepreneurs who exhibit higher representativeness perceive less risk
- **H<sub>1</sub> (d):** Entrepreneurs who exhibit higher status quo bias perceive less risk

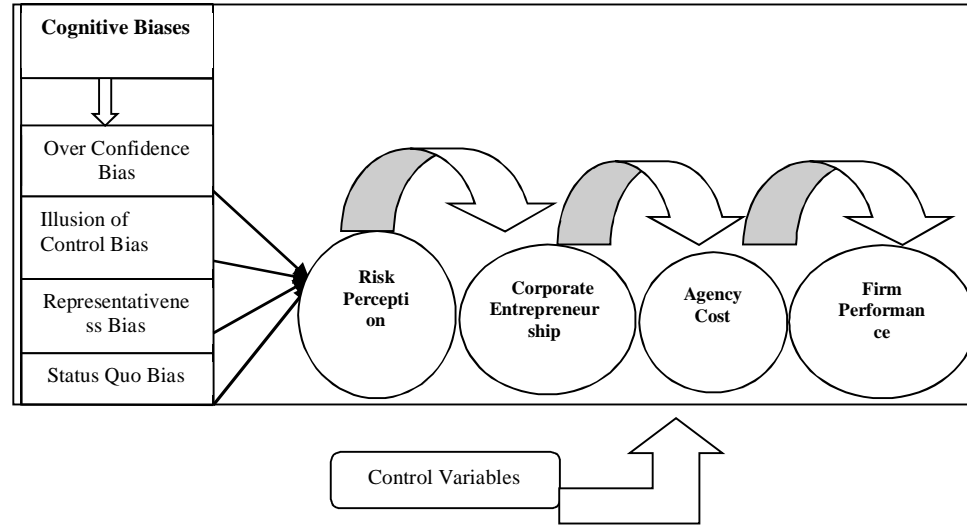
### 3.2.5 Risk perception and Corporate Entrepreneurship

Exploring of entrepreneurial opportunities is risky action that is based upon risk perception (Norton and Moore, 2006). Weber and Milliman (1997) depicted that less risk perception may encourage the entrepreneurial behavior because thresholds disappear associated with prospects which encourage risky action (Simon et al., 1999). Keh et al. (2002) argued that while perceiving lower risk, entrepreneurs might be able to perceive lower probability of business failure. Additionally, it lowers financial loss that might empower the worthiness of entrepreneurial idea (De Carolis and Saporito, 2006). Entrepreneurial orientation is an evident form of risky action, because entrepreneurs are heavily pushed to deliver high performance. To behave entrepreneurially, one might perceive less risk, consequently leading to higher entrepreneurial orientation. (Hisrich, 1990). Corporate entrepreneurship is a concrete appearance of entrepreneurial behavior that could be a valid construct for entrepreneurs (Stull, 2005). Hence, a proposed hypothesis would be:

- **H<sub>2</sub>:** A lower level of risk perception leads to higher levels of Corporate Entrepreneurship

Note: By diagram, this Model looks like serial mediation model; however, there is no direct relationship between risk perception and agency cost according to previous literature. So, this model has been tested through one to one relationship.

### 3.2.6 Proposed Model



## 4. Research Methodology

### 4.1 Model Specification

We took behavioral biases, risk perception, corporate entrepreneurship, agency cost and firm performance

### 4.2 Equations

$$FP_i = \alpha + \beta_1(OC_i) + \beta_2(IC_i) + \beta_3(RB_i) + \beta_4(SQ_i) + \beta_5(RP_i) + \beta_6(CE_i) + \beta_7(AGC_i) + \beta_8(Eco_i) + \beta_1(Gen_i) + \beta_2(Exp_i) + \beta_3(CS_i) + \beta_4(CST_i) + \beta_5(Rpro_i) + \varepsilon$$

Where

$\alpha$  = Overall intercept term;  $\beta$  = Sensitivity of risk regarding to specific factor; CE=Corporate Entrepreneurship; AGC= Agency Cost; FP=Firm Performance; OC=Overconfidence Bias; IC=Illusion of Control Bias; RB=Representative Bias; SQ=Status Quo Bias; RP=Risk perception;  $\varepsilon$  = Error term or Residual

### 4.3 Design of the Study: Cross-sectional design

#### 4.3.1 Samples

The data for Corporate Entrepreneurship, Risk perception and behavioural biases were collected from executives of organizations of non-financial sectors in Pakistan listed at KSE through personal visits to these organizations, and from the USA listed at NYSE. A sample of 250 Pakistani firms and 600 USA firms had been selected based on objective analysis. To call for the research, invitation letters were sent to these firms. In the USA context, the researcher had received training for conducting research under the National Institute of Health, USA. Then, the questionnaire had been approved by University Review committee according to US rules & Regulations before sending it to USA companies and then sent via the university network. Data has been collected from the 257 USA companies and the 175 Pakistani companies listed at KSE and NYSE. Data for Firm

Financial Performance and Agency Cost was taken from Balance Sheet Analysis or Annual reports of companies on the average basis of three years (FY 2009, 2010, 2011).

#### 4.3.2 Sampling Technique

Convenient sampling technique was adopted for both economies because of constraints of resources and time duration. Other major reason behind choosing this sampling technique is absence of proper organizational structures in organizations in a country like Pakistan.

#### 4.4 Data Collection Instrument and Measures

##### 4.4.1 Corporate Entrepreneurship

20-Item scales (Aktan and Bulut, 2008) were used to measure Corporate Entrepreneurship (CE). Past research demonstrated the adequate levels of reliability and construct validity i.e. Alpha= .86. All scale employed for Corporate Entrepreneurship dimensions will be measured on Five -point Likert scales ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The composite value of corporate entrepreneurship had been derived through using imputation method and confirmatory factor analysis in AMOS.

##### 4.4.2 Agency Cost

The scales for measuring agency cost were taken from previous literature by Li, Wang and Deng (2007) and Florackis (2008) which were:

- Administrative Expenses Ratio (A.E.R) = Administrative Expenses/Sales
- Asset utilization Ratio(A.U.R) =Total Revenue/Total Assets

##### 4.4.3 Firm Performance

The scale of financial performance had been created from the existing literature (Aktan and Bulut, 2008) and chosen among the most frequently used financial criteria, which are

- Market Share Growth(MSG) = Company sales/total industry sales
- Return on Assets = Net income /total asset
- Return on Sales = Net income before interest and tax/sales
- Profitability(PF) = Net income /sales or net income/total equity

##### 4.4.4 Behavioral Biases Proxies

**Overconfidence Bias:** A seven-item scale was used to measure the overconfidence bias, which had adapted from Simon (1999) and Bulut (2008). Each question has only one correct answer i.e. 90 %Sure. There were upper and lower limits given for each question. For every correct answer which fell outside the limit was scored one instead of zero; however if respondent state within a limit, it means it is not overconfident. Then summing up all the scores, to obtain the overall confidence level. The maximum score is 7.

**Illusion of Control:** To measure illusion of control three-item scales was adopted from Bulut (2008). All questions were close ended and measured on 5 point Likert scale. The Cronbach's alpha is 0.80.

**Representativeness Bias:** A short business case for starting a new venture was adapted from Bulut (2008) to measure the representative bias. At the end of case study three questions have been asked. Responses were coded 1 for providing answer which exhibits representativeness and coded -1 for not providing answer which exhibits non

representative In order the single variable for representativeness, all responses were added that contains value ranging from -3 to +3.

Status Quo Bias: Four business scenarios were used to measure the status quo bias was adopted from Bulut (2008). There were three choices given for each scenario. The first choice refers to status quo, would coded as 1 and other as 0. To get a single variable of status quo bias, all responses would be added. The maximum score for this bias is 4 exhibits this respondent has this bias.

Risk Perception: A business scenario was used to measure the risk perception of business, which was adopted from Bulut (2008). The risk perception would be measured in the same manner as representativeness bias had been:

Control variables: We took company size and company sector as control variables

- Company size (CS) = LN of total Assets
- For Company Sector, I assigned value from 1 to 14, to each sector to both economies

In addition to these afore mentioned two more control variables were taken for behavioral approach (Bulut, 2008).

- The demographics of respondents were taken as control variable.
- Moreover, risk propensity of business was taken as control variable because every company has some risks like business risk and financing risk. Therefore, a five item scales was adopted from Bulut (2008) to measure the risk propensity which hold equal tolerance for all types of risks. According to them risk propensity might not be effective among entrepreneurs because they faced other risks as well. Each question has two options; one is for vast amount that is sure and second is for higher percentage. The maximum score would be 5 indicating high level of risk propensity.

#### *4.5 Data Analysis Tools*

Data analysis was done by using AMOS 21 software to validate the results. Following tests were applied on the data.

- Descriptive to highlight the main features of sample
- Reliability test for checking the validity of constructs
- Confirmatory Factor analysis of three constructs Corporate Entrepreneurship, Illusion of Control and Risk Perception, as cited in previous studies. It is multivariate analysis to check how well the measured variables represent the number of constructs
- Path Analysis to test the hypotheses. Path analysis was done because it deals with the observed variables. It has been applied when the data are in sequential form, exhibiting one to one relationship. Moreover, path analysis assumes the all data are measured without errors.

### **5. Results**

#### *5.1 Descriptive Statistics*

The descriptive statistics of USA show that Overconfidence bias has highest mean value i.e. 17.37 while in the context of Pakistan FP has highest mean value i.e.83.75. In case of

volatility, Overconfidence bias has highest standard deviation i.e.7.47. In USA while regarding Pakistan FP has variance of 1431.

**Table 2: Descriptive Statistics**

Descriptive Statistics-USA						Descriptive Statistics-Pakistan				
	N	Min	Max	Mean	Std. Deviation	N	Min	Max	Mean	Std. Deviation
Overconfidence	257	0	31	17.37	7.473	175	-.09	.02	-.0289	.04229
Illusion Control	257	1	4	2.84	1.000	175	1.00	2.49	2.0453	.31250
Representative	257	-1	3	2.91	.605	175	-.08	.90	.5673	.37898
Status Quo	257	0	4	1.49	.981	175	.00	.84	.5521	.31256
Riskperception	257	0	0	-.19	.129	175	.91	4.54	2.8044	.96423
CE	257	2	4	2.90	.542	175	-7.66	3.98	.0000	1.93604
Agency	257	.07	2.36	.5440	.30155	175	0	727	4.77	54.872
FP	257	-24.26	3.47	-.0254	1.54083	175	-4482	18376	83.75	1431.703
Valid N (listwise)	257					175				

### 5.2 Reliability Test

The overall reliability of the constructs is 77% and the response rate for research invitation is 43% in USA while the overall reliability of constructs in Pakistan is 85% with response rate is 41%.

**Table 3: Reliability Test**

Cronbach's Alpha	USA	Pakistan
Corporate Entrepreneurship	0.771	0.845
• Risk Taking	0.793	0.672
• Innovativeness	0.658	0.601
• Proactiveness	0.783	0.684
• Competitive Aggressiveness	0.689	0.793
Illusion of Control Bias	0.895	0.587
Risk Perception	0.548	0.919



### 5.3 Confirmatory Factor Analysis

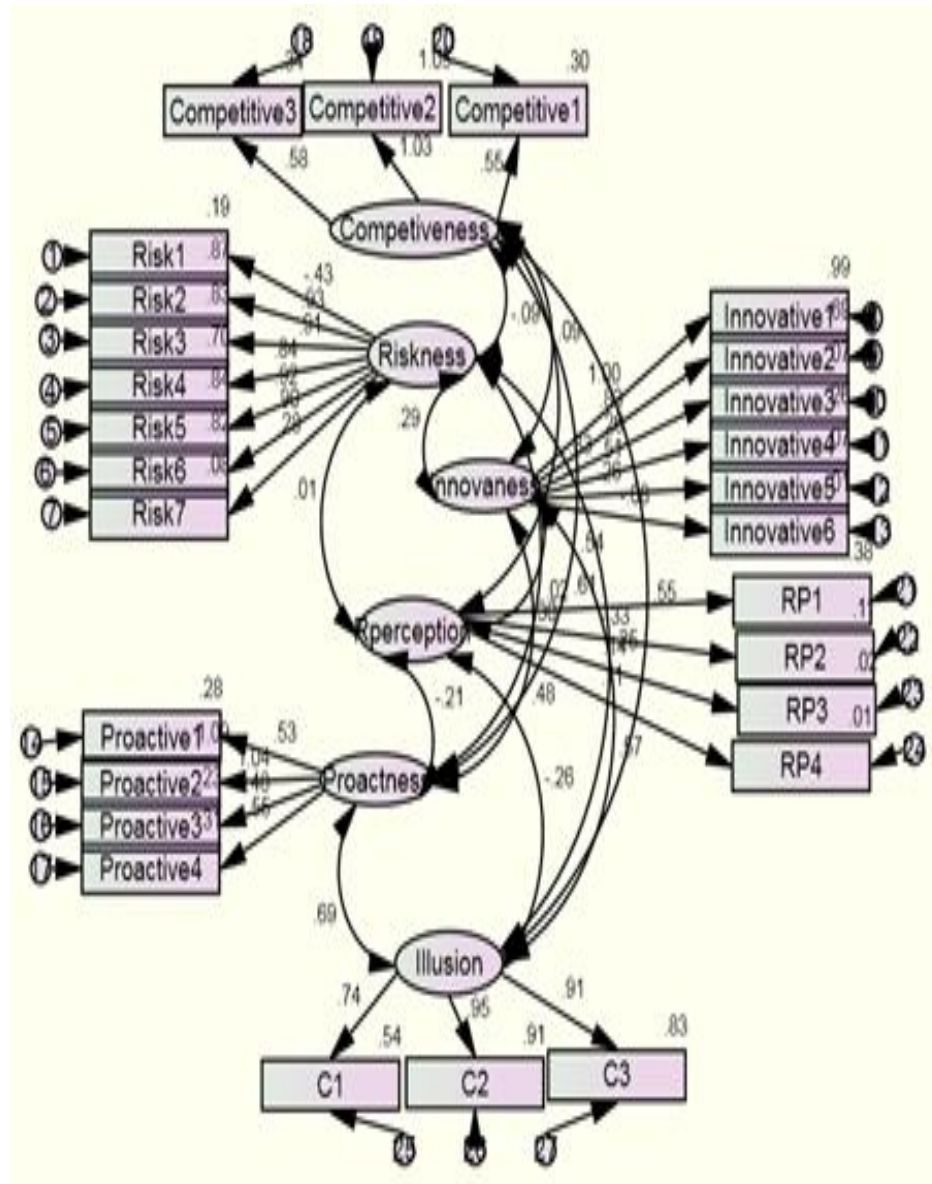


Figure 1: Confirmatory Factor Analysis- USA

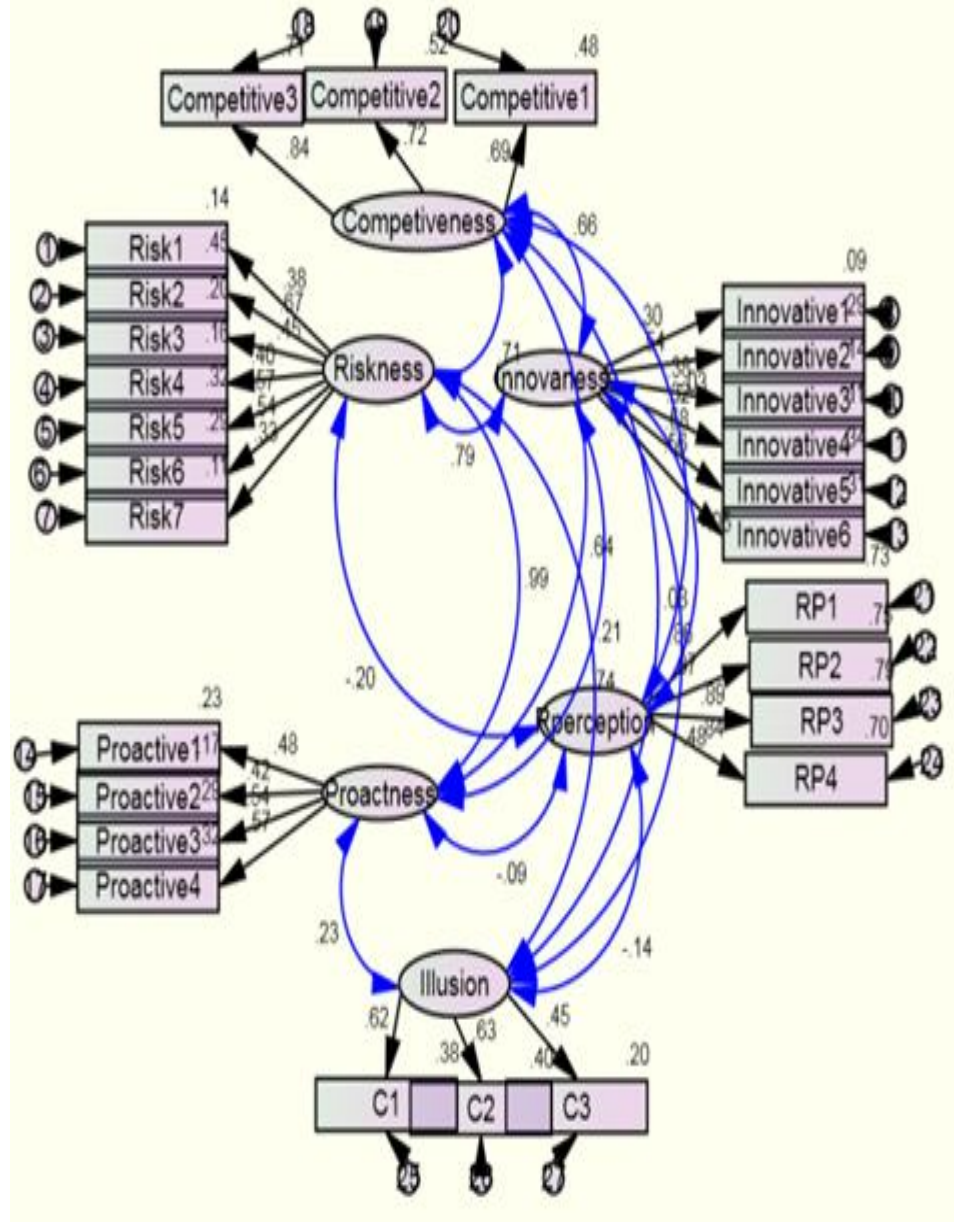


Figure 2: Confirmatory Factor Analysis Pakistan

#### 5.4 Composite Analysis

Relationship between Behavioral Biases, Risk Perception, Corporate Entrepreneurship, Agency Cost and Firm Performance:

$$\begin{aligned}
 FP_i = & \alpha + \beta_1(OC_i) + \beta_2(IC_i) \\
 & + \beta_3(RB_i) + \beta_4(SQ_i) + \beta_5(RP_i) + \beta_6(CE_i) + \beta_7(AGC_i) + \beta_8(Eco_i) \\
 & + \beta_1(Gen_i) + \beta_2(Exp_i) + \beta_3(CS_i) + \beta_4(CST_i) + \beta_5(Rpro_i) + \varepsilon
 \end{aligned}$$

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for USA sample, it has been found that overconfidence bias, illusion of control and status quo bias has insignificant positive impact on risk perception with p-value of 0.744, 0.658 and 0.950 respectively, however, representative bias has insignificant negative impact on risk perception with p-value of 0.643, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.111, having p-value 0.063. However, corporate entrepreneurship has significant negative impact on agency cost having coefficient of 0.106 with p-value 0.02, which also leads to insignificantly negative path to firm performance having coefficient of .088 with p-value 0.158. The Square Multiple Correlation for both models are 0.055, 0.088, 0.053 and 0.008. The other statistics shows the marginal model fit.

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for Pakistani companies, it has been found that overconfidence bias, illusion of control and representative bias have insignificant negative impact on risk perception with p-value of 0.744, 0.658 and 0.643 respectively, however, status quo bias has insignificant positive impact on risk perception with p-value of 0.950, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.008, having p-value 0.910. Moreover, corporate entrepreneurship has insignificant positive impact on agency cost having coefficient of 0.072 with p-value 0.338, which also leads to insignificantly negative path to firm performance having coefficient of 0.005 with p-value 0.949. The Square Multiple Correlation for both models are 0.079, 0.149, 0.005 and 0. The other statistics shows the marginal model fit.

**Table 4: Regression and Fit Indices**

Regression Table –USA					Regression Table –Pakistan			
	Adjusted Estimate	CR	P value	Square Multiple	Adjusted Estimate	CR	P value	Square Multiple
RP <--- OC	.011	.172	.744	.055	-.024	-.326	.744	.079
RP <--- IC	.040	.653	.658	.055	-.033	-.442	.658	.079
RP <--- RB	-.072	-1.173	.643	.055	-.036	-.464	.643	.079
RP <---SQ	.042	.691	.950	.055	.005	.062	.950	.079
CE <--- RP	.111	1.856	.063	.088	.008	.113	.910	.149
AGC<--- CE	-.106	-2.747	.021	.053	.072	.958	.338	.005
FP <--- AGC	-.088	-1.410	.158	.008	-.005	-.064	.949	.000
Measurement Model Data-USA					Measurement Model Data- Pakistan			
Variable=13, exogenous =9, endogenous=4					Variable=13, exogenous =9, endogenous=4			
Total degree of freedom=43		Sample size=257			Total degree of freedom=15		Sample size=175	
Proposed Model :chi square		Df=43	P=0.000		Df=43		P=.047	
Absolute Fit Measures					Absolute Fit Measures			
Likelihood Ratio Chi Statistics		376.825			Likelihood Ratio Chi Statistics		25.224	
Goodness of Fit Index		0.839			Goodness of Fit Index		.966	
Incremental Measures					Incremental Measures			
Truker-Lewis Index		-.316			Truker-Lewis Index		.494	
Normed Fit Index		0.172			Normed Fit Index		.616	
Incremented Fit Index		0.190			Incremented Fit Index		.444	
Non centrality Based Measure					Non centrality Based Measure			
RMESA		0.174			RMESA		.133	
Comparative Fit Index		0.143			Comparative Fit Index		.729	
Parsimonious Measures					Parsimonious Measures			
Normed Chi- Square		8.763			Normed Chi- Square		1.682	
Parsimonious Normed Fit Index		0.112			Parsimonious Normed Fit Index		.330	
Relative Fit Index		-.270			Relative Fit Index		.284	

*5.5 Relationship between Behavioral Biases, Risk Perception, Corporate Entrepreneurship, Agency Cost and Market Share Growth*

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for USA sample, it has been found that overconfidence bias, illusion of control and status quo bias has insignificant positive impact on risk perception with p-value of 0.744, 0.658 and 0.950 respectively, however, representative bias has insignificant negative impact on risk perception with p-value of 0.643, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.111, having p-value 0.063. However, corporate entrepreneurship has significant negative impact on agency cost having coefficient of 0.106 with p-value 0.021, which also leads to insignificantly positive path to market share growth having coefficient of 0.050 with p-value 0.438. The Square Multiple Correlation for both models are 0.055, 0.088, 0.053 and 0.426. The other statistics shows the marginal model fit.

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for Pakistani companies, it has been found that overconfidence bias, illusion of control and representative bias have insignificant negative impact on risk perception with p-value of 0.744, 0.658 and 0.643 respectively, however, status quo bias has insignificant positive impact on risk perception with p-value of 0.950, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.008, having p-value 0.910. Moreover, corporate entrepreneurship has insignificant positive impact on agency cost having coefficient of 0.072 with p-value 0.338, which also leads to insignificantly positive path to market share growth having coefficient of 0.050 with p-value 0.438. The Square Multiple Correlation for both models are 0.079, 0.149, 0.005 and 0.276. The other statistics shows the marginal model fit.

**Table 5: Fit Indices**

Regression Table –USA					Regression Table –Pakistan			
	Adjusted Estimate	CR	P value	Square Multiple Correlation	Adjusted Estimate	CR	P value	Square Multiple Correlation
RP <--- OC	.011	.172	.744	.055	-.024	-.326	.744	.079
RP <--- IC	.040	.653	.658	.055	-.033	-.442	.658	.079
RP <--- RB	-.072	-1.173	.643	.055	-.036	-.464	.643	.079
RP <---SQ	.042	.691	.950	.055	.005	.062	.950	.079
CE <--- RP	.111	1.856	.063	.088	.008	.113	.910	.149
AGC<--- CE	-.106	-2.747	.021	.053	.072	.958	.338	.005
MSG <--- AGC	.050	.775	.438	.426	.050	.775	.438	.276
Measurement Model Data-USA					Measurement Model Data- Pakistan			
Variable=13, exogenous =9, endogenous=4					Variable=13, exogenous =9, endogenous=4			
Total degree of freedom=42		Sample size=257			Total degree of freedom=15		Sample size=175	
Proposed Model :chi square		Df=42	P=0.000		Df=43		P=0.019	
Absolute Fit Measures					Absolute Fit Measures			
Likelihood Ratio Chi Statistics		381.871			Likelihood Ratio Chi Statistics		28.376	
Goodness of Fit Index		0.837			Goodness of Fit Index		.961	
Incremental Measures					Incremental Measures			
Truker-Lewis Index		.001			Truker-Lewis Index		.391	
Normed Fit Index		0.364			Normed Fit Index		.589	
Incremented Fit Index		0.799			Incremented Fit Index		.752	
Non centrality Based Measure					Non centrality Based Measure			
RMESA		0.178			RMESA		.072	
Comparative Fit Index		0.364			Comparative Fit Index		.674	
Parsimonious Measures					Parsimonious Measures			
Normed Chi- Square		9.092			Normed Chi- Square		1.892	
Parsimonious Normed Fit Index		0.232			Parsimonious Normed Fit Index		.315	
Relative Fit Index		0.001			Relative Fit Index		.232	

### 5.6 Relationship between Behavioral Biases, Risk Perception, Corporate Entrepreneurship, Agency Cost and Return on Assets

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for USA sample, it has been found that overconfidence bias, illusion of control and status quo bias has

insignificant positive impact on risk perception with p-value of 0.744, 0.658 and 0.950 respectively, however, representative bias has insignificant negative impact on risk perception with p-value of 0.643, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.111, having p-value 0.063. However, corporate entrepreneurship has significant negative impact on agency cost having coefficient of 0.106 with p-value 0.021, which also leads to insignificantly positive path to return on assets, having coefficient of 0.050 with p-value 0.438. The Square Multiple Correlation for both models are 0.055, 0.088, 0.053 and 0.276. The other statistics shows the marginal model fit.

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for Pakistani companies, it has been found that overconfidence bias, illusion of control and representative bias have insignificant negative impact on risk perception with p-value of 0.744, 0.658 and 0.643 respectively, however, status quo bias has insignificant positive impact on risk perception with p-value of 0.950, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.008, having p-value 0.910. Moreover, corporate entrepreneurship has insignificant positive impact on agency cost having coefficient of 0.072 with p-value 0.338, which leads to insignificantly negative path to return on assets having coefficient of 0.006 with p-value 0.938. The Square Multiple Correlation for both models are 0.079, 0.149, 0.005 and 0. The other statistics shows the marginal model fit.

**Table 6: Regression and Fit Indices**

Regression Table –USA					Regression Table –Pakistan			
	Adjusted Estimate	CR	P value	Square Multiple Correlation	Adjusted Estimate	CR	P value	Square Multiple Correlation
RP <--- OC	.011	.172	.744	.055	-.024	-.326	.744	.079
RP <--- IC	.040	.653	.658	.055	-.033	-.442	.658	.079
RP <--- RB	-.072	-1.173	.643	.055	-.036	-.464	.643	.079
RP <---SQ	.042	.691	.950	.055	.005	.062	.950	.079
CE <--- RP	.111	1.856	.063	.088	.008	.113	.910	.149
AGC<--- CE	-.106	-2.747	.021	.053	.072	.958	.338	.005
ROA <--- AGC	.050	.775	.438	.276	-.006	-.078	.938	.000
Measurement Model Data-USA					Measurement Model Data- Pakistan			
Variable=13, exogenous =9, endogenous=4					Variable=13, exogenous =9, endogenous=4			
Total degree of freedom=42		Sample size=257			Total degree of freedom=15		Sample size=175	
Proposed Model :chi square		Df=42	P=0.000		Df=43		P=0.046	
Absolute Fit Measures					Absolute Fit Measures			
Likelihood Ratio Chi Statistics		374.725			Likelihood Ratio Chi Statistics		25.268	
Goodness of Fit Index		0.841			Goodness of Fit Index		.966	
Incremental Measures					Incremental Measures			
Truker-Lewis Index		-.309			Truker-Lewis Index		.493	
Normed Fit Index		0.195			Normed Fit Index		.616	
Incremented Fit Index		0.214			Incremented Fit Index		.798	
Non centrality Based Measure					Non centrality Based Measure			
RMESA		.176			RMESA		.063	
Comparative Fit Index		0.167			Comparative Fit Index		.728	
Parsimonious Measures					Parsimonious Measures			
Normed Chi- Square		8.922			Normed Chi- Square		1.685	
Parsimonious Normed Fit Index		0.124			Parsimonious Normed Fit Index		.330	
Relative Fit Index		-.265			Relative Fit Index		.283	

### 5.7 Relationship between Behavioral Biases, Risk Perception, Corporate Entrepreneurship, Agency Cost and Return on Equity

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for USA sample, it has been found that overconfidence bias, illusion of control and status quo bias has



insignificant positive impact on risk perception with p-value of 0.744, 0.658 and 0.950 respectively, however, representative bias has insignificant negative impact on risk perception with p-value of 0.643, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.111, having p-value 0.063. However, corporate entrepreneurship has significant negative impact on agency cost having coefficient of 0.106 with p-value 0.021, which also leads to insignificantly negative path on return on equity, having coefficient of 0.083 with p-value 0.184. The Square Multiple Correlation for both models are 0.055, 0.088, 0.053 and 0.007. The other statistics shows the marginal model fit.

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for Pakistani companies, it has been found that overconfidence bias, illusion of control and representative bias have insignificant negative impact on risk perception with p-value of 0.744, 0.658 and 0.643 respectively, however, status quo bias has insignificant positive impact on risk perception with p-value of 0.950, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.008, having p-value 0.910. Moreover, corporate entrepreneurship has insignificant positive impact on agency cost having coefficient of 0.072 with p-value 0.338, however, which leads to insignificantly negative path to return on equity having coefficient of 0.072 with p-value 0.333. The Square Multiple Correlation for both models are 0.069, 0.140, 0.005 and 0.046. The other statistics shows the marginal model fit.

**Table 7: Regression and Fit Indices**

Regression Table –USA					Regression Table –Pakistan			
	Adjusted Estimate	CR	P	Square Multiple	Adjusted	CR	P	Square Multiple
RP <--- OC	.011	.172	.744	.055	-.024	-.326	.744	.069
RP <--- IC	.040	.653	.658	.055	-.033	-.442	.658	.069
RP <--- RB	-.072	-1.173	.643	.055	-.036	-.464	.643	.069
RP <---SQ	.042	.691	.950	.055	.005	.062	.950	.069
CE <--- RP	.111	1.856	.063	.088	.008	.113	.910	.140
AGC<--- CE	-.106	-2.747	.021	.053	.072	.953	.341	.005
ROE <--- AGC	-.083	-1.329	.184	.007	-.072	-.967	.333	.046
Measurement Model Data-USA					Measurement Model Data- Pakistan			
Variable=13, exogenous =9, endogenous=4					Variable=13, exogenous =9, endogenous=4			
Total degree of freedom=43		Sample size=257			Total degree of		Sample	
Proposed Model :chi square		Df=43		P=0.000	Df=43		P=0.003	
Absolute Fit Measures					Absolute Fit Measures			
Likelihood Ratio Chi		376.226			Likelihood Ratio Chi		34.845	
Goodness of Fit Index		0.840			Goodness of Fit Index		.954	
Incremental Measures					Incremental Measures			
Truker-Lewis Index		-.316			Truker-Lewis Index		.224	
Normed Fit Index		0.172			Normed Fit Index		.540	
Incremented Fit Index		0.190			Incremented Fit Index		.673	
Non centrality Based Measure					Non centrality Based Measure			
RMESA		0.068			RMESA		.087	
Comparative Fit Index		0.729			Comparative Fit Index		.584	
Parsimonious Measures					Parsimonious Measures			
Normed Chi- Square		8.749			Normed Chi- Square		2.323	
Parsimonious Normed Fit		0.112			Parsimonious Normed Fit		.289	
Relative Fit Index		-.270			Relative Fit Index		.141	

### *5.8 Relationship between Behavioral Biases, Risk Perception, Corporate Entrepreneurship, Agency Cost and Net Profit Margin*

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for USA sample, it has been found that overconfidence bias, illusion of control and status quo bias has insignificant positive impact on risk perception with p-value of 0.744, 0.658 and 0.950 respectively, however, representative bias has insignificant negative impact on risk perception with p-value of 0.643, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.111, having p-value 0.063. However, corporate entrepreneurship has significant negative impact on agency cost having coefficient of 0.106 with p-value 0.021, which also leads to significantly positive path to net profit margin, having coefficient of 0.183 with p-value 0.003. The Square Multiple Correlation for both models are 0.055, 0.088, 0.053 and 0.098. The other statistics shows the marginal model fit.

When path analysis was done among corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for Pakistani companies, it has been found that overconfidence bias, illusion of control and representative bias have insignificant negative impact on risk perception with p-value of 0.744, 0.658 and 0.643 respectively, however, status quo bias has insignificant positive impact on risk perception with p-value of 0.950, which leads to positive path between risk perception and corporate entrepreneurship with coefficient 0.008, having p-value 0.910. Moreover, corporate entrepreneurship has insignificant positive impact on agency cost having coefficient of 0.072 with p-value 0.338, which leads to insignificantly negative path to net profit margin having coefficient of 0.006 with p-value 0.936. The Square Multiple Correlation for both models are 0.079, 0.149, 0.005 and 0. The other statistics shows the marginal model fit.

**Table 8: Regression and Fit Indices**

Regression Table –USA					Regression Table –Pakistan			
	Adjusted Estimate	CR	P value	Square Multiple Correlation	Adjusted Estimate	CR	P value	Square Multiple Correlation
RP <--- OC	.011	.172	.744	.055	-.024	-.326	.744	.069
RP <--- IC	.040	.653	.658	.055	-.033	-.442	.658	.069
RP <--- RB	-.072	-1.173	.643	.055	-.036	-.464	.643	.069
RP <---SQ	.042	.691	.950	.055	.005	.062	.950	.069
CE <--- RP	.111	1.856	.063	.088	.008	.113	.910	.140
AGC<--- CE	-.106	-2.747	.021	.053	.072	.953	.341	.005
NPM <--- AGC	-.183	-3.013	.003	.098	0.006	.080	.936	.000
Measurement Model Data-USA					Measurement Model Data- Pakistan			
Variable=13, exogenous =9, endogenous=4					Variable=13, exogenous =9, endogenous=4			
Total degree of freedom=42		Sample size=257			Total degree of freedom=15		Sample size=175	
Proposed Model :chi square		Df=42	P=0.000		Df=43		P=0.013	
Absolute Fit Measures					Absolute Fit Measures			
Likelihood Ratio Chi Statistics	370.622				Likelihood Ratio Chi Statistics	29.740		
Goodness of Fit Index		0.842			Goodness of Fit Index		.961	
Incremental Measures					Incremental Measures			
Truker-Lewis Index		-0.267			Truker-Lewis Index		.349	
Normed Fit Index		0.217			Normed Fit Index		.577	
Incremented Fit Index		0.239			Incremented Fit Index		0.733	
Non centrality Based Measure					Non centrality Based Measure			
RMESA		0.175			RMESA		.075	
Comparative Fit Index		0.194			Comparative Fit Index		.651	
Parsimonious Measures					Parsimonious Measures			
Normed Chi- Square		8.824			Normed Chi- Square		1.983	
Parsimonious Normed Fit Index	0.138				Parsimonious Normed Fit Index	.309		
Relative Fit Index		-.230			Relative Fit Index		.210	

## 5.9 Individual Analysis

Table 9: Regression and Fit Indices

Regression Table –USA					Regression Table –Pakistan			
	Adjusted Estimate	CR	P value	Square Multiple Correlation	Adjusted Estimate	CR	P value	Square Multiple Correlation
RP <--- OC	.011	.172	.864	.055	-.024	-.326	.744	.079
RP <--- IC	.040	.653	.514	.055	-.033	-.442	.658	.079
RP <--- RB	-.072	-1.173	.241	.055	-.036	-.464	.643	.079
RP <--- SQ	.042	.691	.490	.055	.005	.062	.950	.079
RN <--- RP	-.021	-.432	.666	.412	.000	-.005	.996	.170
IN <--- RP	.191	3.160	.002	.063	0.014	.191	.849	.117
PN <--- RP	-.010	-.162	.872	.044	-0.003	-.042	.967	.172
CA <--- RP	.083	1.374	.169	.066	.043	.586	.558	.124
AER <--- RN	-.032	-.402	.688	.062	-0.659	-14.041	***	.637
AER <--- IN	-.062	-1.004	.315	.062	0.000	.002	.999	.637
AER <--- PN	.009	.139	.889	.062	0.547	11.642	***	.637
AER <--- CA	.019	.302	.763	.062	0.180	3.867	***	.637
AUR <---RN	-.117	-1.935	.053	.092	-0.678	-16.480	***	.721
AUR <--- IN	.084	1.400	.161	.092	-0.067	-1.648	.099	.721
AUR <--- PN	-.002	-.033	.974	.092	0.591	14.351	***	.721
AUR <--- CA	-1.187	-3.139	.002	.092	0.198	4.858	***	.721
MSG<--- AER	-.021	-.449	.653	.427	.121	1.788	.074	.564
MSG <--- AUR	.107	2.217	.027	.427	0.505	7.417	***	.564
ROA<--- AER	-.001	-.009	.993	.054	-.010	-.099	.921	.000
ROA <--- AUR	.024	.395	.693	.054	-.003	-.033	.974	.000
ROE<--- AER	-.029	-.468	.640	.007	-.093	-.944	.345	.068
ROE <--- AUR	-.078	-1.260	.208	.007	.225	2.286	.022	.068
NPM<--- AER	-.076	-1.280	.200	.098	.022	.215	.830	.018
NPM <--- AUR	-.171	-2.818	.005	.098	.118	1.164	.244	.018

Measurement Model Data-USA			Measurement Model Data- Pakistan	
Variable=17, exogenous =9, endogenous=8			Variable=17, exogenous =9, endogenous=8	
Total degree of freedom=92	Sample size=257		Total degree of freedom=74	Sample size=175
Proposed Model :chi square	Df=92	P=0.000	Df=74	P=0.000
Absolute Fit Measures			Absolute Fit Measures	
Likelihood Ratio Chi Statistics	1070.939		Likelihood Ratio Chi Statistics	1854.325
Goodness of Fit Index	0.764		Goodness of Fit Index	.607
Incremental Measures			Incremental Measures	
Truker-Lewis Index	-.034		Truker-Lewis Index	-.443
Normed Fit Index	0.303		Normed Fit Index	0.126
Incremented Fit Index	0.322		Incremented Fit Index	0.130
Non centrality Based Measure			Non centrality Based Measure	
RMESA	0.204		RMESA	0.372
Comparative Fit Index	0.301		Comparative Fit Index	0.110
Parsimonious Measures			Parsimonious Measures	
Normed Chi- Square	11.641		Normed Chi- Square	25.0580
Parsimonious Normed Fit Index	0.205		Parsimonious Normed Fit Index	.077
Relative Fit Index	-.031		Relative Fit Index	-0.418

When path analysis was done among individual variables of corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for USA sample, it has been found that overconfidence bias, illusion of control and status quo bias has insignificant positive impact on risk perception with p-value of 0.864, 0.514 and 0.490 respectively, however, representative bias has insignificant negative impact on risk perception with p-value of 0.241. Risk perception has negative path to riskiness and Proactiveness, having p-values of 0.666 and 0.872, while it has positive significant path with innovativeness and insignificant path with competitive aggressiveness, having p-values of 0.002 and 0.169 respectively. Riskiness and innovativeness have negative impact on administrative expense ratio with p-values of 0.688 and 0.053 respectively; however, Proactiveness and competitive aggressiveness have positive impact on administrative expense ratio with p-values of 0.889 and 0.763 respectively. Moreover, Riskiness and Proactiveness have insignificant negative impact on assets utilization ratio having p-values of 0.053 and 0.974 respectively; and significant negative impact on assets utilization ratio having p-values of 0.002; however innovativeness has insignificant positive impact on assets utilization ratio having p-values of 0.161. Administrative expense ratio has insignificant negative path with market share growth having p-value of 0.653; however, asset utilization ratio has significantly positive impact on market share growth.

Administrative expense ratio has insignificant negative path with return on assets having p-value of 0.993, however, asset utilization ratio has significantly positive impact on return on assets having p-value of 0.693. Both Administrative expense ratio and asset utilization ratio have insignificant negative path with return on equity having p-value of 0.653 and 0.208 respectively. Administrative expense ratio has insignificant negative path with net profit margin having p-value of 0.200; however, asset utilization ratio has significantly positive impact on market share growth having p-value of 0.005.

When path analysis was done among individual variables of corporate entrepreneurship, agency cost and firm performance in the presence of behavioral biases and risk perception for Pakistani sample, it has been found that overconfidence bias, illusion of control and representative bias has insignificant negative impact on risk perception with p-value of 0.744, 0.658 and 0.643 respectively, however, status quo bias has insignificant positive impact on risk perception with p-value of 0.950. Risk perception has positive path to innovativeness and competitive aggressiveness, having p-values of 0.849 and 0.558, and null path with riskiness, having p-value of 0, while it has negative insignificant path with Proactiveness, having p-values of 0.967. Riskiness has significant negative impact on administrative expense ratio and assets utilization ratio with p-values of 0.000 and 0.000 respectively; however, Proactiveness and competitive aggressiveness have significant positive impact on administrative expense ratio and asset utilization ratio. Innovativeness has null impact on administrative expense ratio with p-value of 0.999 and negative path with assets utilization ratio having p-value of 0.099.

Moreover, administrative expense ratio has insignificant positive path with market share growth having p-value of 0.074, however, asset utilization ratio has significantly positive impact on market share growth, having p-value of 0.000. Administrative expense ratio and asset utilization ratio have insignificant negative path with return on assets having p-value of 0.074 and 0.921 respectively. Administrative expense ratio has insignificant negative path with net profit margin having p-value of 0.200; however, asset utilization ratio has significantly positive impact on market share growth having p-value of 0.005. Moreover, administrative expense ratio and asset utilization ratio have insignificant positive path with net profit margin having p-value of 0.830 and 0.244.

#### *5.10 Alternate Model*

When the alternate analysis has been done to test the possible relationship in Model 2, it has been found that corporate entrepreneurship has a significant positive relationship with illusion of control bias in both USA and Pakistani context. Overconfidence bias has a significant negative relationship with corporate entrepreneurship in the USA while it has a significant positive relationship with corporate entrepreneurship in Pakistan. Corporate entrepreneurship has a significant negative relationship with agency cost; and significant positive relationship with risk perception in USA companies. Representativeness is a significant negative relationship with agency cost in Pakistan. The results of alternative analysis have been shown in ensuing tables.

**Table 10: Regression USA and Pakistan**

Regression Table –USA				Regression Table –Pakistan		
	Adjusted Estimate	CR	P value	Adjusted Estimate	CR	P value
RP <--- OC	.021	-.343	.732	-.138	-1.848	.065
RP <--- IC	-.019	-.298	.766	-.092	-1.234	.217
RP <--- RB	-.056	-.895	-.895	-.089	1.202	.229
RP <--- SQ	.090	1.452	.146	-.034	-.453	.651
CE <--- RP	.139	3.271	.001	-.028	-.371	.710
CE <--- OC	-.259	-6.139	***	.178	2.403	.016
CE <--- IC	.680	16.123	***	.157	2.140	.032
CE <--- RB	-.020	-.484	.629	.081	1.106	.269
CE <--- SQ	.011	.264	.792	.049	.672	.501
AGC <--- CE	-.137	-1.491	.036	.081	1.026	.305
AGC <--- OC	.053	.799	.424	.063	.664	.507
AGC <--- IC	.077	.875	.382	-.056	-.867	.386
AGC <--- RB	-.046	-.741	.459	-.173	-2.462	.014
AGC <--- SQ	.061	.976	.329	.124	1.640	.101
AGC <--- RP	-.011	-.179	.858	.103	1.385	.166
FP <--- AGC	-.085	-1.370	.171	.000	.001	.999
FP <--- OC	-.028	-.448	.654	.084	1.110	0.267
FP <--- IC	-.092	-1.478	.139	.045	.592	.554
FP<--- RB	-.012	-.198	.843	.072	.948	.343
FP <--- SQ	-.022	-.351	.726	.002	.024	.981



## 6. Discussion of Results

When the path analysis was run among behavioral biases, risk perception, corporate entrepreneurship, agency cost and firm performance, it was seen that overconfidence bias, illusion of control bias and status quo bias have an insignificant positive impact on risk perception while representative bias has an insignificant negative impact on risk perception. However, in case of Pakistan overconfidence bias, illusion of control and representative bias have insignificant negative impacts on risk perception while status quo bias has an insignificant positive impact on risk perception. The Hypotheses 1(a) and 1 (b) i.e overconfidence bias and illusion of control bias perceive less risk rejection in the USA and Pakistan. Hypothesis 1(c) also rejects that representative bias leads to low risk perception both in the USA and Pakistan, whereas, hypothesis 1(d) is rejected in both countries, exhibiting an insignificant positive relationship with risk perception.

Furthermore, risk perception has an insignificant positive impact on corporate entrepreneurship in the USA and Pakistan. From individual analysis, it was seen that risk perception has a significant positive impact on innovativeness in USA, depicting that USA companies are more concerned with launching innovative products because they want to take the competitive edge based on innovations and achieve market share irrespective of other things, however risk perception is independent of risk taking and proactive strategies, showing that they perceive less risk while moving towards risky projects and proactive strategies. Moreover, USA companies take second priority to competitive activities after innovation. However, in Pakistani companies, risk perception has an insignificant positive impact on innovativeness and competitive aggressiveness, which depicts that Pakistani companies perceive risk while launching innovations. Like the USA, Pakistani companies perceive less risk while playing a proactive role in the market, while they don't invest in risky projects attributable to fear of failure. Hypothesis 2 is supported in the USA where risk perception has significant impact on innovativeness. However, on the composite basis, it didn't receive significant support in both economies. Behavioral biases are not helpful in entrepreneurial decision making because of possible individualistic characteristics. Some studies also found behavioral biases outcomes don't comply with the existing theoretical evidence; sometimes that shows different results even in the same context. There is no significant role of behavioral approach in both economies that may be attributable to individualistic features of entrepreneurs.

## 7. Conclusion

This study bridges the gap in literature by extending the relationship between corporate entrepreneurship and agency cost, to firm performance and further tested in the presence of behavioral biases. It has been found that behavioral biases have insignificant relationship on corporate entrepreneurial activities through risk perception in both countries i.e. USA and Pakistan. This is attributable to the fact that behavioral biases are independent of corporate entrepreneurial activities.

Previous also confirmed that behavioral biases did are not consistent overtime, usually impact on entrepreneurial activities differently, and at different points of time as Simon, et, al (1999) found only significant impact of overconfidence on risk perception; and Keh, et, al (2002) found the significant impact of illusion of control bias on risk perception while they didn't find any impact of overconfidence and representativeness on risk perception. Similarly, Bulut (2008) found the significant impact of overconfidence

bias, illusion of control and representativeness on risk perception, however, failed to identify the impact of status quo bias on risk perception, stills demands to execute them in more entrepreneurial setting, which prompts us to investigate among different economies or different culture, with the aim to identify the behavioral styles that USA entrepreneurs might use in their entrepreneurial activities, which can be best guide for Pakistan entrepreneurs because Pakistan need these entrepreneurial activities to compete in global milieu.

Moreover, researchers personally visited USA and found the differences in the behavior of people both countries, generally, as they think differently like Pakistani people think that entrepreneurial activities demand high cost, irrespective of considering its merits, so they treat entrepreneurial activities as equally as administrative costs. Whereas, the USA citizens prefer to lead in market through entrepreneurial activities that automatically reduce costs. Based on these reasons, the above mentioned relationship does not support itself in Pakistan. However, the USA, as a developed economy, confirms that corporate entrepreneurship can be an efficient technique for reducing agency cost within the organization, which supports Bhutta and Shah's Model.

Based on above discussion, this study gives us a unique edge that behavioral intension does not affect does not affect from economy to economy or culture to culture, particularly refers to individualistic approach. Therefore, it is concluded that entrepreneurial styles as well as individualistic approach are helpful in executing entrepreneurial activities, irrespective of behavioral intension. Moreover, entrepreneurs don't depend on managers' deeds while achieving organizational goals. The effective implementation of corporate entrepreneurship can be worthwhile through the mutual cooperation of both entrepreneurs and managers within firms; otherwise, it could deteriorate entrepreneurial activities.

#### 7.1 Future Directions/Limitations:

All economies need corporate entrepreneurship in real terms for achieving competitive advantage; however, behavioral biases did not provide any support that may impact on entrepreneurial activities. So it is highly appreciable that in future studies, the behavioral biases would be re-examined in entrepreneurial settings while controlling more factors. Secondly, the relationship between corporate entrepreneurship, agency cost, firm performance and behavioral biases would be investigated in the presence of other possible variables.

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