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Sherry Robinson, Editor
Penn State University

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Sherry Robinson, Editor
Penn State University
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BEYOND RISK PROPENSITY – THE INFLUENCE OF EVALUATION PERIOD AND INFORMATION RELEVANCE ON RISK TAKING BEHAVIOR

Congcong Zheng, San Diego State University
Radmila Prislin, San Diego State University

ABSTRACT

Controlling dispositional risk propensity, we investigate the extent to which entrepreneurial students' risk taking behavior changes due to the length of evaluation period they adopt and relevance of the feedback they receive. Using a 2 (group membership: entrepreneurship vs. non-entrepreneurship students) x2 (evaluation period: long vs. short) x2 (information relevance: relevant vs. irrelevant) factorial design, we assess the betting amount of 256 entrepreneur and non-entrepreneur students in a computer-facilitated game. We find that in general, entrepreneur students take higher risks than non-entrepreneur students. A longer evaluation period leads to higher risk taking in similar extent by entrepreneurs and non-entrepreneurs. Remarkably, entrepreneurs and non-entrepreneurs react to information relevance differently: entrepreneurs take higher risks when receiving relevant (vs. irrelevant) information and non-entrepreneurs take lower risks when receiving relevant (vs. irrelevant) information. These results suggest that when information is relevant, entrepreneurs take it as challenge, whereas non-entrepreneurs take it as threat.

INTRODUCTION

Entrepreneurs face and respond to risks every day (Sarasvathy et al., 1998). Entrepreneurial researchers have long debated whether entrepreneurs are different than others in the way they perceive and respond to risks. For some scholars, the essence of being an entrepreneur is taking risks and functioning in less structured environments in which uncertainties are welcomed rather than feared (Cantillon, 1755 [1979]; Knight, 1921). Others argue that entrepreneurs are no different than others in the way they perceive and take risks (Brockhaus, 1980; Palich and Bagby, 1995). Still other researchers maintain that entrepreneurs might be more risk averse than the general population (Xu and Ruef, 2004).

One reason for such diversity might be the different risk conceptualizations that researchers adopt (Sitkin and Pablo, 1992). Two general approaches to entrepreneurial risk taking can be distinguished from previous literature. In some accounts, entrepreneurial risk taking behaviors (the decision-making behaviors in risky contexts) are considered relative stable

behaviors that stem from innate, dispositional traits such as risk taking propensity (Stewart and Roth, 2001). Accordingly, entrepreneurs and non-entrepreneurs might differ in their general dispositions towards risk and such differences tend to persist across a variety of contexts and environments. Alternatively, risk behaviors can be conceptualized as the output of a context-specific judgment process. From this perspective, individual's risk behaviors largely result from contextual and environmental factors that influence how they view, frame, and solve the problem at hand (Kahneman and Tversky, 1979; Tversky and Kahneman, 1991). Accordingly, influencing how decision makers view problems should alter their behaviors, making them either more or less likely to engage in risky behaviors.

Whereas individuals' actual risk behavior might be a combination of dispositional risk propensity and environmental factors, any study investigating the risk taking behaviors of entrepreneurs vs. non-entrepreneurs has to control for risk taking propensity and simultaneously evaluate the influence of decision making context. A growing body of research suggests that investment time horizon (i.e., the choice of evaluation period) is an important contextual factor that influences risk framing and risk behavior (cf., Behartzi and Thaler, 1999; Gneezy and Potters, 1997; Gneezy et al., 2003; Klos et al., 2005). The longer time horizon decision makers adopt, the longer the period that they choose to evaluate their decision outcome, and the less likely that they will experience loss. Consider an investment option that offers equal chances to win $200 or to lose $100. The probability of losing money after one independent trial is 0.5, but goes down to 0.25 for two independent trials, to 0.18 after 10 independent trials and to 0.0077 for 50 independent trials (Klos et al., 2005). In this way, the risky business of investment becomes less risky after more independent trials over a longer evaluation period.

Another stream of research also emphasizes the importance of information relevance in influencing risk behaviors (Rothman and Schwarz, 1998). Relevant information tends to elicit systematic processing of available information whereas irrelevant information fosters heuristic processing of information (Crano and Prislin, 2006). Systematic information processing might reduce risk taking behavior because decision makers have an opportunity to evaluate arguments in favor and against a decision. If decision makers tend to be generally risk averse, they might weigh losses more heavily than gains and thus take less risk.

The choice of evaluation period and the relevance of information are of particular importance in entrepreneurs' work environments. Entrepreneurs operate in highly chaotic, complex and unpredictable environments where they make time sensitive decisions despite a lack of relevant and available information (Aldrich and Martinez, 2001). To cope with such environments, entrepreneurs are often encouraged to be focused, resilient, and to evaluate their decisions with a long term perspective (Shepherd, 2003). Yet, to date, few studies have empirically tested the effect of long term orientation and information relevance on decision making. In this paper, we contribute to the literature on entrepreneurship and risk taking by examining the relationship between risk taking behavior, evaluation period, and information relevance, while controlling for dispositional risk propensity. Specifically, we explore whether

entrepreneurs and non-entrepreneurs differ in their investment behaviors in risky assets, and whether such behaviors differ as a result of evaluation period and the type of information received. We suggest that controlling for individual risk propensity characteristics, entrepreneurs tend to engage in riskier behaviors than non-entrepreneurs. Additionally, entrepreneurs and non-entrepreneurs might react differently to the choice of evaluation period and information relevance where compared to non-entrepreneurs, entrepreneurs are more susceptible to the effect of long evaluation period and information relevance. In so doing, we contribute to the literature by demonstrating that important situational, contextual factors can shift the risk taking behavior of entrepreneurs and non-entrepreneurs.

We test our theory through an experiment conducted in a group of 256 entrepreneurship students and non-entrepreneurship students in a Southern California university. Subjects were recruited to make investment decisions of repeated rounds in a computer-facilitated game and received financial reward. Below, we outline our theoretical background and develop the hypotheses. We then describe our experiment method, present our results and conclude with a discussion of findings and proposals for future research.

THEORY BACKGROUND AND HYPOTHESES DEVELOPMENT

Risk and Entrepreneurship

Researchers have devoted a great deal of attention to understand the different risk propensity of entrepreneurs and non-entrepreneurs (Xu and Ruef, 2004). A significant body of research is built on the assumption that entrepreneurs tend to have higher risk propensity (or lower risk aversion) than non-entrepreneurs (Kihlstrom and Laffont, 1979). Entrepreneurs are believed to "take more risks than do managers because the entrepreneurial function entails coping with a less structured, more uncertain set of possibilities" (Stewart and Roth, 2001: 145). In the labor market, if an individual has a choice between operating a risky venture and working for a riskless wage, the less risk averse individual chooses to operate the venture, bears the risk associated with production and profit and thus becomes an entrepreneur (Kihlstrom and Laffont, 1979). Risk seeking tendency refers to the tendency that a decision maker chooses a risky prospect with expected value X (or more than X) than a certain prospect with the value of X. Risk aversion refers to the tendency that a decision maker prefers a certain prospect of X (or less than X) than a risky prospect with expected values X. There is evidence suggesting that risk taking propensity might be dispositional (Stewart and Roth, 2001). According to this view, risk taking propensity is a facet of extraversion in the Big Five personality theory (Mount and Barrick, 1995).

Despite the intuitive appeal of risk propensity difference, the *behavioral* difference in risk taking between entrepreneurs and non-entrepreneurs has not received firm empirical support. For example, Brockhaus (1980) compared entrepreneurs (i.e., owner-managers of companies)

with managers working in organizations on how they make choices based on a choice dilemma questionnaire. The instrument measures the certainty an individual has to feel before making a significant decision. The results revealed that entrepreneurs were similar to managers in organizations regarding the certainty they required before making a decision. Using the national representative survey of Panel Study of Entrepreneurial Dynamics (PSED), Xu and Ruef (2004) compared entrepreneurs' investment choices with those of the general population. Survey respondents were given three investment scenarios: a profit of $5 million with a 20% chance of success; a profit of $2 million with a 50% chance of success; and a profit of $1.25 million with an 80% chance of success. Even though the three scenarios had the same expected value, entrepreneurs were more likely to choose the less risky scenarios (a profit of $1.25 million with 80% chance of success) than the general population.

Researchers in entrepreneurial cognition have recently suggested that the risk taking behavior not only results from the dispositional risk taking propensity, but also from contextual and environmental factors that influence how entrepreneurs view, frame and weigh their decisions. The risk propensity captures an individual's risk-taking tendencies and willingness to take risks in general. But such dispositional traits might be overtaken or overwhelmed by individuals' evaluation of a particular risk situation (Busenitz and Barney, 1997; Palich and Bagby, 1995; Simon et al., 1999; Sitkin and Pablo, 1992). Whereas risk propensity might be an enduring trait characteristic, risk behavior might change greatly as a result of social influence, the way that the decision maker frame the issues (Sitkin and Weingart, 1995), and such cognitive biases as overconfidence (Busenitz and Barney, 1997), or illusion of control (Simon et al., 1999). These situational influences change the weight that decision makers put on positive and/or negative outcomes and/or the assessment of what is positive and/or negative, and thus shaping risk taking behavior.

In this paper, we suggest that when controlling for risk taking propensity, risk taking behavior might be influenced by length of evaluation periods entrepreneurs choose to appraise their decision outcomes and the type of information they receive. Research on myopic loss aversion (MLA) has shown that decision makers are myopic in evaluating outcomes over time (Gneezy and Potters, 1997). The more frequently they evaluate their decision outcome, the more sensitive they are to losses than to gains and the more risk-averse they become. Thus, entrepreneurs' risky behavior might not only result from their innate risk seeking propensity, but also from the fact that they choose a longer evaluation period, evaluate their gains and losses infrequently, and thus experience less pain. Also entrepreneurs might respond to information relevance differently than non-entrepreneurs. When facing relevant information about gains and losses, they might be able to incorporate the relevant information into the decision they make in the future whereas non-entrepreneurs might be deterred by the information about their losses. We develop our hypotheses about these effects below.

Hypotheses Development

Risk is associated with the variations in the distribution of potential outcomes, the likelihood of such outcomes, and their subjective values (March and Shapira, 1987). Entrepreneurs, compared to non-entrepreneurs (such as waged employees), might take higher risks because of their different ways of framing risks and the cognitive biases they face. Research on decision making and risk has found that individuals tend to be risk averse when they are in the gain situation and risk seeking when they are in the loss situation (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). That is, their risk functions are concave in gain situation and convex in loss situation. Individuals also tend to weigh losses more heavily than gains, a tendency called loss aversion. On average, people tend to weigh loss twice as more as they weigh similar amount of gain (Gneezy and Potters, 1997). Entrepreneurs' utility functions might be less concave than non-entrepreneurs. As a result, a similar increase in gains will increase the utility of entrepreneurs more than those of non-entrepreneurs. Thus, to improve their utility, entrepreneurs might be more likely to engage in actions to improve their chances of gains and take riskier actions than non-entrepreneurs.

In addition, entrepreneurs might also be susceptible to the cognitive bias of overconfidence which might change the estimation of how likely they are to succeed (Busenitz and Barney, 1997). An overconfident decision maker tends to be over optimistic in the evaluation of a scenario and tend to overestimate the likelihood of success vs. failure, thereby attributing a higher expected value than necessary to the scenario. Entrepreneurs often have to make decisions in a data-impoverished environment. Overconfidence allows them to proceed with a venture idea before they have full, complete information about the risks and returns of the venture. Also, they have to convince stakeholders such as investors, key employees, suppliers and customers on the potential of the venture in order to secure their help to build the venture. When lacking data to back up their claim, entrepreneurs rely on confidence and enthusiasm to proceed (Busenitz and Barney, 1997; Simon et al, 1999; Hmieleski and Baron, 2009). Their overconfidence that enables them to operate in data-impoverished environments also makes entrepreneurs more likely to take higher risks.

Hence, we argue,

Hypothesis 1: Controlling for risk taking propensity, entrepreneurs take higher risks compared to non-entrepreneurs.

Research on myopic loss aversion (MLA) has shown that decision makers are myopic in evaluating outcomes overtime (Gneezy and Potters, 1997). The phenomenon of MLA is based on two behavioral concepts: loss aversion and myopia. Loss aversion refers to the fact that decision makers tend to put more weight on losses than on gains (Kahneman and Tversky, 1979); that is, losses hurt more than gains please. Myopia refers to the fact that decision makers tend to

mistreat the time dimension when they make decisions. Decision makers tend to evaluate the magnitude of gains or losses similarly even though they might occur in different time dimensions (Gneezy et al., 2003). "For example, bad news from one day to the next ('the market value of an investment fell since yesterday') is treated the same way as bad news referring to a longer period ('the market value of an investment fell since last year')" (Gneezy et al, 2003: 822). As a combination of the loss aversion and myopia effect, the more frequently people evaluate their decision outcomes, the more sensitive they become to losses than to gains and the more risk averse they will become. For instance, if a decision maker evaluates his/her decision outcomes every day, there would be many days when the outcomes do not live up to the expectation, therefore increasing the chances he/she will perceive more risk in the decision. However, if the same decision maker evaluates his/her outcomes less frequently, say once a week, it is more likely that the aggregate return (for that week) is positive, which would reduce the chances that he/she perceives risk in the situation. Gneezy and Potters use an example to explain the process of MLA (1997). Consider an individual who is presented with a gamble with a return of $200 with ½ probability and a loss of $100 with ½ probability. "Suppose that the individual is characterized by loss aversion and has a utility function u(z)=z for z>=0 and u(z)=2.5z for z<0, and z is change in wealth due to the decision" (Gneezy and Potters, 1997: 632). Under such conditions, the individual is not encouraged to take the decision because the utility of one gamble is negative as ½ (200x1) + ½ [(-100) x2.5] <0. Thus, a rational individual will reject one gamble and the second one, if he/she evaluates both gambles separately. However, the same individual might accept two gambles if evaluating two gambles in combination. In so doing, he/she encounters 1 out of 4 chance of winning two bets (total gain: $400), 1 out 2 chance of winning one bet and losing one bet (total gain: $100) and 1 out of 4 chance of losing two bets (total loss: $200). Combined, the utility function is ¼ (400 x1) + ½ (100x1) +¼ [(-200) x2.5], resulting in an above–zero utility. Hence, the longer evaluation period reduces the perceived probability of loss, thus increasing the chance of the individual taking higher risks. In agreement with this argument, we derive the following hypothesis.

Hypothesis 2: A longer evaluation period tends to increase risk taking behavior.

Another factor that should influence decision makers' risk behavior is the type of information that they receive and whether the information is relevant or irrelevant to the tasks at hand (Rothman and Schwarz, 1998; Rothman and Salovey, 1997). Health care researchers have found that when individuals perceive information to be relevant, they are more likely to engage in a *systematic* processing strategy, where they rely on the content of information to make decisions. In contrast, when receiving irrelevant information, people tend to rely on ease of recall and other *heuristics* to make decisions. Rothman and Schwarz (1998) found that undergraduate students with a family history of heart disease considered heart disease to be personally relevant and thus internalized the health related information to judge their own

vulnerability to heart disease. They systematically processed information provided and made judgments about their own risk based on the health care information provided. Conversely, those students without a family history of heart disease did not consider heart disease personally relevant and relied on the heuristics such as ease of recall to judge their own vulnerability to heart disease. The judgment of their vulnerability was not based on the information content, but on how easy or difficult it is for them to recall the health care related information.

We argue that relevant information tends to elicit systematic information processing in decision makers, making them evaluate the gains and losses more closely. This might exacerbate individuals' loss aversion tendency, hereby reducing the risk taking behavior. Thus:

Hypothesis 3: Individuals receiving relevant feedback tend to take less risk than those receiving irrelevant feedback.

We argue that the effect of longer evaluation period might be stronger for entrepreneurs than for non-entrepreneurs. This might be due to how overconfidence bias changes over time. Overconfidence refers to entrepreneurs' tendency to be overly optimistic in their initial assessment of a situation and slow to incorporate additional information into their assessment because they are attached to their initial optimism (Busenitz and Barney, 1997). Overconfident individuals tend to overestimate the probability of rare events (Fischhoff, 1982; Russo and Schoemaker, 1992). The effect of overconfidence might be more evident when entrepreneurs try to evaluate outcomes in a longer evaluation period as opposed to in a shorter evaluation period. In a fast moving environment where entrepreneurs are required to make decisions rapidly, they do not and will not have enough time to check the accuracy of the information and thus have to rely more on their gut feeling, hunches, and beliefs to make decisions. They might end up taking higher risk than otherwise justified by rational beliefs. They might rely on such gut feeling, hunches, and beliefs even more when facing a longer decision making time frame, since it is difficult to predict outcomes far into the future. Non-entrepreneurs, in contrast, are less subject to the effect of overconfidence. Hence, we argue:

Hypothesis 4: Compared to non-entrepreneurs, entrepreneurs will increase their risk taking to a greater extent when they take a long (vs. short) evaluation period.

Lastly, we argue that the effect of information relevance might affect entrepreneurs more than non-entrepreneurs. Previously, we argued that information relevance could prompt a systematic information processing strategy where the decision makers would incorporate the information to guide their decisions. Such a systematic information processing strategy may accentuate the initial, differential risk taking behaviors of entrepreneurs and non-entrepreneurs, thus leading to different effects. Entrepreneurs, initially being less risk averse and going through

the systematic processing strategy, might emphasize the upside potential (the positive outcomes), and arrive at strategies to promote their gains. Non-entrepreneurs, initially being risk averse and after going through the systematic processing strategy, may increasingly orient towards the potential of losses, and arrive at strategies to prevent losses. Thus, the information relevance magnifies the differences between the two. Hence, we argue,

Hypothesis 5: Compared to non-entrepreneurs, entrepreneurs are more likely to take higher risks as a result of relevant information.

METHOD

Design

Participants were randomly assigned to one of eight conditions in a 2 (group membership: entrepreneurship vs. non-entrepreneurship students) x2 (length of evaluation period: short vs. long) x2 (information relevance: relevant vs. irrelevant) between-subjects factorial design.

Participants

Research participants were recruited from entrepreneurship majors and non-entrepreneurship majors from a Californian university. 258 participants agreed to partake in a decision-making experiment lasting about 40 minutes, with a chance to win a $50 gift certificate depending on results of the experiment. 2 participants failed to follow the procedure and were excluded from our final sample. Our final sample was 256 students with 125 entrepreneurship and 131 non-entrepreneurship students. The sample of participants ranged in age from 18 to 49 (mean age =21.5 years).

Materials

We recruited college students to participate in an experiment that involved a brief personality survey and a betting game on a computer. In the personality survey, we asked the students to respond to an abridged Jackson Personality Inventory -Revised (1976, 1994) with risk taking propensity measures. Immediately after they completed the survey, participants took part in a computer-facilitated betting game, adopted from Gneezy and Potters (1997). During the betting game, subjects faced a sequence of twelve independent rounds with identical odds. In each of the first nine rounds ("part 1" of the experiment), subjects were endowed with 200 cents by the game. They had to decide which part (X_t) of this endowment they wanted to bet in the lottery ($0<=X_t<=200$, t=1,…9). In the lottery there was a probability of 2/3 of losing the amount

bet and a probability of 1/3 of winning two and a half times the amount bet. Subjects were clearly instructed about the probabilities of gains and losses. They were also informed that they could not bet any money accumulated in the previous rounds during the first nine rounds. Thus the maximum bet in each of the first nine rounds was 200 cents, no matter what the outcome of the bet of any previous rounds was. In rounds 10-12 ("part 2" of the experiment), subjects were no longer endowed with any additional money by the game. Rather, they had to make bets from the money accumulated from Part 1. To that effect, after round 9, the computer calculated the subjects' earnings in part 1 and divided that by three. The resulting amount was the subjects' endowment (M) for each of the three rounds in part 2. Again, for each of these rounds, a subject had to decide which part (X_t) of the endowment/earning to bet in the lottery ($0<=X_t<=M$, t=10, 11, 12). We used the percentage of endowment bet in part 1 ($X_t/200$) and part 2 (X_t/M) as the dependent variable: the risk taking behavior by participants.

We operationalized the evaluation period by giving participants feedback about their betting performance at different intervals (giving feedback after every round of betting vs. giving feedback after every three rounds of betting), thus manipulating the period they evaluated their betting results. Subjects were randomly allocated to two treatments: 1) short evaluation period (S), receiving performance feedback after every round of betting, and 2) long evaluation period (L), receiving performance feedback after three rounds of betting. In Treatment S, participants played the rounds one by one and knew how well they did in the last round immediately. In Treatment L, participants played the rounds in blocks of three, where the three bets had to be equal. Here subjects chose their bets for three rounds at one time and they could not change their decision after each round, and hence had less freedom. In Treatment L, we had $X_t=X_{t+1}=X_{t+2,}$ for t=1, 4, 7, 10, whereas in Treatment S, these equalities needed not hold. Furthermore, the subjects in Treatment S were supplied with more information than were the subjects in Treatment L. When deciding on $X_{t,}$ a subject in Treatment S was fully informed about the realization and corresponding earnings of each previous round, while in Treatment L, subjects had to simultaneously decide upon three bets without knowing how each of the previous rounds had turned out.

We operationalized information relevance by giving participants different types of feedback. Relevant feedback informed the participants the outcomes of their betting in terms of their gains and losses in the last evaluation period [(e.g., in the previous round(s), you bet X cents. You lost X (or you won Y)]. Irrelevant feedback informed the participants that the time they spent on making the bet was within the range of similar students from previous studies. No matter how long subjects took to place a bet in a round, they were told that the time they spent was within the range of previous studies. This ensured that the feedback was irrelevant to the final objective, which was maximizing gains in the betting game.

As a result, our complete design employed in the experiment was a 2 (group membership: entrepreneurs vs. non-entrepreneurs) x2 (evaluation period: short period vs. long period) x2 (information relevance: relevant vs. irrelevant feedback) between-subjects factorial design with

eight conditions. Risk taking was measured by the bet that subjects placed in each round. In addition, as a control variable, we used data on risk propensity as a personality trait. These data were collected using a revised version of the Jackson Personality Inventory (1994). The risk taking propensity is measured by a composite index of 20 true or false scale items with such questions as "when I want something, I'll sometimes go out on a limb to get it", "If the possible reward was very high, I would not hesitate putting my money into a new business that could fail", "I rarely make even small bets" (reverse coded), and "If I invested any money in stocks, it would probably only be in safe stocks from large, well-know companies" (reverse coded). The index, calculated as the algebraic sum of all 20 questions, theoretically ranges from 0 to 20 (1 to 19 in our sample).

Procedure

Upon entering the experiment room, the experimenters read a short standard introduction to the participants. The participants were informed that the experiment consisted of a short personality survey and a betting game on the computer. They were asked to view the game as realistic as possible, and were informed that the top 10 participants with the highest betting results at the completion of the study would each receive a $50 gift certificate. After completing the survey, each participant was given another short instruction on how the betting game worked. Next, each participant was tested on their knowledge of the probability and magnitude of winning and losing. Participants were only allowed to start the betting game once they understood the probability and scale of wins and losses of the game. The betting game was facilitated through a computer implementation. Depending on the condition that the subjects were in (e.g., long evaluation period with relevant feedback or short evaluation period with irrelevant feedback), they received corresponding feedbacks after every three rounds of betting or after every round of betting. After 9 rounds of betting, the subjects were informed of their accumulated earnings for the last 9 rounds. They were also told that they were entering part 2 of the experiment, where they would no longer receive any endowment but had to bet from their previously accumulated earnings from part 1 of the experiment. As mentioned previously, at this point in the game the software divided the previous earnings by three and this number became the starting endowment (M) for each of the three rounds of part 2. The subjects were allowed to bet up to M in each round for rounds 10-12. After the game was finished, the participants were asked to leave their email addresses with the experimenters and were informed that the top 10 students with the highest earnings would be contacted at the conclusion of the study to receive a $50 gift certificate. Finally, the participants were debriefed about the experimental manipulations included in the study.

RESULTS

We use general linear model with repeated measures to evaluate how entrepreneurial students and non-entrepreneurial students differ in the amount bet throughout the game. We then use GLM univariate tests to examine the interaction effects. The results of these analyses reveal that entrepreneurs differ significantly from non-entrepreneurs.

Manipulation Check

To document that the entrepreneurship and non-entrepreneurship students differed in the predicted manner, we asked the participants to answer questions related to two entrepreneurial characteristics: risk taking propensity and innovation (Lumpkin and Dess, 1996; Jackson Personality Inventory, 1994). Risk taking propensity and innovativeness have been theorized as two of the most distinguishing qualities that characterize an individual's entrepreneurial orientation (Lumpkin and Dess, 1996). Thus, we expected entrepreneurship students to have higher scores on both than non-entrepreneurship students. This hypothesis was tested using the measures of risk taking and innovation from the Jackson Personality Inventory (1994). Similarly to the risk taking index discussed above, innovation was operationalized as the algebraic sum of 20 true or false scale items with such questions as "I prefer work that requires original thinking", "I like to experiment with various ways of doing the same thing", "I obtain more satisfaction from mastering a skill than coming up with a new idea" (reverse coded) and "I like a job which demands skill and practice rather than inventiveness" (reverse coded). Theoretical range of scores from 0 to 20 was fully covered in our sample.

A multivariate analysis of variance (MANOVA) with the group membership as the independent factor and the risk taking propensity and innovation characteristics as the dependent variables proved significant, $F(2,245) = 16.83$, $p<0.001$, partial $\eta^2=.12$. A follow up univariate analysis of variance (ANOVA) with risk taking propensity as the independent variable yielded a statistically significant F test , $F(1,255) = 31.45$, $p<0.001$; indicating entrepreneurship students were significantly more risk taking ($M=11.57$, $SD=.40$) than non-entrepreneurship students ($M=8.52$, $SD=.39$). Also entrepreneurship students ($M=13.90$, $SD=.40$) were more innovative than non-entrepreneurship students ($M=11.63$, $SD=.39$), as indicated by the univariate analysis with the innovation composite index as the dependent variable, $F(1,246)=16.59$, $p<0.001$.

Preliminary Analysis

Table 1 shows the mean percentage of betting in different rounds for entrepreneurship and non-entrepreneurship students.

Table 1: Average Percentage of Endowment Bet by Group Membership			
	Entrepreneurship Mean (SD)	Non-Entrepreneurship Students Mean (SD)	F-test
Rounds 1-3	47.06 (31.66)	39.06 (26.71)	F(1,254)=4.79, P<0.05
Rounds 4-6	54.78 (31.92)	43.89 (27.49)	F(1, 254)=8.32, P<0.01
Rounds 7-9	56.32 (32.99)	47.47 (30.59)	F(1, 254)=4.96, P<0.05
Rounds 1-9	52.72 (26.97)	43.47 (25.35)	F(1, 254)=8.00, P<0.01
Rounds 10-12	53.30 (31.25)	47.89 (31.05)	F(1, 254)=1.93, P=0.17

As expected, entrepreneurship students bet significantly higher percentage of their endowment than non-entrepreneurship students. This was consistent across different rounds, from rounds 1-3 [F(1,254)=4.79, p<0.05], rounds 4-6 [F(1,254)=8.32, p<0.01] and rounds 7-9 [F(1,254)=4.96, p<0.05]. In the last three rounds of the game, where students were no longer endowed with additional money by the computer but rather had to bet from their previous earnings, entrepreneurship students again showed a tendency , albeit non-significant, to place higher bets than non-entrepreneurship students. The overall pattern of the results supported Hypothesis 1.

Adopting different evaluation periods also changed subjects' risk taking behavior. We hypothesized that when adopting a longer evaluation period, individuals took higher risks. Table 2 shows the mean percentage of endowment bet in different rounds by individuals in long vs. short evaluation periods.

Table 2: Average Percentage of Endowment Bet by Evaluation Period			
	Long Evaluation Period Mean (SD)	Short Evaluation Period Mean (SD)	F-test
Rounds 1-3	45.65 (29.80)	40.28 (28.95)	F(1, 254)=2.14 , P=0.14
Rounds 4-6	53.07 (31.30)	45.33 (29.58)	F(1, 254)=4.14, P<0.05
Rounds 7-9	55.36 (31.60)	48.23 (32.19)	F(1, 254)=3.20, P<0.10
Rounds 1-9	51.36 (25.59)	44.61 (27.08)	F(1, 254)=4.20, P<0.05
Rounds 10-12	56.55 (30.86)	44.51 (30.50)	F(1, 254)=9.86, P<0.01

Long evaluation periods tended to promote the risk taken consistently. This was true across different rounds, from rounds 4-6 [F(1,254)=4.14, P<0.05], rounds 7-9 [F(1,254)=3.20, P<0.10], and rounds 10-12 [F(1,254)=9.86, P<0.01]. In rounds 1-3, long evaluation periods were also associated with higher risks, as compared to short evaluation periods; however, this difference was not significant. Thus, overall, the results supported Hypothesis 2.

Table 3 shows the differences in the average percentage bet for students receiving relevant vs. irrelevant feedback.

Table 3: Average Percentage of Endowment Bet by Feedback Relevance			
	Relevant Feedback Mean (SD)	Irrelevant Feedback Mean (SD)	F-test
Rounds 1-3	44.27 (31.72)	41.67 (27.05)	F(1, 254)=0.49, P=0.48
Rounds 4-6	47.32 (31.96)	51.09 (29.27)	F(1, 254)=0.97, P=0.33
Rounds 7-9	51.27 (34.00)	52.32 (30.06)	F(1, 254)=0.07, P=0.79
Rounds 1-9	47.62 (27.78)	48.36 (25.29)	F(1, 254)=0.05, P=0.82
Rounds 10-12	45.61 (31.39)	55.45 (30.35)	F(1, 254)=6.50, P<0.01

Here, the main effect of feedback relevance on the risk taking behavior was difficult to interpret. In rounds 1-3, individuals receiving relevant feedback wagered more of their endowments than those receiving irrelevant feedback. The opposite held true for rounds 4-6, 7-9 and 10-12. However, the differences were insignificant for all rounds in part 1 (round 1-9). In part 2 (rounds 10-12), individuals receiving irrelevant feedback placed significantly higher bets than individuals receiving relevant feedback [$F(1,254)=6.50$, $P<0.01$]. Thus overall, the results did not provide support for Hypothesis 3.

As evident from the preliminary analysis, the amount of bets from rounds 1-3, 4-6, 7-9 and 10-12 may have differed, but the effects of our main variables did not. Preliminary analysis showed that the effects of our variables were consistent across different rounds of betting. Thus, we collapsed results from rounds 1-9, using the average percentage of endowment bet from rounds 1-9 as our main independent variable for the main analysis. Using other indicators of risk taken did not change our results significantly. Those results are available from the authors.

Main Analysis

Table 4 shows the mean, standard deviation, and number of cases in each condition of our experiment. Table 5 below shows the results of ANOVA analysis, where the dependent variable is the collapsed, average percentage of endowment bet in rounds 1-9. Consistent with the preliminary analysis, entrepreneurship students bet more percentage of their endowments (supporting Hypothesis 1) and students adopting long evaluation periods bet a higher percentage of their endowments (supporting Hypothesis 2). Both of the main effects were significant after controlling for dispositional risk propensity measures. Additionally, the interaction between group membership and evaluation period proved insignificant [$F(1, 245)=0.01$, $P=0.91$]. Entrepreneurship students and non-entrepreneurship students responded to evaluation period similarly, with both types of students taking higher risks under long evaluation period. Thus, we did not receive support for Hypothesis 4.

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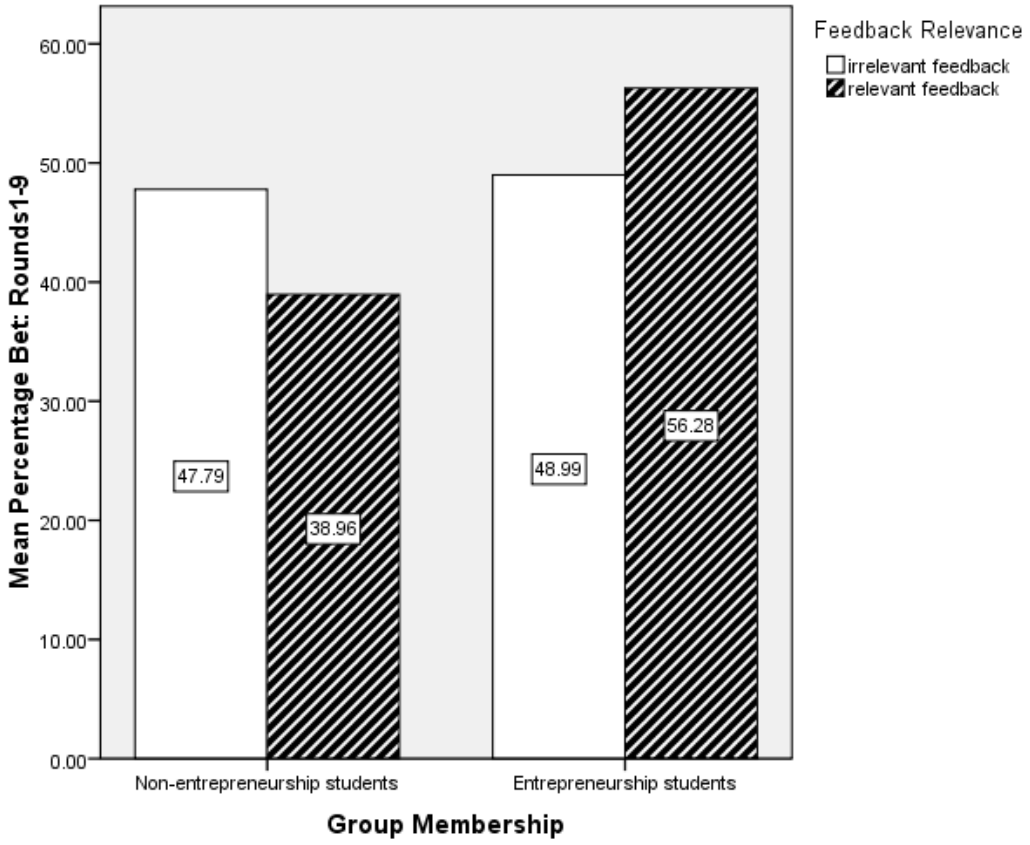
Table 4: Percentage of Endowment Bet in Rounds 1-9 by Group Membership, Evaluation Period and Feedback Frequency					
		Entrepreneurship Students		Non-Entrepreneurship Students	
		Long Evaluation Period	Short Evaluation Period	Long Evaluation Period	Short Evaluation Period
Irrelevant Feedback	Means	50.30	47.64	52.34	43.36
	SD	25.84	28.63	24.00	22.99
	N	31	30	33	34
Relevant Feedback	Means	60.61	51.67	41.53	36.54
	SD	24.07	28.76	25.99	26.85
	N	33	31	31	33

Table 5: Results of the ANOVA Analysis				
Independent Variables	*df*	*F*	*P*	partial η^2
Group Membership	1, 245	3.41	<.05	.02
Evaluation Period	1, 245	4.37	<.05	.02
Feedback Relevance	1, 245	0.22	ns	.00
Group Membership x Evaluation Period	1, 245	0.01	ns	.00
Group Membership x Feedback Relevance	1, 245	7.35	<.01	.03
Evaluation Period x Feedback Relevance	1, 245	0.11	ns	.00
Group Membership x Evaluation Period x Feedback Relevance	1, 245	0.65	ns	.00
Risk Propensity (Covariate)	1, 245	9.01	<.01	.04

The interaction between group membership and feedback relevance proved significant [$F(1, 245)=7.35$, $P<0.01$]. Entrepreneurship and non-entrepreneurship students responded to feedback relevance markedly differently. Figure 1 shows the interaction effect.

Figure 1: Interaction Effect: Feedback Relevance*Group Membership



This interaction was further analyzed by performing simple effect tests based on the overall error term. Simple effect test within the entrepreneur group revealed a marginally significant difference in risk taking in response to relevant and irrelevant feedback, $t(245) = 1.75$, $p = .08$. Specifically, entrepreneurs took somewhat higher risk in response to relevant than irrelevant feedback. In contrast, non-entrepreneurs took significantly lower risk in response to relevant than irrelevant feedback, $t(245) = 4.05$, $p < .001$. Additional analyses within the feedback relevance conditions revealed no significant difference between entrepreneurs and non-entrepreneurs in response to irrelevant feedback, $t(245) = .31$, $p = .76$. In contrast, entrepreneurs took significantly higher risk than non-entrepreneurs in response to relevant feedback, $t(245) = 1.99$, $p < .05$. Thus, we received support for Hypothesis 5.

DISCUSSION, CONTRIBUTION, AND CONCLUSION

This paper tested the effects of two environmental factors on risk behavior. We also controlled for the risk taking propensity of entrepreneurs and non-entrepreneurs through dispositional measures of the Jackson Personality Inventory. Even with risk taking propensity as

a covariate, we detected differences in risk taking behaviors between entrepreneurship and non-entrepreneurship students, suggesting the importance of environmental contexts on risk taking behavior. We investigated two environmental factors in particular: evaluation period, and information relevance. Our results suggested that entrepreneurs and non-entrepreneurs might be subject to different socialization processes that influence the way they view and respond to risks. We also found that a longer evaluation period significantly altered the way individuals viewed risks, leading individuals (entrepreneurs and non-entrepreneurs alike) to take higher risks. Lastly, we found that entrepreneurs and non-entrepreneurs reacted to feedback differently, with entrepreneurs taking more risks when receiving relevant feedback and non-entrepreneurs taking less risk when receiving similar relevant feedback.

Contrary to our Hypotheses 3, we did not find that all individuals took less risk when receiving relevant feedback as compared to irrelevant feedback. Whereas this was true for non-entrepreneurs, it proved quite the opposite for entrepreneurs who took more risk when receiving relevant (vs. irrelevant) feedback. Relevant feedback (i.e., feedback about gains and losses) did not seem to elicit heavy weighting of losses as we hypothesized. Instead, it appeared to promote strategizing about how to improve gains. Future research might directly measure utility and probability assessments after receiving different types of feedback, to uncover the type of changes individuals engage in *post* feedback. We also did not receive support for Hypothesis 4, in that entrepreneurs as compared to non-entrepreneurs took more risk as a result of adopting longer evaluation period. Instead, the increase in risk-taking with a prolonged evaluation period was of similar extent for both entrepreneurs and non-entrepreneurs. This might be due to the fact that even though entrepreneurs might be confident about their predictions, goals, and beliefs, such confidence might be constant whether they face a short or long evaluation period. Future research might need to investigate how overconfidence changes with time, to shed light on this issue.

Limitations

Whereas our experimental design and laboratory setting allowed us to hold constant many potential confounding effects, our tasks and the expertise required to complete them do not completely capture the complexity of entrepreneurial organizational settings. Participants in our experiment may have had weak motivation to take risks because the betting game may have seemed unsophisticated. Moreover, we provided positive incentives only -- our participants had the potential to earn rewards but would not have money taken away from them. The absence of negative incentives may have suppressed participants' sense of risk. Thus, although our groups differed significantly in the critical dimensions of risk taking and innovation, it is possible that our experimental scenario provided a less than optimal setting for activation of these differences and their behavioral expressions. Ultimately, this may have resulted in lack of support for Hypothesis 4.

Theoretical Implications

Our findings have important theoretical implications for entrepreneurship research. Entrepreneurship researchers have long debated whether there are differences between the risk taking behaviors between entrepreneurs and non-entrepreneurs and what the sources of such differences are. Moving beyond comparing the innate, dispositional risk taking propensity between the two groups, we investigate how risk perception might also be a result of the environmental context and how risk taking might change after the decision makers receive certain feedbacks. In so doing, we contribute to a growing stream of literature that emphasizes the effect of cognitive biases and heuristics on risk (Busenitz and Barney, 1997; Janney and Dess, 2006; Simon et al., 1999; Palich and Bagby, 1995). Innate disposition towards risk is important to entrepreneurs, but equally so is the chaotic, dynamic, complex environment in which they operate. Such an environment offers information cues to entrepreneurs, shaping their decision priorities and preferences.

If risk behavior is dynamic and is a result of decision makers receiving certain cues from the environment, then to a certain extent the risk behavior could be learned. Prominent among the cues are the evaluation period and the type of information the decision makers receive. In this study, we have shown that non-entrepreneurs, by adopting a long evaluation period, can significantly increase their risk taking behavior. If risk taking is closely related to the decision to start a venture (Simon et al., 1999), we can partially influence such decision by changing how individuals evaluate their decision outcomes. We focused on evaluation period and information relevance in this study. Future research might be able to evaluate other environmental factors to see how they affect risk taking.

Practical Implications

Our research has significant practical implications for entrepreneurship education and advising. Our results show that by adopting a longer evaluation period to evaluate wins and losses, individuals could change the way they view risk and become less risk averse; thus, it pays to take a long term view. Entrepreneurs who face important investment decisions need to break out of their daily routines of worrying about gains and losses in a short period of time and start to view their gains and losses in a longer time frame. If they adopt a longer time frame, they are less likely to experience the pains that are associated with losses, as gains and losses tend to cancel out in the long term.

For entrepreneurial education, educators might be able to train the risk averse students who are considering an entrepreneurial career by shifting their attention to a longer evaluation period and by training them to distinguish the relevant information from the irrelevant information.

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ENTREPRENEURIAL ORIENTATION: AN EMPIRICAL STUDY OF THE RISK-PROPENSITY DIMENSION OF ENTREPRENEURS

Laurent Josien, Utah Valley University

ABSTRACT

The goal of this paper was to analyze the relationship that might exist between risk taking propensity and the entrepreneurial orientation of entrepreneurs. In order to test that relationship, a contingency approach was used by splitting a sample of entrepreneurs into three different sets based on the Carlands' trichotomy of entrepreneurs. A sample of 1003 entrepreneurs was used for the study, and 103 responses were used for analysis. The result of the study indicates that the relationship between risk propensity and the entrepreneurial orientation of entrepreneurs is contingent to the set of entrepreneurs.

INTRODUCTION

The entrepreneurial orientation construct in entrepreneurship has received considerable attention from researchers, even if there are some controversies in its dimensions (Josien, 2008; Gurol & Atsan, 2006; Lyon, Lumpkin, & Dess, 2000; Aragon-Correa, 1998; Barringer & Bluedorn, 1999; Zahra & Covin, 1995; Dess & Lumpkin, 1996). This high level of interest is stemming from the significant impact the entrepreneurial activity has on an economy. This economical impact can be seen through the number of jobs created by entrepreneurs. Entrepreneurial ventures, defined as small firms with fewer than 500 employees, accounted for 69% of the total employment growth for the 1992-1996 period. Small business ventures represented all of the employment growth in goods-producing industries, 59% of the growth in service, and 79% of the growth in information technology (U.S. Small Business Administration, 2000).

A careful analysis of the results of the research mentioned above reveal that conflicting results have been found. For some researchers, entrepreneurial orientation is composed of three dimensions: innovativeness, proactiveness, and risk taking (Wiklund & Shepherd, 2005; Morris & Sexton, 1996). For some others, that same concept has five dimensions: autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness (Dess & Lumpkin, 1996). There are also some researchers who use a different set of five dimensions: achievement, personal control, innovation, self-esteem, and opportunism (Robinson, 1987; Shanthakumar,

1992), and one researcher even included two more dimensions to the previous model: risk taking and independence (Solymossy, 1998).

One of the more salient areas of conflicting results is within the risk taking dimension of entrepreneurs. Indeed, risk taking has always been a part of the early entrepreneurship literature, dating back to Cantillon (1734) who argued that the principal factor that separated entrepreneurs from hired employees was the uncertainty and risk of self-employment. Furthermore, the risk propensity dimension of entrepreneurs has yielded different outcomes: Palmer (1971) and Liles (1974) reported that entrepreneurial functions primarily involve risk taking. In addition calculated risk taking is reported to be a strategic behavior of entrepreneurs (Hoy & Carland, 1983). However, some other findings may indicate that entrepreneurs may be risk-averse due to their strategic behavior (Burns & Kippenberger, 1988). Similarly, chief executives with external control were found to be conservative in their decision-making, while chief executives with internal locus of control were more prepared to adopt riskier decisions (Miller & Friesen, 1982). Conversely, the need for achievement is associated with risk taking propensities (McClelland, 1961). Furthermore, Brockhaus (1980) has reported inconsistencies in the risk-taking propensity of entrepreneurs. Finally, Gurol and Atsan (2006) found a difference in risk taking propensity between entrepreneurial students versus non-entrepreneurial students based on 400 Turkish students.

As we can see, the literature review shows without a doubt that there are conflicting results as far as the risk propensity dimension is concerned. Therefore, it might be fruitful to examine why some researchers have found antagonistic results about the risk dimension in the entrepreneurial orientation of entrepreneurs.

In our opinion, the reason for the conflicting results rests in the wide range that exists in entrepreneurs. Entrepreneurs can vary tremendously, from the kid with a lemonade stand to the successful executive who decides to create his or her own venture and invests a few hundred thousand dollars in it (i.e., the engineers who left IBM to create SAP). Carland and Carland (1996, 1997, & 2002) approached that wide range in entrepreneurship and extensive diversity question by splitting the field of entrepreneurs into a trichotomy: microentrepreneurs, macroentrepreneurs, and entrepreneurs.

They defined macroentrepreneurs as highly driven entrepreneurs who see their involvement with their business as the primary vehicle for pursuing self-actualization. Macroentrepreneurs measure success in terms of changing the world or creating something that no one else has been able to do. They have one thing in common: a dream to create, a dream to change, a dream to shape the world differently. Macroentrepreneurs are innovative and creative and have a tremendous risk-taking propensity. They never cease striving, taking risks, expanding, growing, and competing, even when they might be considered by others to be highly successful or tremendously wealthy (Carland & Carland, 1997).

Microentrepreneurs are quite the opposite of macroentrepreneurs. These individuals have a different and often unique view of success. They see their business ventures as a primary

source for family income or as a means for establishing family employment, and they view their business as being an important aspect of their lives rather than being consumed by it. Microentrepreneurs pursue self-actualization through their individual freedom. For these people, success is measured by their freedom; operating their own business frees them from the pressures and demands of a career, while still providing their families with financial support. They often have no real idea of their profitability, but measure success in their ability to pay their bills (Carland & Carland, 1997).

Finally, between these two groups is the main body of entrepreneurs: individuals who have a great deal of their self-perception connected to their business. They aspire to attain recognition, advancement, wealth, and admiration, and they want to be financially successful. They enjoy work but are not consumed by it, and they tend to avoid risks that might jeopardize their established business (Carland & Carland, 1997).

The Carland and Carland's trichotomy should help solve the conflicts that exist in the entrepreneurial orientation research. Without the Carland separation, both macro- and microentrepreneurs would be considered entrepreneurs in a comparison with non-entrepreneurs. However, the intrinsic differences between these two groups of entrepreneurs might be the reason why some researchers showed relationships and others did not. Maybe the ratio of macro/microentrepreneurs was different in Hoy and Carland (1983) compared with Burns and Kippenberger (1988), and that might explain why one found entrepreneurs to be risk takers while the others found them to be risk averse.

Therefore, our goal is to measure a group of entrepreneurs' entrepreneurial orientation and their risk propensity and test if the trichotomy of entrepreneurs would have a moderating effect on the risk taking dimension of entrepreneurial orientation. That moderating effect would be based on the contingency theory developed by Burns and Stalker (1961). According to Burns and Stalker, the effectiveness of a leader will depend on both the characteristics of the leader (internal characteristics) and the favorableness of the situation (external characteristics). Furthermore, they define a leader as an individual who is given the task of directing and coordinating task-relevant activities, or the one who carries the responsibility for performing these functions when there is no appointed leader. In the case of entrepreneurs, we can affirm that the entrepreneurs are the self-appointed leaders of their organization. Therefore, using the contingency theory as our theoretical underpinning is applicable.

Consequently, we should find that there will be differences in risk propensity between the three groups of entrepreneurs as defined above. By definition, macroentrepreneurs are said to have a tremendous risk-taking propensity; therefore, we should expect a positive, significant, relationship between entrepreneurial orientation and risk taking for the macro entrepreneurs.

On the other hand, microentrepreneurs are said not to be risk takers, by definition they might recognize opportunities but consciously choose not to pursue them as they would increase their risk. As a result, we should find risk taking to be not related to the entrepreneurial orientation of microentrepreneurs.

That leaves the entrepreneurs, who are said to avoid risks that might jeopardize their established businesses. However, the Carlands also suggested that entrepreneurs will change their view of the importance of their business after they attain what they consider to be a successful level of financial achievement. In other words, we can expect an entrepreneur who has not yet reached his goal to act like a macroentrepreneur, engrossed in developing his or her business. For that reason, we expect to find a positive, significant, relationship between entrepreneurial orientation and risk taking for entrepreneurs. To summarize, the hypotheses are as follow:

H1: The influence of risk-taking propensity on entrepreneurial orientation will be contingent to the trichotomial group of entrepreneurs.

H2: Entrepreneurs with a high Carland Entrepreneurship Index (CEI) score (>25) will have risk as a dimension of entrepreneurial orientation.

H3: Entrepreneurs with a medium CEI score (16-24) will have risk as a dimension of entrepreneurial orientation.

H4: Entrepreneurs with a low CEI score (<15) will not have risk as a dimension of entrepreneurial orientation.

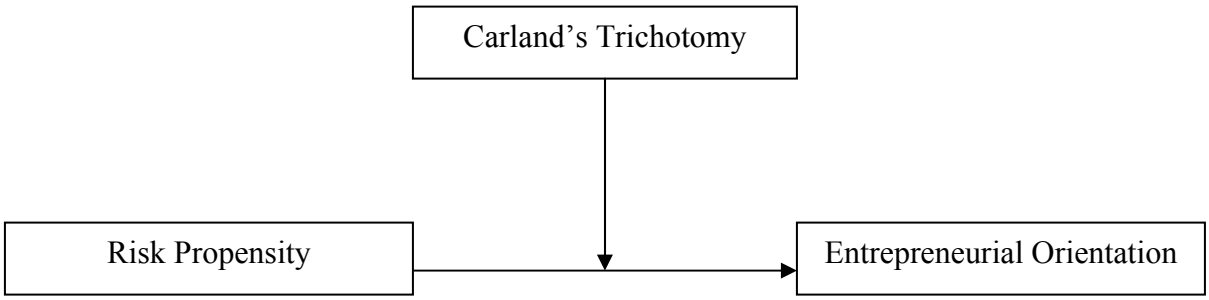
Operationalization

The entrepreneurial orientation was measured by using the Carland Entrepreneurship Index (see appendix 1). This index is composed of 33 questions that determine if someone is a microentrepreneur, an entrepreneur, or a macroentrepreneur. A score of 0-15 indicates a microentrepreneurial orientation, a score of 16-25 an entrepreneurial orientation, and a score of 26-33 reflects a macroentrepreneurial orientation. The index was developed by Jim and JoAnn Carland and has been validated through several research studies (www.thecarland.com, RISE conference, 1996). The index exists in two forms, one for active entrepreneurs and one for prospective entrepreneurs; the active entrepreneur index will be used since respondents have been selected from an active entrepreneur list.

The risk propensity of the entrepreneurs was calculated by using a scale developed by Rohrmann (2004). The scale was develop for medical/psychological field but is starting to be used in business research (Josien, 2008). The scale is composed of 12 Likert-style items and is aimed to measure one's risk propensity.

The Entrepreneurial Orientation construct was measured by using the scale developed by Covin and Slevin (1991). This scale is made of 8 Likert-style items and has been widely used in research (Dess and Lumpkin, 1996; Josien, 2008). Figure 1 summarizes our model for the research.

Figure 1: Research Model.



The data needed to carry out the research was collected by way of an electronic survey. Electronic surveys have been developing rapidly in recent years. Several questions have been raised about their ability to truly measure the respondents' answers (McConkey, Stevens, & Loudon, 2003; Boyer, Olson, Calantone, & Jackson, 2002). However, the results of the research on this issue showed that there was no major difference between an Internet survey and a mail-based survey.

One of the advantages advanced by Boyer et al. (2002) was that electronic surveys had fewer missing responses than the mail-based surveys in their sample and that electronic surveys could be coded/presented in a more flexible manner. Electronic surveys also offer an advantage in suppressing a source of data error. Data-entry error has two sources of error: the error can be made by the respondent (checking a "3" instead of a "4", even though the respondent thought that "4" was his/her answer for that question) or the error can come from the researcher who transcribed a "3" instead of the "4" that the respondent checked. Of the two errors, researcher error is the biggest one. Since the survey will be electronically sent to the respondents, they will be the ones who are going to enter their responses directly into the database; therefore, a major source of data error will be avoided. Another benefit of using an electronic survey is that there will be no transfer of respondent data from paper to a database by the researcher.

The survey was created in May 2007 and was distributed electronically to entrepreneurs from June to October 2007. The list of potential respondents was selected from the Louisiana Economic Development (LED) agency. In order to register with the LED, entrepreneurs have to meet the following definition:

> "A Small Entrepreneurship (SE) is a firm independently owned and operated; not dominant in its field of operations, which shall be determined by consideration of the business' number of employees, volume of business, financial resources, competitive status, and ownership or control of materials, processes, patents, license agreements, facilities, and sales territory, is owned by and has officers who are citizens or legal residents of the United States, all of whom are domiciled in Louisiana, and who maintain the principal business office in Louisiana; and together with its affiliate entities, has fewer than 50 full-time employees with average annual gross receipts not

> exceeding $5,000,000.00 per year for construction operations and $3,000,000.00 per year for non-construction operations, for each of the previous three tax years" (LED, 2007)

This list is composed of 3285 registered small businesses, after removing all members that didn't provide an email address and those whose email was no longer valid; the survey was sent to 1003 entrepreneurs.

Each potential respondent received an email with an explanation of what the research was to be used for and a link to access the survey itself. Once the respondent clicked on the link provided, a new window opened with the survey itself.

The standard three waves of e-mail with the survey link for the selected entrepreneur were applied, following the usual mail-based approach. The third-wave results were also used to assess if there were any differences between the respondents and late/non-respondents by conducting a T-test between the two groups (first and second-waves vs. third-wave), no significant differences were found between the waves.

In summary, a total of 103 responses were recorded for analysis out of a sample population of 1003 entrepreneurs. Therefore, the response rate for the research analysis is 10.20%.

Analysis of Responses

Once the responses were in, a reliability analysis was conducted on the scales. The result of the Cronbach Alpha analysis for the Rohrman's scale was .658 and the Covin and Slevin's scale was .733. Both scales are higher than the .6 recommended lowest acceptable limit for meaningful analysis; therefore, we proceeded to analyze our results.

As mentioned before, the Carland Entrepreneurship Index (CEI) is a set of 33 dichotomous questions. Each of these questions is scored either 0 or 1 depending on the answer for that particular question. Thus, any respondent can have a CEI score between 0 and 33. By definition, someone who scores 15 or less is categorized as a microentrepreneur. A score between 16 and 24 tags the respondent as an entrepreneur. Finally, a score of 25 and above categorize the respondent as a macroentrepreneur (Carland and Carland, 1997).

Overall, out of the 103 respondents, eight were characterized as microentrepreneurs (7.77% of the respondents), another seven were categorized as macroentrepreneurs (6.80%), and the 88 other respondents being grouped as entrepreneurs (85.44%).

The hypotheses set for the research was to determine if the separation of entrepreneurs in three groups would produce different results in the relationship between the risk taking construct and the entrepreneurial orientation construct.

In order to test the hypotheses, a regression analysis was run for the full sample and another one with splitting the file according to the type of entrepreneur as determined by the CEI score. Also, all measurements were standardized.

For the full sample, R^2 was .032; the Beta coefficient was .179 with a p-value of .147. For the macroentrepreneurs, R^2 was .128; with a Beta coefficient of .359 and a p-value of .642. For the entrepreneurs, the R^2 was .067; the Beta coefficient was .258 with a p-value of .050. Finally, for the microentrepreneurs, R^2 was .023; the Beta coefficient was -.152 and a p-value of .807. Table 1 summarizes the results.

Table 1: Result analysis

Sample	R^2	Beta	P-value
Full Sample	.032	.179	.147
Macroentrepreneurs	.128	.359	.642
Entrepreneurs	.067	.258	.05**
Microentrepreneurs	.023	-.152	.807
** significant at the .05 level			

Therefore, based on our analysis, H2 is not supported. H2 advanced that there would be a positive, significant relationship between risk and entrepreneurial orientation for macroentrepreneurs. The sign of the relationship was found to be positive (Beta of 0.359); however, with a p-value of 0.642 we have to reject that hypothesis, as the p-value indicates that there is no significant relationship between risk taking and entrepreneurial orientation for the macroentrepreneurs.

H3 is supported; H3 predicted that entrepreneurs would have a positive, significant relationship between risk and entrepreneurial orientation. With a p-value of .05 and a Beta coefficient of 0.258, this relationship stands as predicted. There is a moderate significant positive relationship between risk taking and entrepreneurial orientation for entrepreneurs.

Hypothesis H4 is also supported; H4 predicted that risk would not be related to entrepreneurial orientation for microentrepreneurs, and with a P-value of .807, this hypothesis can be safely rejected. Furthermore, the negative beta coefficient (-0.152) would tend to prove that microentrepreneurs are even risk averse; however, since the p-value is not significant we cannot draw much inference from the beta coefficient.

Finally, since different findings were obtained between the three types of entrepreneurs, we have to conclude that H1 is supported; the trichotomy of entrepreneurs has a moderating effect on the relationship of risk taking and entrepreneurial orientation.

CONCLUSIONS

The goal of the research was to find whether any differences in risk propensity exist between different groups of entrepreneurs. By separating a sample of entrepreneurs into three different sets, we were able to find that there are differences between the three kinds of entrepreneurs as defined by the Carlands (1997) as far as risk propensity is concerned. This

finding leads us to conclude that not separating entrepreneurs would be a cause for errors in research.

In our case, if we do not differentiate the kind of entrepreneurs, we would have had to conclude that there was no significant relationship between risk propensity and entrepreneurial orientation since the p-value associated with that analysis was 0.147, when in reality risk propensity is significantly related to entrepreneurial orientation for more than 85% of the sample. By simply removing the extremes of our sample, which as extremes are more likely to behave differently than the mean, we find a much different result in our analysis. As alluded to before, this result might explain why there are different findings regarding risk as an antecedent of entrepreneurial orientation, indeed the level of micro- and macroentrepreneurs seems to have an impact on the relationship between the two concepts.

Like any other research, there are some limitations to our finding. The first limitation is the fact that our sample was based on entrepreneurs located only in Louisiana, which might introduce a bias in the results. Another limitation is grounded in the relatively small number of respondents used for analysis, with 103 responses, it is not a very large sample. Obviously, replicating the research with a bigger, national, sample would add some validity to the finding.

Nevertheless, this finding opens the door for further research, if risk propensity is moderated by the kind of entrepreneur, then what of the other antecedents of entrepreneurial orientation? Obviously, further research is needed in order to analyze the other antecedents.

Another issue raised by this research is about the number of entrepreneurial sets. This research established that differences exist between three kinds of entrepreneurs; however, the separation into three kinds can be questioned. Indeed, would we have better results if we were to separate entrepreneurs into two groups? Or four? Shall we ascertain a difference in entrepreneurs based on the "lifestyle" type of entrepreneurs versus the "regular" entrepreneurs? Hence, creating a dichotomy of entrepreneurs for analysis. Or shall we split the entrepreneurs into four groups, i.e. survival, lifestyle, managed growth, and aggressive growth as developed by Barringer (2009, chapter 1)? Further analysis will be required in order to address this issue.

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APPENDIX 1
Carland Entrepreneurship Index

1. **Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.**
   - o Written objectives for this business are crucial
   - o It's enough to know the general direction you are going

2. **Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.**
   - o I like to think of myself as a skillful person
   - o I like to think of myself as a creative person

3. **Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.**
   - o I wouldn't have started this business if I hadn't been sure that it would succeed
   - o I'm never sure whether this business will succeed or not

4. **Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.**
   - o I want this business to grow and become a major force
   - o The real purpose of this business is to support my family

5. **Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.**
   - o The most important thing I do for this business is plan
   - o I am most important in day to day management of this business

6. **Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.**
   - o I like to approach situations from a sympathetic perspective
   - o I like to approach situations from an analytical perspective

7. **Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.**
   - o My primary purpose here is to survive
   - o I won't rest until we are the best

8. **Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.**
   - o A plan should be written in order to be effective
   - o An unwritten plan for development is enough

9. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I probably spend too much time with this business
- o I balance my time between this business, family and friends

10. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I tend to let my heart rule my head
- o I tend to let my head rule my heart

11. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o My priorities include a lot of things outside this business
- o One of the most important things in my life is this business

12. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I'm the one who has to do the thinking and planning
- o I'm the one who has to get things done

13. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o People who work for me, work hard
- o People who work for me, like me

14. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I look forward to the day when managing this business is simple
- o If managing gets too simple, I'll start another business

15. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I think I am a practical person
- o I think I am an imaginative person

16. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The challenge of being successful is as important as the money
- o Money, which comes with success is the most important thing

17. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I'm always looking for new ways to do things
- o I try to establish set procedures to get things done right

18. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I think it is important to be sympathetic
- o I think it is important to be logical

19. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I think that standard operating procedures are crucial
- o I enjoy the challenge of invention more than anything else

20. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I spend as much time planning as in running this business
- o I spend most of my time running this business

21. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I have found that managing this business falls into a routine
- o Nothing around here is ever routine

22. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I prefer people who are realistic
- o I prefer people who are imaginative

23. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The difference between competitors is the owner's attitude
- o We have some things which we do better than the competitors

24. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o My personal objectives revolve around this business
- o My real life is outside this business with family and friends

25. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I enjoy the idea of trying to outwit the competition
- o If you change too much, you can confuse the customers

26. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The best approach is to avoid risky moves whenever possible
- o If you want to outdo the competition you have to take some risks

27. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I hate the idea of having to borrow money
- o Borrowing is just another business decision

28. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o Quality and service aren't enough. You must have a good image
- o A fair price and good quality is all any customer really wants

29. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o People think of me as a hard worker
- o People think of me as easy to get along with

30. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The only undertakings this business makes are those that are relatively certain
- o If you want the business to grow you have to take some risks

31. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The thing I miss most about working for someone else is security
- o I don't really miss much about working for someone else

32. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I am concerned about the rights of people who work for me
- o I am concerned about the feelings of people who work for me

33. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o It is more important to see possibilities in a situation
- o It is more important to see things the way they are

VALUING INTERNET COMPANIES: A MORE ACCURATE, COMPREHENSIVE FINANCIAL MODEL

Natalie Romanova, ACA Beacon Verification Services
Marilyn M. Helms, Dalton State College
Margaret Takeda, California State University San Bernadino

ABSTRACT

This research presents alternatives on valuing Internet companies and highlights a best practices model designed to optimize accuracy of decision processes and outcomes. This innovative model is then tested and validated. The earnings per share trends, revenues per share trends, and cash flows per share trends are tested and compared to stock price trends of Amazon, Barnes and Noble, eBay, and Yahoo to determine if patterns of variable trends match stock price trends and thus can be used to predict future stock prices. When cross-appropriated for synergies that enhance strengths and minimize weaknesses, the results indicate several techniques that provide the foundation for an optimized approach to forecast the stock price of an Internet company. Based on an analysis of various valuation approaches, findings support an integrative model that forces the investor to conduct a thorough analysis of Revenues per Share (Revenue), Discounted Cash Flow (Risk), and Research and Development Investment (Research), thus resulting in a Range of Values (Range) with the added step of evaluating the accuracy of the prediction and the profit earned by the firm on a quarterly basis (Results). Based on companies studied, this comprehensive 5R Model of Stock Valuation is a useful tool for valuing Internet stock and yields accurate short and long-term results for the companies studied.

INTRODUCTION

The Internet has become a part of life for many, if not most, households in the US and most of the developed world. It is commonly used for communication, commerce, entertainment, and education. According to the PEW Internet and American Life Project national survey (Rainie, 2010), 74% of American adults (age 18 and older) use the Internet, 60% of American adults use broadband connections at home, and 55% of American adults connect to the Internet wirelessly, either through a WiFi or WiMax connection via their laptops or through their handheld device including smart phones.

Because of its growing reach and potential, entrepreneurs sought to profit from the diverse opportunities the Internet presented. Pioneering internet companies such as

Amazon.com, eBay, Overstock.com, and thousands of other e-businesses emerged in the 1990's to take advantage of the huge market potential supported by increasingly sophisticated software platforms for enabling rapid ordering, inventory control, customer data collection and marketing innovations.

However, opportunity does not guarantee profitability and sustainability. Who remembers the promise of drugstore.com? The fact is, most Internet companies created in the late 1990s and shortly after the peak of the NASDAQ in 2000 no longer exist today (Laseter & Roth, 2011). In hindsight, market valuations of Internet company value defied common sense. In many cases, the complete lack of product, sales, earnings, or profits did not stop investors from placing big price tags on these companies. Why did investors choose to ignore such fundamentals when valuing Internet companies? What factors determined the worth of an Internet business? In recent years there have been attempts to more clearly understand an Internet pricing model that aligns with traditional company valuations. The question posed in this paper is, "What is the most accurate way to determine Internet company value and what factors support a robust valuation outcome?" This question is more critical now than ever, given the high degree of economic uncertainty in the US and in the global economy. There is little room for the huge speculative errors of the past, especially given the lack of corporate reserves, bank financing and the inability for many financial institutions to weather losses. Jackson (2009) points out while most business leaders and investors agree the Internet has created a few high-profile success stories, there are many more Internet businesses that have destroyed rather than created value. His research illustrates how more recently executives have lowered expectations for the transformational potential of Internet companies and have reduced investments accordingly.

The valuation accuracy of Internet firms is needed for a number of stakeholders including venture capitalists who participate in additional funding for e-businesses as well as investors and owners. Yet traditional finance theory provides little useful guidance (see Herring, Olbrich, & Steinrucke, 2006; and Herbst, Lin, & Pantzalis, 2001). There is also little room for error in evaluation as entrepreneurial failure rates tend to increase during recessionary times. Goldenberg and Goldenberg (2009) agree it is challenging to value Internet firms and other technology-based start-ups. There is even a new debate regarding the successful LinkedIn IPO, with some prominent analysts concerned it has signaled the forming of a new Internet bubble 2.0. With the LinkedIn IPO and many more social network IPOs on the horizon including Facebook, Twitter, and Groupon, the issue of valuation of Internet companies has become important once again. Analysts predict the soaring valuations such Internet IPOs could be even bigger than the first one (Rosenbush, 2011).

The purpose of this paper is to present an approach to Internet startup valuation which optimizes the strengths of highly effective approaches while omitting the practices which have shown to be unreliable. The recommendations are designed to benefit all Internet stakeholders including investors, creditors, suppliers, employees, and consumers. That is, any person, firm or

institution with a vested interest in relying on the validity of the predicted future worth of an Internet company.

ANALYSIS OF VALUATION METHODS: A SUMMARY TO DATE OF PRACTICE AND RESULTS

Revenues Per Share Method

Xu and Cai (2006) suggest revenues are more value relevant than traditional earnings and operating cash flows. In their study, revenues outperformed other key performance measures in the valuation of dot.com companies. However, Mills (1998) finds valuation is challenging in technology-companies that are not expected to produce any immediate or significant profits. Thus traditional measures of the value associated with revenue, profits, and assets offer little guidance.

King (2000) states that most e-businesses are being valued on the comparable method, and agrees analysts look at factors like revenue trends, negative earnings trends, and the company's competitive position relative to other Internet businesses. An implicit assumption in such analysis is that every dot.com company can become the next Yahoo or Amazon success story. Yet it is again left to the analyst to determine the probability an Internet company will succeed.

Discounted Cash Flow Method

Brian Kettell (2002) believes factors driving stock prices are not found in financial statements alone. He suggests the valuation of intangible assets can be assessed in the cost of creation, capitalization of income or savings, or discounted cash flow (DCF). Kettell argues the key to successful valuation of such companies is "to apply techniques that can predict *future* cash flows, given that current profits and cash flow may give little help in forecasting the future prospects for a company" (p. 127). In the past, web traffic measures were standard Internet company performance benchmarks, however, the number of people viewing a webpage may not accurately represent the customer database.

Market capitalization-to-revenue was a primary method for valuating Internet stocks since most firms' earnings were initially negative. Kettell (2002) reports a method for calculating the stock price of an Internet company developed by Professor James Angel of Georgetown University. Angel's method was based on an assumption that an Internet company will mature into a company with predictable profits and growth and therefore can be valued with traditional pricing models. Angel's method, however, relies heavily on estimations, such as how long it will take the company to mature, of what the company will look like at maturity, as well as estimates of revenues growth, profit margins, and other important inputs (Kettell, 2002).

Methods which require guessing and the use of estimated variables are seldom accurate or appropriate.

To overcome these limitations, Kettell (2002) designed a modified DCF approach incorporating his learning into a model first introduced by Copeland, Koller and Murrin (2000). This modified approach follows a three step process: (1) start from a fixed point in the future and work back to the present, (2) use probability-weighted scenarios to address high uncertainty in an explicit way, and (3) exploit classic analytical techniques to understand the underlying economics to forecast future performances.

Gollotto and Sungsoo (2004) find conventional valuation methods like the price/earnings (P/E) ratio are of little use. In their examination of DCF earnings potential, which is a slightly modified version of the DCF, they found this method's weakness is that the potential growth and discount rate must be estimated by an analyst, thus calling into question its validity. To arrive at a future value using this method, an analyst must estimate the number of visitors a website will have each quarter, average order size, and the frequency of orders. The analyst must then project a revenue stream, pick reasonable price-earnings multiples for the stock, arrive at the future stock value in five years, then discount the results to find the present value of the Internet stock. Gollotto and Sungsoo (2004) concluded that this method presents too many opportunities for guessing, increasing its riskiness and lowering its usefulness in terms of long predictive ability.

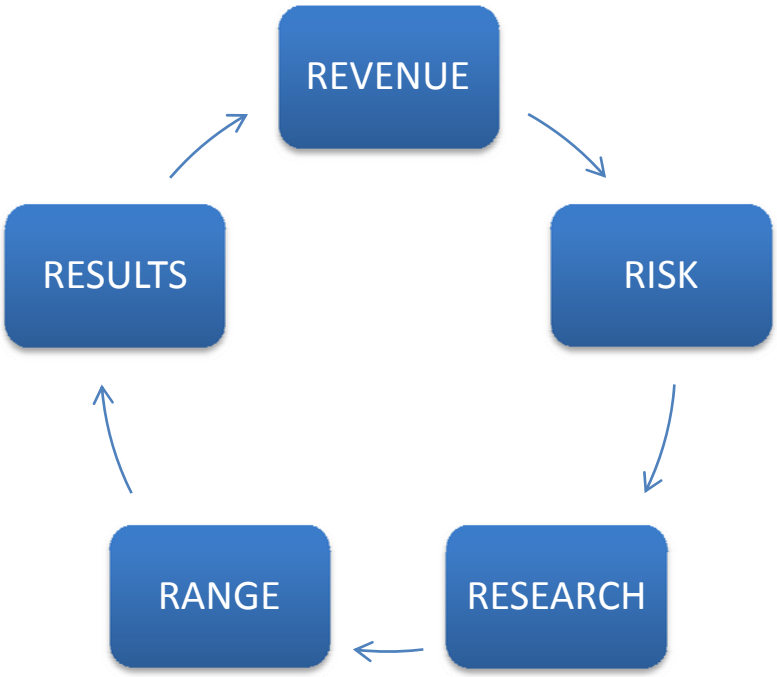
Research and Development Method

Based upon their extensive critique of various models, their weaknesses and opportunities for improvement, Gollotto and Sungsoo (2004) offered their method of valuation based on product development expenditures. The authors believe research and development (R&D) expenditures can signal both the potential future growth of a company and returns to investors, so the more a dot.com company spends on R&D, the higher their stock is valued. They found a positive and statistically significant correlation between the market appreciation of the value of a web company stock and their spending on R&D.

The Proposed 5R Model of Stock Price Valuation

Following a integrative model, as shown in Figure 1, that forces the valuation process through analysis of Revenues per Share (Revenue), Discounted Cash Flow (Risk), and Research and Development Investment (Research), thus resulting in a Range of Values (Range) with the added step of evaluating the accuracy of the prediction and the profit earned by the firm on a quarterly basis (Results), provides a more comprehensive approach and will yield the most accurate short and long term results. This proposed "5R Model of Stock Valuation" is presented as a useful tool, particularly for Internet stock valuation.

Figure 1: The 5R Model of Stock Price Valuation



1. Revenue. Xu and Cai (2006) and King (2000) suggest revenues trend are a better measure for most e-businesses because they show the company's competitive position relative to other Internet businesses. Xu and Cai (2006) claim revenues outperformed other key performance measures in valuation of dot.com companies.

2. Risk. The next factor in the model, risk, represents the DCF approach as a first step in the Internet valuation process. This approach supplies the most accurate overall valuation of the firm's potential, but lacks a long term signal of viability or sustainability. The essence of the Discounted Cash Flow is captured in the model by designating it as the "Risk" factor. Because DCF relies on the time value of money, with all future cash flows estimated and discounted to give their present values, the result is the most accurate assessment of *Risk*. It assumes:

- the time value of money (*Risk-Free Rate*) where investors would rather have cash immediately than having to wait and must therefore be compensated by paying for the delay, and
- a risk premium (*Risk Premium Rate*) - which reflects the extra return investors demand because they want to be compensated for the risk the cash flow might not materialize after all.

3. Research. Gollotto and Sungsoo (2004) believe research and development expenditures and stock price have a positive correlation. It seems logical and fundamental that a company adequately investing in its development can be expected to have a longer life. By analyzing the degree to which the start-up leaders and investors are committed to a sustainable

business model, and not focusing solely on the short term, the higher the success rate of the firm and the more accurate the valuation will be.

4. Range. It is important to look at the valuation of an Internet business as a range of prices. The lower end of the range is what one would pay with a high risk premium and the highest end of the range is a price that an investor would be willing to pay with a low risk premium.

5. Results. The bottom line for success of any venture is the ability to sustain a profit over time. This is why a comprehensive model should include the ongoing evaluation of the performance of the firm and provide for regular re-assessment of valuation. Thus, a quarterly review of firm performance (profitability) serves as the quality control check necessary to ensure the process is working. The model is iterative. If the results are not "on target" the valuation process (beginning with Step 1 and revenue) begins anew.

The 5R Model of Stock Valuation is a more comprehensive approach for predicting future stock values. Use of the model should provide investors with more confidence in their decision to acquire or invest in an Internet start-up venture.

EVALUATING THE 5R MODEL: DATA ANALYSIS AND RESULTS

To initially test the 5R model, Amazon, Barnes and Noble, EBay, and Yahoo Internet valuation experiences were sampled to determine if variable trends match stock price trends, and thus can be used to predict future stock prices. The four companies were chosen based on their longer history as Internet companies as well as their growth, popularity and the ease of finding the necessary data for analysis. While the sample is a convenience sample, it is necessary for this exploratory research and these key companies have been the focus of similar analysis (see Jackson, 2008).

R1: Revenues per Share Trends

Xu and Cai (2006) and King (2000) suggest revenues trend is a solid measure for most e-businesses. Analysts consider factors including revenue trends and the company's competitive position relative to other Internet businesses. Xu and Cai (2006) claim revenues are more relevant than traditional earnings and operating cash flows. Their study reveals revenues outperformed other key performance measures in the valuation of dot.com companies. Table 1 includes revenues per share as well as stock prices of Amazon, Barnes and Noble, EBay, and Yahoo from 1998 through 2006.

Table 1: Revenues per Share and Stock Prices								
	Revenues Per Share Trend				Stock Price			
	Amazon	Barnes and Noble	EBay	Yahoo	Amazon	Barnes and Noble	EBay	Yahoo
12/31/1998	$1.92	$43.71	$0.05	$0.26	$53.54	$29.58	$10.05	$29.62
12/31/1999	$4.75	$53.20	$0.23	$0.55	$76.12	$14.36	$15.65	$108.17
12/31/2000	$7.73	$67.27	$0.40	$0.98	$15.56	$18.45	$8.25	$15.03
12/31/2001	$8.37	$72.47	$0.68	$0.62	$10.82	$20.60	$16.73	$8.87
12/31/2002	$10.14	$81.13	$0.98	$0.80	$18.89	$12.58	$16.95	$8.18
12/31/2003	$13.05	$86.18	$1.67	$1.23	$52.62	$22.87	$32.31	$22.51
12/31/2004	$17.16	$69.36	$2.44	$2.58	$44.29	$31.16	$58.17	$37.68
12/31/2005	$20.41	$76.53	$3.24	$3.68	$47.15	$41.52	$43.22	$39.18
12/31/2006	$25.87	$80.83	$4.36	$4.49	$39.46	$39.24	$30.07	$25.54

Revenues per share as shown on Figure 2 are rising smoothly for Amazon, EBay, and Yahoo. Barnes and Noble fell in 2004, but then recovered to continue the rise. Considering stock prices in Figure 3, the situation is drastically different. Stock prices rise and fall without a pattern.

Figure 2: Revenues Per Share

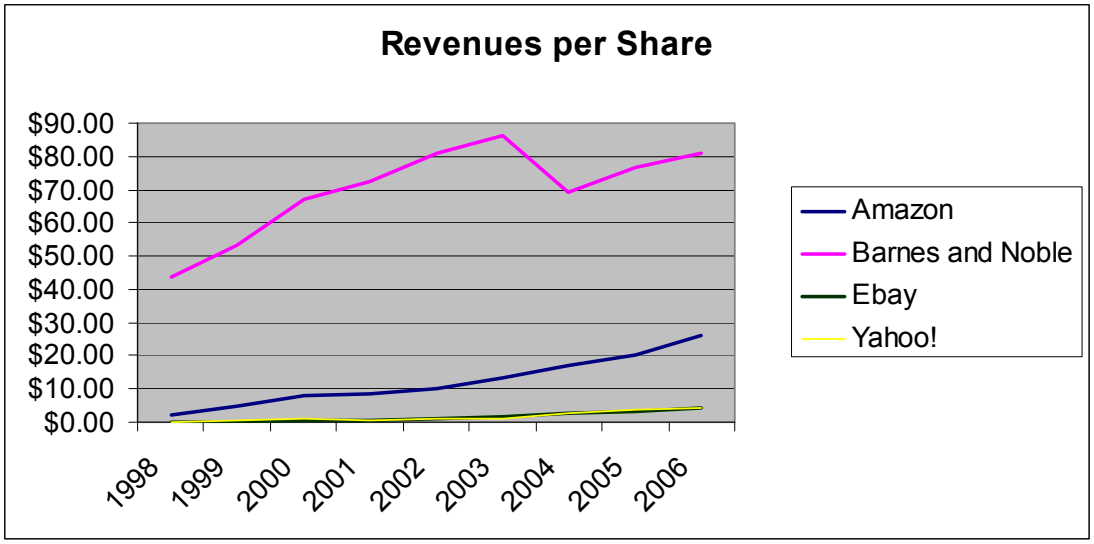
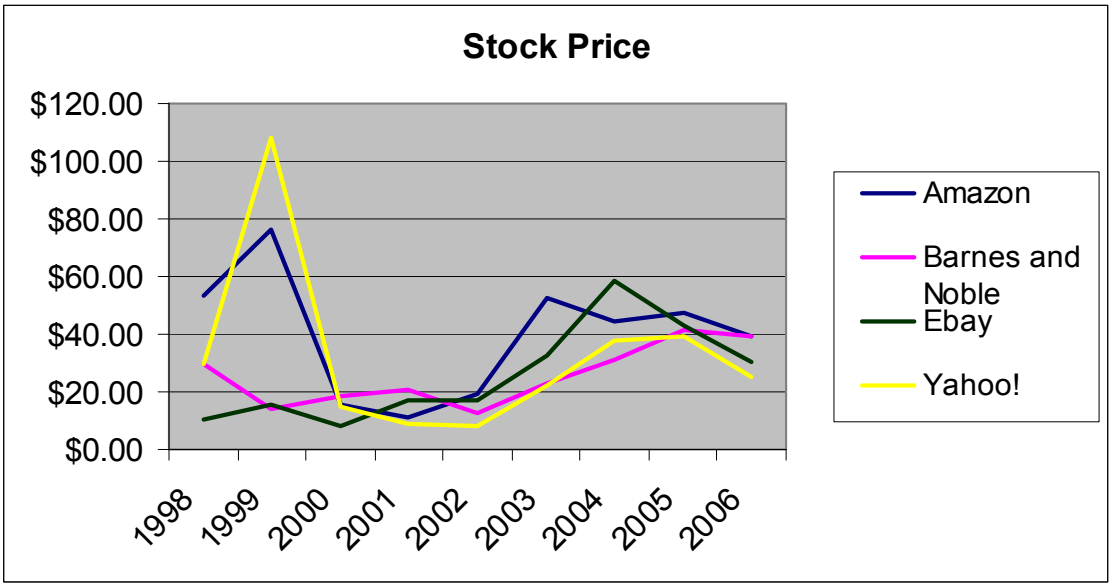


Figure 3: Stock Prices



Amazon's stock price fell from $76.12 per share to $15.56 at the end of 2000. The stock price gradually recovered to $52.62 in 2003 only to fall again. Amazon's smooth revenues-per-share trend line does not look anything like Amazon's choppy share-price trend line. The general trend of Amazon's stock price is down, which makes it difficult to say whether or not investors should pay attention to the revenues per share trend in predicting stock price and trends. Yahoo's stock price fell from $108.17 to $15.03 in 2000 while revenues per share rose by 43 cents. It is curious when Barnes and Noble's revenues per share dropped in 2004, its stock price continued to rise. On its own, as shown in Table 2, the trend is not statistically significant in forecasting stock price.

Table 2: Significance of Revenues per Share in Predicting Stock Price	
Results	
R Square	1%
Significance (95%)	55%
	P-values
Revenue/Share	55%

However, it is important to pay attention to this trend because to survive in the market, a firm should generate positive revenues. An investor should always take this measure into consideration, but should not rely solely on it to predict stock price or decide to purchase the stock.

R2: Risk

Discounted cash flow is so far the only traditional method successfully used in valuing Internet stock. Fernandez (2002) and Kettell (2002) apply different variations of this method to predict the stock price of dot.com companies. Fred Decosimo (personal communication, April 30, 2009), the owner and principle of a leading regional CPA firm with offices in Tennessee, Georgia, Ohio and the Cayman Islands (http://www.decosimo.com/www) agrees, whether Internet or traditional, firms need profitable, positive cash flows. Peter Thiel (personal communication, April 29, 2009), the cofounder of PayPal, admitted DCF is the most widely used tool for valuating online businesses.

The analysis will attempt to predict future cash flows of Amazon, Barnes and Noble, and EBay, estimate their growth rates, and required rates of return, and finally discount these cash flows estimate the present value of the companies' stocks. While the calculated price is not, a priori, expected to match the real price, the key contribution will be to explain the discrepancies.

The DCF method estimates the stock price based on the sum of estimated future cash flows discounted back to the present at the investors' required rate of return. The required rate of return is calculated by the following formula: $r = r_{rf} + (r_m - r_{rf})b_i$

Where, r = required rate of return on investment; r_{rf} = risk-free rate; r_m = market rate, and b_i = stock beta. Table 3 shows calculations of required rate of return for Amazon, Barnes and Noble, and EBay.

Table 3: Calculations of the Required Rate of Return

	r_{rf}	r_m	b_i	r_i
Amazon	4.4%	12.0%	1.2	13.5%
Barnes and Noble	4.4%	12.0%	1.15	13.1%
EBay	4.4%	12.0%	1.1	12.8%

Another important ingredient of DCF calculations is the growth rate. It is calculated as follows:

$$g = \left(\frac{P_{2006}}{P_{1998}}\right)^{1/8} - 1, \text{ for an eight-year period}$$

$$g = \left(\frac{P_{2006}}{P_{2001}}\right)^{1/5} - 1, \text{ for a five-year period}$$

Table 4 below reflects the calculated growth rates for the three companies.

Table 4: Calculated Growth Rates									
	EPS growth %			RPS growth %			CFPS growth %		
	Amazon	Barnes and Noble	EBay	Amazon	Barnes and Noble	EBay	Amazon	Barnes and Noble	EBay
8-years	0.00	14.01	86.68	38.42	7.99	74.81	0.00	11.39	84.97
5-years	*4	17.47	58.09	25.32	2.21	45.01	**35.24	9.10	53.65
* Calculations are made based on 3-year data ** Calculations are made based on 4-year data									

Growth rates for Amazon and EBay are extremely high and the rapid stock price growth for Internet companies is attributed primarily to the abnormally high growth rates of these companies. However, in reality these rates cannot be sustained. In fact, over the long-term, these companies cannot grow faster than the economy growth rate, which historically has been about 6.5%. Therefore, a 6.5% growth rate, or *g*, is used in DCF model.

Barnes and Noble's growth rate is not as high because the company's primary source of sales comes from traditional bookstores and only part of sales comes from online customers. The firm's growth rate was 2.2% for the past five years, so the company is estimated to grow at 4% during the next five years, gradually shifting more business to the Internet, according to Value Line (www.valueline.com). Lastly, Table 5 shows future cash flows according to Value Line predictions for the next five years, and the resulting stock price based on these cash flows as calculated by DCF model:

$$P_{2006} = \frac{CF_{2007}}{(1+r)^1} + \frac{CF_{2008}}{(1+r)^2} + \frac{CF_{2009}}{(1+r)^3} + \frac{CF_{2010}}{(1+r)^4} + \frac{CF_{2011}}{(1+r)^5} + \frac{\frac{CF_{2011}(1+g)}{r-g}}{(1+r)^5}$$

Table 5: Future Cash Flows			
	Future Cash Flows		
	Amazon	Barnes and Noble	EBay
12/31/2007	1.85	4.45	1.70
12/31/2008	2.05	4.60	1.90
12/31/2009	2.65	5.07	2.22
12/31/2010	3.25	5.53	2.53
12/31/2011	3.85	6.00	2.85
12/31/2012	30.98	36.83	26.60
Calc. P 2006	$40.01	$54.46	$34.28
Actual P 2006	$39.46	$39.24	$30.07
Discrepancy	$0.55	$15.22	$4.21

Amazon's calculated stock price came very close to the actual trading price in 2006 with a mere 55 cent discrepancy. Based on the DCF results, all three companies are undervalued: Amazon by $0.55, Barnes and Noble by $15.22, and EBay by $4.21. Generally, when predicted stock price exceeds the actual price per share it is likely attributed to uncertainty of investors on the future of the company and its ability to generate cash and revenues to pay investors and support the intrinsic value of its stock. On the other hand, if results were lower than the stock price it would signal excess investors' confidence and speculation about the emerging new economy which was often cited in the media at the turn of the 21st century. Investors thought super growth Internet companies could only go up and were willing to pay more for a share of Internet stock than the company could support with its assets (or rather lack of assets), cash, and revenues.

There are numerous estimations and projections involved in calculating DCF, and often if reality deviates from projections. If the stock was undervalued, the investor made a good deal, but if it was overvalued, then the investor lost money. The model is sensitive to change in variables. For example, Value Line measures Amazon's beta, or risk, at 1.2 relative to the market. Some investors might believe that its beta is 1.3. If the higher beta is used in the DCF calculations, Amazon's price becomes $35.88, making the actual price appearing to be overvalued. Table 6 shows the actual growth rate and investors' required rate of return that were needed to arrive at the price at which the stock was actually trading.

Table 6: Actual Growth Rate and Investors' Required Rate of Return

	Amazon	Barnes and Noble	EBay
g	6.38%	-1.60%	5.40%
k	13.617%	17.11%	13.65%

Everything else held constant, Amazon's growth rate was expected to be 6.38%, Barnes and Noble's -1.6%, and EBay's 5.4%. Each growth rates is lower than the estimated rates used in DCF calculations. In Barnes and Noble's case, the growth rate was negative. Everything else held constant, Amazon's required rate of return was expected to be 13.617%, Barnes and Noble's 17.11%, and EBay's 13.65%. Each required rate of return is higher than the estimated rates used in DCF calculations. These results show how sensitive the DCF model is to the smallest changes in estimates. However, DCF appears to be the most reliable and concrete method of prediction of an Internet company's stock price.

R3: Research

Gollotto and Sungsoo (2004) believe R & D and stock price are positively correlated and a change in research and development expenditures can signal a potential change in the stock price. Research and development expenses for Amazon consist primarily of technology

development directed to simplify and improve the customer shopping experience. Amazon strives to create and enhance the specialized, proprietary software unique to their business and continually invests in several areas of technology, including seller platforms, web services, and digital initiatives (*Amazon Annual Report,* 2006, p. 6). For EBay, R&D expenses are primarily employee compensation, payments to outside contractors, depreciation on equipment used for development, and certain corporate overhead allocations (*EBay Annual Report,* 2003, p.27). Table 7 provides R&D data on a per share basis.

Table 7: R & D Date on a per Share Basis

	Research and Development Expense per Share		Stock Price	
	EBay	**Amazon**	**EBay**	**Amazon**
1995	0	$0.012	0	0
1996	$0.002	$0.145	0	0
1997	$0.052	$0.522	0	$5.02
1998	$0.005	$0.874	$10.05	$53.54
1999	$0.025	$0.463	$15.65	$76.12
2000	$0.052	$0.754	$8.25	$15.56
2001	$0.068	$0.646	$16.73	$10.82
2002	$0.084	$0.556	$16.95	$18.89
2003	$0.123	$0.515	$32.31	$52.62
2004	$0.180	$0.691	$58.17	$44.29
2005	$0.234	$1.084	$43.22	$47.15
2006	$0.361	$1.599	$30.07	$39.46

Figure 4 represents R & D expenses on a per share basis and shows EBay has experienced a more steady growth of R&D expenses over the years, while Amazon took a sudden dip in 1999, which is attributed to the burst of the Internet bubble. This burst is still the subject of extensive analysis and discussion according to Constantinides (2004) who agrees the Internet meltdown followed almost seven years of staggering growth and often "irrational exuberance". Amazon's R&D fell from 87 cents per share to 46 cents per share. It then recovered to 75 cents per share in 2000, but continued to fall slightly each year until 2004. In 2006 R&D expenditures reached $1.59 per share. The overall trend has been for R&D expenses to increase for both companies.

Figure 4: R & D Expenses on a per Share Basis

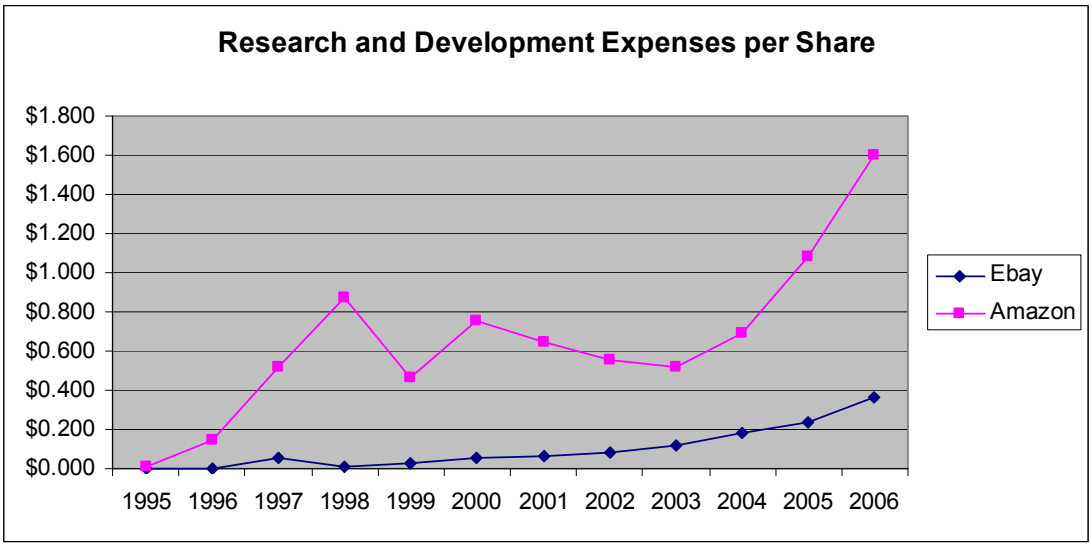


Figure 5: Amazon's Stock Price

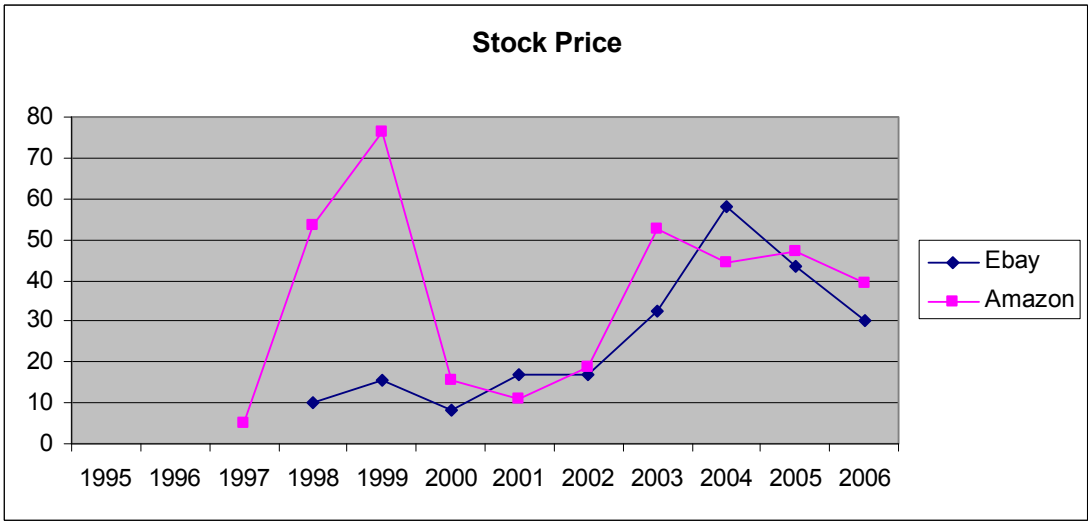
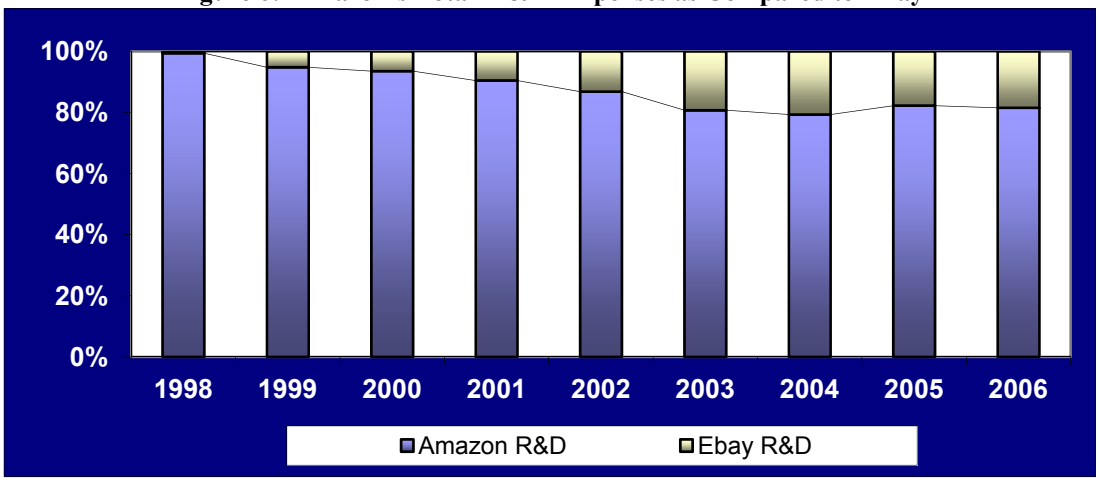


Figure 6: Amazon's Total R & D Expenses as Compared to EBay



As shown in Figure 5, Amazon's stock price skyrocketed from $5.02 in 1997 to $76.12 in 1999 effectively growing 289.4% annually. The stock price then plummeted to $15.56 per share due to the burst of the Internet bubble in 2000. In 2003, Amazon was worth $52.62 per share, after which its value for investors started to fall. EBay enjoyed a more steady growth of stock price and took a smaller fall in 2000 from $15.65 to $8.25. It then gradually rose to $58.17 in 2004, after which the price started to fall again. The general trend of R&D is up; however, it is quite the opposite for the stock price for both Amazon and EBay. Figure 6 shows how Amazon's total R&D expenses compare to that of EBay. From this graph it is evident Amazon has spent more on R&D than EBay. Thus, supposedly Amazon's stock price should on average be higher than EBay's stock price, yet this is not the case in Figure 7.

Figure 7: Stock Prices of Amazon and EBay

Amazon's price is significantly higher in 1998 to 2000 and again in 2003 but EBay's stock is worth nearly as much as Amazon's in 2002, 2005, and 2006. In 2001 and-2004 EBay's stock is valued higher than Amazon's. It appears stock price does not move proportionately with R&D expenses. Certainly, higher expenses in R&D may signal potential growth, but this factor alone cannot accurately predict stock value, therefore R&D is only one factor in the proposed model.

R4: Range

Given the volatile nature of Internet valuation, Internet stock prices should be viewed as a range. Copeland, Koller, and Murrin (2000) used valuation by scenarios and DCF to arrive at $66 per share of Amazon and provided four scenarios for ten years ranging from most optimistic to least optimistic. They divided the sum of the different equity values by the number of shares outstanding to arrive at $66 per share. The authors, however, did not allocate any probability to a voluntary reorganization or bankruptcy for the company (Fernandez, 2002).
Fernandez's (2002) valuation by simulation and DCF is similar to that of Copeland, Koller and Murrin (2000), but Fernandez assigned higher a probability to the more pessimistic scenarios, assigning a probability of 43.43% of bankruptcy or voluntarily reorganization, which reduced the share price to $21.

Fernandez (2002) suggests an Internet firm should be valued by first assuming the year in which a company will become consolidated or will experience moderate growth. The capitalization of the company in that year should be appreciated at the required rate of return. Based on how probable the calculated capitalization seems, one must determine whether the current price per share is reasonable, "another way would be to compare the cash flows required to justify the capitalization" (p. 259). Fernandez (2002) concludes if you cannot find a rational explanation for a share to continue rising, you can be sure that it will decline.

R5: Results

The final step of the valuation process must include evaluation of firm results. That is, a planned schedule of analysis that includes performance-based measures of: profitability, market share growth, investment in new technologies, and other indicators of sustainable business processes and outcomes. Whether the CEO has invested a significant amount of personal assets in the company should also be considered. As suggested by Fred Decosimo (personal communication, April 30, 2009), if CEOs are not investing in his their own firm they are less motivated to work hard to make the company successful.

The results-based analysis, along with the research, risk analysis, revenue per share analysis and pricing based upon a range of values, all allow an individual investor to weight the overall health of an Internet company business model. If any one factor is not within a healthy

range (the figure is not diamond-shaped but rather "bloated" in one or two Rs and weak in the others) then there is cause for further research and some concern. If an investor is unable to obtain firm performance measures, or cannot identify a healthy price range, these are warning signs as well. Simply the process of researching and clarifying each of the 5Rs goes a long way toward avoiding the irrational exuberance warned about when the first Internet bubble burst.

THE 5R MODEL
DISCUSSION, CONCLUSION, AND AREAS FOR FUTURE RESEARCH

In the end, it seems Cohan (1999) was right when he compared Internet stock to hot potatoes. Investors tend to buy e-company's stock, but sell as soon as the price goes up. Investors fear losing their investments due to the volatile nature of the stock. Now that a wave of social networks IPOs is upon us, the 5R model is proposed as a timely, helpful tool designed to help investors rationally determine for themselves whether an Internet start-up has the potential to support its stock price, or whether the stock price reflects unreasonably high hopes of overly optimistic investors.

For example, major financial experts are not convinced that LinkedIn's 143% rise in stock price on the first day of trading reflects the true value of the firm. Ovide (2011) points out that at the current stock price, LinkedIn is valued at $10.5 billion, which is 43 times its 2010 revenue. Demos and Waters (2011)suggests that the enthusiasm with which investors are buying LinkedIn shares is reminiscent of the year 2000 optimism, with LinkedIn being a business professional oriented social networking site with 100 million users who only update their profile on average once a month. If LinkedIn is commanding such high valuation, then what kind of stock prices can be expected from Facebook, with 600 million users, emailing platforms, e-commerce, business marketing, and a host of other services well beyond the scope and scale of LinkedIn? Judging by the high level of enthusiasm and the great lengths that investors will go to invest in this private company, one can only speculate about the potential stock prices that await Facebook once it goes public (Ruslin, 2011). One example is Goldman Sachs. The firm merely received a "slap on the wrist" from the SEC when it was discovered that Goldman was selling $1.5 billion worth of Facebook shares to its highest net worth clients. Goldman was able to do this due to a technicality that allowed all of Goldman's clients to be counted as one investor, thus enabling to keep Facebook's number of investors below the limit of 500 (Alden, 2011).

Today's biggest wave of immense interest in the Internet companies since 2000 signals the beginning of a new era – the era of new generation of Internet companies going public. In such times an average investor is in need of a tool to calculate the true value of a company instead of going along with the frenzied investors who would pay anything to obtain a hot, new stock. Investors who do not wish to buy a hot potato, but wish to invest their money wisely and long-term will benefit from applying the 5R model in their research.

RELYING ON THE 5R MODEL ADVICE FOR INVESTORS

Traditional advice for investing in an Internet company remains the same. It is important to thoroughly study the nature of the business and to weigh the possibilities of different outcomes. It is easier to predict future cash flows for an established Internet firm. But if it is a new firm, investors should consider if there is a large market for the product or service, if the product or service is so valuable it will be possible to charge a price that far exceeds the cost, and if there are significant barriers to entry that can deter potential entrants for both start-ups and existing companies.

Then for testing purposes, the 5R model can be employed as a validity check, to ensure all relevant components of sound investment strategy are considered. The 5R method is additional insurance against hasty, irrational exuberant speculation and a risk management tool which forces the individual investor to consider alternative values of the same offering. Taken together, the components of the 5R will help guard against investment in a bubble, since by its very definition the model requires bubble scrutiny.

AREAS FOR FUTURE RESEARCH

As Internet start-ups continue to emerge, learning from incumbents in the first generation of Internet start-ups is important. While the strategies are evolving, chaotic, and often exist in uncertain environments, there is still a need for proper valuation. Future research should test the proposed model with a larger sample of Internet-based companies and also include additional longitudinal data to validate the exploratory findings. Additional research should test the model with Internet-only companies as well as bricks-and-mortar companies who also have an Internet presence to validate the efficacy of the model. Confirmation of the model with start-up Internet companies and Internet companies with a longer history are also needed. Finally case studies of valuation in Internet companies are needed for finance and other business courses to train students (i.e., future investors, business leaders, and entrepreneurs) on the various valuation options and their strengths and weaknesses.

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ON HEIDEGGER, 'THEORY OF NOTHING' AND ENTREPRENEURSHIP A PROLOGUE TO AN ENTREPRENEURIAL PHILOSOPHY OF NOTHING

Håvard Åsvoll, Norwegian University of Science and Technology

ABSTRACT

This paper proposes that entrepreneurship is often considered a decision-making paradigm and that the equally important 'theory of Nothing' has not received the attention it deserves. With reference to Heidegger's existence oriented philosophy, the paper indicates how nothing can be a condition for an entrepreneurial decision-making paradigm. It is suggested that the 'theory of Nothing' bears the possibility of further development and can re-create the entrepreneurial paradigm of decision making. This may also indicate a structure for understanding the possibilities in entrepreneurship research.

INTRODUCTION

> "Since capitalist enterprise, by its very achievements, tends to automatize progress, we conclude that it tends to make itself superfluous-to break to pieces under the pressure of its own success" (Schumpeter 1987: 134).

> "… because Dasein is lost in the 'they', it must first find itself…it must be shown to itself in its possible authenticity" (Heidegger 1962: 268)

Heidegger's potential in offering insights into entrepreneurial research has not received much attention, despite the striking resemblance between the entrepreneurial and economic need for newness (Schumpeter 1987) and a reading of Heidegger's thinking as the philosophy of newness (Chattopadhyay and Srivastava 2007). Shionoya (2010) is one of the few who has commented upon this issue and observes that;

> *"Schumpeter, from the Austrian school of economics, criticized the static nature of mainstream economics and took a unique approach to dynamic economics based on the concept of innovation and development. However, his economic theory is part of his concept of a universal social science: he had a*

> *much broader vision of society based on a typology of Dasein, though he did not use this ontological term" (: 191).*

In short, Heidegger's notion of newness involves relinquishing the 'automatized' and 'practical' self-understanding (Dasein) which may block us from being open to possibilities. Entrepreneurship is often understood as the art of the new: new ventures, new companies, new products, innovations and so on. It would thus seem to be contradictory to speak about 'nothing' and the importance of 'a theory of Nothing' with regard to the constructive creation of new products, ventures and the like. Instead of embracing the oxymoronic and paradoxical nature of entrepreneurial nothingness, which considers entrepreneurial being and nothing as mutually exclusive aspects, I offer the view that it is a valid and useful addition and condition to the lexicon of entrepreneurial decision-making practices. It is incorrect to view 'nothing' and entrepreneurial as being opposites. This applies equally to lay thinking and the very theory or essence of entrepreneurship. I will also claim that there is much to be gained or recalled in analytic terms from understanding a 'theory of Nothing'. It is possible to rethink certain taken-for-granted notions about what kind of decision-making entrepreneurship consists of, and also expand the notion of the entrepreneurial decision making.

This is not an effort to completely translate the sublime and often very difficult philosophical thinking of Heidegger into the realm of entrepreneurship studies, or to enter into a difficult sorting out the different periods and writings of Heidegger's thinking. There is no intention to offer a 'grand' and novel theory of entrepreneurship. Instead I will show how some aspects of how entrepreneurship and decision making have usually been interlinked and discussed, and suggest how this relationship can be recreated. Even though I will talk of a 'theory of Nothing', I do not claim to have such a theory. The way of thinking is to indicate that non-being and nothingness show something beyond theory and language. This is a kind of phenomenology where the phenomena and subjectivity of human experience become more valued. Heidegger (1962) argues that much of the Western tradition has merely assumed a general theory about being human based on limited phenomena without adequately examining the phenomena themselves and without letting that phenomena guide any theorizing. In this sense, this paper should be read as a prologue to a theory which does not yet exist or perhaps never will exist, because when it becomes fully blown and theoretically articulated the theory will cease to exist. In other words, the recognition of Being can never be as clearly evident as theoretical recognition, and the quality of Nothing involves the abandonment of preconceived notions and logical puzzles. The Nothing denies the "is" of something. This phenomenology matches an interest in the experience as it unfolds. It is, in Heidegger's thinking (1962), not by means of conceptual analysis, but through the (emotional) experience of Nothing that we can learn what we basically are as human beings, and hence how the nature of entrepreneurial practice could be understood. First, this paper presents the rationale behind the 'theory of Nothing' and the features of a decision-making paradigm. Second, an outline for a 'theory of

Nothing' and implications for re-searching entrepreneurship are described. This is followed by some concluding remarks.

ON HEIDEGGER AND 'THEORY OF NOTHING'

Heidegger's main interest was (fundamental) ontology or the study of being. This paper draws on several texts written by Heidegger (1962, 1977, 1993). These texts may be considered to have little in common and therefore it can be argued that they should not be used together. I claim, however, that the texts share the same motive; namely an exploration of the question of the meaning of being. That is to say, Heidegger (1962, 1977, 1993) seeks to recall perplexity about the question of Being as one of the basic issues of being, metaphysics and technology.

In his first Magnus opus, *Being and Time* (Sein und Zeit), he attempted to access being (Sein) by means of phenomenological analysis of human existence (Dasein) in respect to its temporal and historical character. According to Heidegger (1962) the question about *the meaning* of Being has been neglected. This is the main concern in his texts, and also central in outlining the 'theory of Nothing'. More specifically I draw upon Heidegger's texts (1962, 1977, 1993) *Being and Time, The question concerning Technology* and *What is Metaphysics?* in order to show some aspects of how nothing can be a condition for existence in a modern scientific approach such as an entrepreneurial decision-making research paradigm. Moreover, due to this negligence of the meaning of Being, man (the 'who' of everyday Dasein is Das Man or man) has lost almost all his connections with Being and lives now in a technical and artificial world (Heidegger 1962, 1977, 1993). That is to say, man has lost his *ground* and is not-at-home anymore. By taking the question of Being as the clue, Heidegger (1962) is concerned about the Being behind all beings or entities, which can be grasped by the self-understanding of *Dasein* (human being). The human being (Dasein) is always already (being-in-the-world) in a process of opening entities into our world involvement. In this way we categorically perceive entities *as* entities either as themselves or as something they are not, but always for-the-sake of some circumspective activity (Heidegger 1977). It is being-in-the-world (In-der-Welt-Sein) and this perception 'for-the-sake' of which also constitutes nothing or the experience of nothingness.

Nothingness and the experience of 'Nothing'

Why are there beings rather than nothing? That is the question, Heidegger (1993) asserts in his famous *What is Metaphysics?* According to Heidegger (1993) it is essential how we encounter this question. By encounter he does not mean merely to hear and read about it as an interrogative formulation but to ask the question, to bring it about, i.e. feels its inevitability. It is important to know that nothing or nothingness is not the void brought about by imagining that everything that exists is gone, and it is not the result of the logical act of universal negation. The question can be posed as a whole and also from the essential position of the existence (Dasein).

In this way Heidegger (1993) challenges the authority of logic and its prime representative science. Science only deals with something, and it accepts nothing of the nothing, according to Heidegger (1993). Rhetorically he asks; how can the nothing be tested, verified? Science does not want trouble about the nothing. Science says Heidegger (1993:84) *"wishes to know nothing of the nothing."* As Richard Polt (1999: 123) comments;

> *"Heidegger starts by emphasizing science's 'submission to beings themselves'. Good chemists, economists or historians all have this in common: they want to know what is the case, what is true and only that. They are devoted to beings alone – and nothing else."*

It is this assumption of science that Heidegger rejected in his elaboration of the nothing (das Nichts). Science is impotent to describe the nothing, and science in expressing its own proper essence, never calls upon the nothing for help (Heidegger 1993).

Nothing and the world are intertwined, they exists as the shadow in the presence of light. The world can be understood as nothing. The world is the nothing that originally (*nihil originarium*) temporalizes itself and simply arises in and with the temporalizing (*Zeitigung*). We may call the world the original nothing (*nihil originarium*). Moreover, in *What is Metaphysics?* he develops another theme that is not seen in *Being and Time* which is the relationship between being and nothing. He states that in *"the being of beings the nihilation (Nichten) of nothing occurs"* (Heidegger 1993: 91). Heidegger takes nothing as to be equivalent to being.

This equalization neatly captures the basic meaning of nothing in Heidegger's usage, namely, as something experienced by *Dasein*'s *Angst*, equivalent to being, and functioning through negation and withdrawal. In *Being and Time*, the most extensive discussion of nothing is found. The work illustrates how nothing is revealed and experienced in *Angst* (I use the German term Angst instead of the English translation anxiety, because the concept of Angst refers more to a human condition than' anxiety' which may be more associated with a psychopathological disorder.)

So how can we approach the nothing? Heidegger (1962) opens the window to the nothing through Angst. He describes ways in which a person can encounter nothingness, and thereby takes hold of his or her existence authentically. This is not accomplished by simply doing a cognitive exercise. According to Heidegger (1960) it is (only) *the feeling* of Angst that genuinely reveals nothingness, i.e. the possible not-being of everything that I am. This experience is always possible for Dasein (human understanding) and it does not need an unusual event to rouse it, because, *"its sway is as thorough going as its possible occasionings are trivial. It is always ready, though it only seldom springs, and we are snatched away and left hanging"* (Heidegger 1993: 93).

Angst should not be equated with a negative experience. Instead it can be understood and seized as a precondition for waking up and being-there. In ordinary everyday life we tend to be

locked into routine, and being preoccupied by practical tasks (Zuhanden) and busy with their execution we rarely question the sense of the whole system of cares, goals, and activities. Angst relieves us from the automatized world and enables us to make our own personal decisions. Angst can be the means to become our own selves. By prompting us to become genuine individuals, it can make our lives authentic. This Angst is a way of curling the mind away from logic towards questions without answers. Also it is not possible to pursue Angst and nothing, because neither can be grasped through conscious deliberate intention. For Heidegger (1962) this meditative and transforming 'step-back' can allow us to encounter the world authentically, and allow us to become attuned to the openness or nothingness pervading all things. In Heidegger's later work on the essence of modern technology the Angst and 'homelessness'-ridden project of human existence is explored further, especially with regard to naive forms of technology where existence becomes quantified objects which can be manipulated, calculated and ordered.

Technology and enframing

In his later work *The Question Concerning Technology* (Heidegger 1977), he states that the essence (Wesen) of modern technology lies in *Enframing* (Gestell) or revealing. This is challenging and ordering, and includes being reminded of and thinking how the phenomenon of technology comes to be present and endures. Heidegger (1977) argues that the traditional ways of conceiving technology are inadequate. Neither the anthropological view that technology is one form of human activity among many (e.g. including also *praxis* and *theoria),* nor the instrumentalist view that technology is a neutral tool, a means to an end that can be calculated and controlled by conscious human direction, grasps the essence of modern technology. The distinctive mode of technology always stands prior to any conscious act taken on the basis of what is already revealed. Heidegger (1977: 17 and 26) states that;

> *"Everywhere everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering. Whatever is ordered about in this way has its own standing. We call it the standing-reserve [Bestand]"* …
>
> Thus … *"Where Enframing holds sway, the regulating and securing of standing in reserve marks all. They no longer even allow their own fundamental characteristic of revealing to appear ... Thus the challenging Enframing conceals not only a former way of revealing or bringing-forth, but it conceals itself and with it that wherein unconcealment, e.g., truth, comes to pass."*

That is to say, man should take technology not only as an instrument at hand, but as a way of revealing. Heidegger (1977) states that metaphysics 'represents' being as beings. This

kind of representing is a displacement in being where beings are no longer experienced as they are but as things determined at one's disposal. In this determination beings are set aside, as a standing by (Bestand) in which time and space are abstracted and have no real, ontological bearing. Heidegger (1977) refers to this dislocation as 'the standing-reserve', a spatial determination that distorts time and in turn affects how we consider time and being. One example is the understanding of clock time. It is essentially a spatial relation to time in which temporality itself is conceived as a sequence of nows. The nows determine time in a specific way that, according to Heidegger (1977), reinforces the technological understanding of progress. Time is repeated and secures its mastery over nature. This is an interpretation in which time itself is subordinated to the desire to gain control. Here, the repetition necessary in experimentation is a manner of flattening down time so that it can be repeated which makes time conform to a series of tests that can assure us of certain results or a method to attain such results. These results are value determinations and such determinations stand before, and then subsequently as, the presencing of being. It is about getting things stored and kept "standing by" for future use, manipulation and ordering. Modern technology takes what is, transforms it and keeps it in "standing reserve" until it is wanted.

Heidegger (1962, 1977, 1993) asks how it is that we see things as we do when man is cut off from that mysterious ground of all that comes to presence. That is to say, Dasein (self-understanding) "owns up" to the *nihil*, the abyss, present within itself, i.e. the nothingness encountered within the meaningful horizon of its own being. The grounds for what is, are in the groundless ground (nothingness) of Dasein as understanding what is, through transcendence. Transcendence is the fundamental aspect of Dasein on the basis of which it can relate to any other being (MitDasein). It is being-in-the-world, as the basic way in which Dasein is in the world, as disclosive, and as temporal. Transcendence precedes every possible mode of activity, i.e. it is prior to any practical or theoretical mode of understanding the world, prior to all behavior (Heidegger 1962).

Preliminary remarks on nothingness and entrepreneurship

It could be that entrepreneurial research studies tend to avoid "Dasein and nothing" and do not want to know anything about them. If this is the case, then every new effort at avoidance or detachment, leads to new domination. Every new proposal for sense-making, leads to new chaos. Every bit of optimism leads to pessimism and vice versa. Entrepreneurial research and practice means to give sense (to control) to the senseless (the uncertainty), which means trying to make the uninhabitable inhabitable. But this is in one way impossible, and this is the reason why entrepreneurial studies may fail in terms of showing the importance of nothingness.

Translated into entrepreneurial research this may mean that the entrepreneurial decision-making paradigm has achieved its greatest successes by applying the methodological principle whereby concepts which refer to distinctions beyond possible experience have no importance

and ought to be avoided. Maybe it is correct to say that entrepreneurial research as a science, in expressing its own proper essence, seldom calls upon the nothing for help. To explore this assumption further I assume that Heidegger's *Dasein* can be explained in the context of entrepreneurial decision making under uncertainty and risk. This may imply a questioning and criticism against a rational decision-making paradigm that is typical of economics and entrepreneurship research.

THE DECISION-MAKING PARADIGM IN ENTREPRENEURIAL RESEARCH

It is stated that there is a lack of a unifying framework that distinguishes entrepreneurship from strategic management (Zhara and Dess 2001), and hence that entrepreneurship does not have the characteristics of a paradigm. Accordingly rather than claiming that entrepreneurship is an emerging paradigm, in the pre-theory stage it is possible to suggest that entrepreneurship has its own identity and paradigm (Schade 2010, Bygrave 1989, Choi 1993). However, it is not obvious how the dynamics and varieties of a scientific inquiry in entrepreneurial research can represent a paradigm, even if I claim that there is such a decision-making paradigm. This claim is not so much about how to understand the ambiguities of the concept of paradigm and the dispute between different paradigms, but may serve to raise a deeper awareness of the fundamental assumptions and identity of entrepreneurship. I borrow the notion of a paradigm from Kuhn (1962), in order to indicate that effective research could not begin until one was clear (i) about the fundamental units into which one was researching, (ii) how these might interact with each other, and (iii) what questions might legitimately be asked about such entities and what techniques employed in seeking answers to them (Kuhn, 1962: 4-5). Such preliminaries are necessary because, there are no data which can compel us to draw certain conclusions. What is presented to researchers as data is inseparable from what researchers have already taken to be analytic, i.e., their pre-empirical assumptions (Kuhn 1962), for instance about the importance of decision making in entrepreneurial processes and practice. It is also important to note as Kuhn (1962: 44) observes that "scientists can agree in their *identification* of a paradigm without agreeing on, or even attempting to produce, a full *interpretation* or *rationalization* of it". Moreover, Schade (2010: 173) states that; *"The reason why I call entrepreneurial decision making a paradigm, however, is not only due to the way to look at phenomena and data requirements but because the specific perspective on phenomena requires specific theory, too".* Even though the way to look at phenomena and theory in the sense of 'specific' or substantive theory are important, they do not capture the whole essence of what a paradigm is about in the Kuhnian sense. As Rouse (1998: 43) expresses it;

> *"Theories for Kuhn are not already-developed semantic structures with a definite content, but ongoing practices of articulating concepts in relation to one another in specific contexts. What the theory says about the world is not yet fully*

> *determinate, but only emerges over time in the concrete uses of its concepts--uses that are embedded as much in material practices as in talk and calculation".*

In other words, theory cannot be understood without practice. In my view (consistent with the Kuhnian view), a paradigm could consist of many specific and theories as long as they share a common look at an 'ongoing' practice.

That is to say that even very different theories in entrepreneurial research with very diverse ontological and epistemological assumptions (as demonstrated by Miller 2007) can be said to have one common denominator; namely that they are preoccupied with one dominant mode or unit of research practice called decision making. In other words they are framed in the same picture which illuminates decision making as the dominant mode of entrepreneurial practice (or the dominant way researchers frame entrepreneurship).

The claim that entrepreneurship and decision making are inextricably linked is not new. In different approaches such as economics and psychology there are a number of highly diverse views on decision making and the economic/entrepreneurial agent, but they all seem to comprise three components: the environment, the specific characteristics of the decision to be taken and the entrepreneur himself/herself. For instance the roles of the entrepreneur according to theory of economics differ greatly, but they all tend to emphasize the entrepreneur's decisions. For instance Schumpeter's (1934) entrepreneur needs judgment to deal with the novel situations connected with innovation. Entrepreneurs are the sole facilitators of innovation that bring about these structural and market changes in economic systems called creative destruction. The Kirznerian (1973) entrepreneur as an arbitrageur points out that an entrepreneur is someone with the ability to perceive profit opportunities and act (decide) upon them. This entrepreneur decides to sell something at a price higher than that at which it can be bought. The Knightian (1921) entrepreneur states that, in uncertain conditions, entrepreneurs attempt to predict and act upon change within markets. The entrepreneur does not know the potential economic outcome but experimentally decides and tries different combinations.

The insights of previous economists can be synthesized: entrepreneurs are experts who use decisions to deal with novel and complex problems. In psychological research there are different assumptions for instance that decision making and learning are significantly affected by individual cognition (Allinson & Hayes, 1996), that the decision-making process reflects the entrepreneur's cognitive process (Simon 1976), that entrepreneur would construct special cognitive structure to accelerate the speed of information processing and decision making when facing a complicated and ambiguous environment (Mintzberg, Raisinghani and Theoret 1976), and that entrepreneurs have been demonstrated to decide differently than others (Busenitz and Barney 1997). Despite the differences between and within the literature in economics and psychology, the joint view is to look at choices and decisions as the object of investigation, either conducted at individual, group or societal levels.

Many researchers in entrepreneurship have used the term entrepreneurial decision making to label their theories and empirical findings, for example Busenitz and Barney (1997), Le´vesque and MacCrimmon (1997), Forlani and Mullins (2000), Sarasvathy (2001), Simon and Houghton (2002), Mullins and Forlani (2005), Le´vesque and Schade (2005) and Gustafsson (2006). Some academics suggest that decision making is the most fundamental type of behavior exhibited by individuals in organizations (March and Simon, 1966, Cooke and Slack, 1984), which may also include entrepreneurial management. Schade and Lamp (2009) conclude that entrepreneurial decision making bears the potential of a scientific paradigm, and addresses the need to stimulate theory development to establish such a paradigm. The traditional view of entrepreneurship and management maintains that entrepreneurship is a rational set of activities that considers entrepreneurs perform functions such as plan, control, organize and lead (Mukhi, Hampton & Barnewell, 1988); i.e. performing decisions along many functions. Examples of decisions by entrepreneurs explored from different research streams are whether or not to exploit an opportunity? how to enter a market ? (Camerer and Lovallo, 1999); how to manage effectuation? (Sarasvathy 2001); how to raise capital? (Timmons, Spinelli, and Zacharakis 2005); how to deal with competitors, network and alliances? (Bass (1969); how to manage rapid growth? (Churchill and Lewis 1983). These examples framed as questions indicate the presence of an entrepreneurial decision-making paradigm. In the following I will not try to give accurate answers to these questions, but rather describe some of the main features of entrepreneurial decision-making practice as it unfolds in the (becoming) entrepreneurial practice.

SOME DISTINCT FEATURES OF THE ENTREPRENEURIAL CONTEXT OF DECISION MAKING AND NOTHINGNESS

What are the characteristics of an entrepreneurial context? Or what does an entrepreneur do? What does an entrepreneurial student do? Of course there are no clear cut answers to these questions, but there seems to be some common challenges regarding decisions concerning management, human resources, financial and market issues. Attached to this is the assumption that the entrepreneurial world rests on decision making, and that the entrepreneurial sciences and business of the sciences is about 'preparing' for the best possible decisions. This, in short, also seems to be the justification for entrepreneurial education and business schools, there are decisions to be made, and we need to learn how to execute and handle them.

A vast amount of academic courses in entrepreneurship focus on the development of business plans. This involves the assembly of resources (knowledge) prior to the opportunity exploration and exploitation processes. From the view of the entrepreneurial student the emphasis is on decision-making tools and pre-launched strategies, and experience about how the constituent parts of the venture creation such as R&D, marketing, production, and finance are assembled and codified and are just waiting to be ordered. The entrepreneurial student practice is characterized by the rational decision making and planning model that underpins the traditional

entrepreneur and management models. Here it is possible to use a train metaphor; the knowledge and resources are ordered like railcars on a train, with a predictable and clear track laid out ahead. Once the train is assembled, the venture creation is initiated and can be implemented with a full head of steam.

The business schools and institutes of entrepreneurship willingly adopt recent advancements in management/entrepreneurial information systems; one of the main purposes is to increase the ability of entrepreneurial management students to progress towards optimal decision-making in their business plans and venture creation. Such logic can be said to rest on two cognitive constraints identified by Simon (1979): time (computational processing power) and memory (information storage and retrieval). Together with this decision-making approach, associated decision tools can be added like: the cost benefit analysis, the SWOT analysis, and the net present value technique. Much of the academic status and legitimacy of business schools or institutes of entrepreneurship derives from the way in which they seem to signify commodified 'decision-making knowledge', as well as the capacity to conduct decision making in order to eventually create new ventures. This 'commodified' or tool-based view in isolation may reduce decision-making to the (mechanical) application of pre-conceived rules for optimalization. It may trivialize decision-making, and makes it harder to show the entrepreneurs in pre-decision moments of a particular and unpredictable kind.

A dominant and 'trivializing' logic of reasoning seems to be that of resource utilization, the way in which a (student) entrepreneur treats the world as a set of resources is a dominant logic of reasoning. This resembles the way in which Heidegger (1977) conceptualized technology as that which transforms the world into a resource (standing reserve). Much of entrepreneurship theory and practice does, in fact, deal with things such as decision tools, opportunity recognition and optimization of possibilities involving decision making, but the original (nothing) aspect of entrepreneurship may not really fit such theoretical concepts. One could argue that by stating this 'Gestell' I am reducing or even demeaning entrepreneurial practice. It is clear, however, that entrepreneurship practice and research consists of much more than merely rigorously and complicated decision making as a standing reserve. Aspects such as commitment, creating and unfolding a life-project, stories of existential moments of despair, doubt and happiness all contain aspects of meaning that often go beyond the notion decision making. The re-utilization of the already existing, that which is "always already", may have escaped overt theorizing.

We can now link the idea of Gestell/decision making to the meaning of entrepreneurship and nothingness in the lives of the entrepreneurs. There is not much entrepreneurial research which is concerned with such existential and personal experience-oriented themes. Research on entrepreneurial experience is rare, but can for instance be found in *Stories of entrepreneurs* focusing on a narrative construction of identities (Hytti 2003). In this dissertation eight entrepreneurs are interviewed in order to analyze how they became entrepreneurs. I have

extracted some data which may serve to illustrate the presence of existential aspect of the 'theory of nothing'. Here are some illustrations from the entrepreneurs' narratives;

There was a case of an employee whose actions caused the entrepreneur (Jonathan) a great deal of stress and who subsequently had to be dismissed. In elaborating the issue he says that;

> *"Then without warning (s)he just lost her\his nerve and (s)he just informed the EU that we were not taking any more projects"* (Hytti 2003: 150).

As Hytti (2003:150) conclude*; "Jonathan takes this episode very personally and experiences infirmity and powerlessness as things is being pushed into his face and there is nothing he can do"*.

Another entrepreneur (Rosemary) also experienced some form of 'powerlessness' at the beginning of the new venture project;

> *But can you imagine my feeling Ulla when the first shipment arrived … I thought I will never make it as an entrepreneur if the beginning is like this, using all the borrowed money and I can't even use the materials …But then I pulled myself together and have not cried since because of entrepreneurship… So there it started (Hytti 2003:123).*

One of the entrepreneurs (Arthur) illustrates a fictional narrative of how a cascade of events may create an experience of loosing control; *"Imagine you are in a car that dashes down a meandering road and occasionally the car veers of the road and you just have to stay in it, wondering what will happen"* (Hytti 2003: 245).

Another entrepreneur (Diane) sees her career history in intervals of six years and in the end of every six years period she felt the urge to move on and not stay at the same work place (even if the jobs were high ranked and well paid). When she decided to start as a entrepreneur she describes the situation as; *"My boss in Helsinki asked me for the reasons, to list the plusses and minuses for why I wanted to leave, so I had no minuses, but I just had to get away, I felt I have given everything there already"* (Hytti 2003: 194). Generally these may be the signs of a restless soul or as Hytti (2003: 193) formulates it; *"She describes her working history as a search for her place in this world."*

Hytti (2003: 276) summarizes how the entrepreneurs narrated their experiences; *"The difficult times that are constructed as learning experiences were painful and traumatic events that are vividly described in the stories. At the same time they are also depicted as needed and necessary experiences, where the participant has gone through the experience, survived and learned from the experience and is currently stronger and better equipped to face new difficulties and challenges."* That is to say that the events that take place form an entrepreneurial life and venture creations where the events are tied into everyday life. They are not just facing

uncertainty as a lack of information, but they face a kind of radical uncertainty which questions their identity and challenge their life-projects as (becoming) entrepreneurs. The character of these 'powerless', 'restless' and 'survival' events can be interpreted as nothingness, i.e. Angst as the feeling and moment of not-being-at-home in the (entrepreneurial) life project.

Within the decision-making paradigm unexpected existential moments and consequences and incalculable results are created. That is to say that Angst/not-being-at-home experiences cannot just be considered as side effects from decision making. In a way the 'side effects' may enlarge the regions of ignorance and not codified knowledge, waiting to be the new source of anxious concerns and existential nothingness. The decision-making paradigm/Gestell may generate more unknowns outside the immediate reach of the 'enframed' concern. Therefore a perspective based on the notion of decision making as a mutually concern for being and nothingness, has been suggested in order to start to reflect upon the textures which interwove (entrepreneurial) life, nothingness and decision making (technology). Such a reflection should also take existing research literature into account.

THE 'THEORY OF NOTHING' AND RESEARCH LITERATURE

Heidegger's (1962) concern with Nothingness has parallels with other themes in organizational/entrepreneurial life such as anomie (Merton, 1968) a disenchantment with or disengagement from life or community. Such a detachment and meaninglessness which do not result in active resistance to the organization may result in drift, detachment and anxiety (Bridges, 1995). It is possible that such research may show some of the negative consequences and the unfortunate effects of nothingness, even though it is important to be aware that this does not need to be the whole case of nothingness.

Within academic entrepreneurial literature, the management of unexpected and discontinuous events has been identified as a significant learning source for entrepreneurs (Cope and Watts, 2000, Deakins and Freel, 1998, Sullivan, 2000). For example it has been demonstrated that entrepreneurs can experience distinctive forms of higher-level learning as a result of facing discontinuous events. These examples from case studies illustrate that entrepreneurs not only can experience 'double-loop' learning (Argyris and Schön, 1978), but also deeply personal, 'transformative' learning (Mezirow, 1990, 1991) that changes their perceptions of themselves as entrepreneurs. Following Mezirow's (1990, 1991) assertion that crises are powerful stimulants of transformative learning, the catalyst for transformative learning can sometimes be an event that is largely self-imposed and not externally imposed as a result of a failure by the entrepreneur. In general, it seems that research suggests that some learning can become so related to the self that it enters into our sense of identity and can have considerable importance and become a significant force in our life projects. Significant feelings can come to be attached to this type of learning experiences (Boud et al.: 33). From this 'learning event' research it is argued that there is more to learning from discontinuous events than the

incremental accumulation of more routinized, habitual, 'lower-level' learning (Cope 2003). This kind of research also illustrates that events have the capacity to stimulate distinctive forms of 'higher-level' learning that is fundamental to the entrepreneur in personal terms and with regard to critical self-reflection. It would be reasonable to say that a 'theory of Nothing' shares the often-neglected emphasis on critical events, self-reflection and discontinuous learning, but differs with regard to a sharper focus on existential possibilities which exist prior to learning, (self-)reflection and personal transformation, i.e. that the entrepreneur find himself/herself experiencing nothing in an inhospitable world.

There is another kind of research which also directs attention to the fact that entrepreneurship is more than accurate representations of what is repeatable and regular, thus to conduct decision making and to solve problems. In their book *Disclosing New Worlds* Spinosa, Flores, and Dreyfus (1997), explain why our role as disclosers is forgotten. The authors are introducing the distinction of "Disclosers" as those who can disclose new worlds or new human possibilities. They especially value the noticing of anomalies in our practices. They take the term anomaly from Thomas S. Kuhn, and say that they mean by it "*a disharmony between [practitioners'] understanding of what they do and what in fact they do*" (Spinosa et al. 1997:193). They *provide* examples to sensitize us both to the subtle details not immediately evident in our everyday background practices, and to the ways in which they contain anomalies. This is the beginnings of a whole new form of history-making activity. We are at our best, they say, when "*we become sensitive to anomalies that enable us to change the style of our culture* (Spinosa et al. 1997: 181). The overall goal is to help you to expand "*your ability to appreciate and engage in the ontological skill of disclosing new ways of being"* (Spinosa et al. 1997:1). Spinosa et al. (1997) do not see the main issue as regular decision making and problem-solving at all. Instead they argue that entrepreneurship essentially involves skills of articulation, conversation, communication, and the creation of a shared new world, a reconfigured set of practices that many or most people then come to take for granted. In line with this Heidegger inspired way of thinking, a 'theory of Nothing' shares the same concern about moving beyond the taken for granted ways of being and decision making, so they are not necessarily mutual independent ways of thinking. In fact, the first step of creating new worlds could be the experience of nothing. The experiences of nothing by (coming to be) entrepreneurs can be a result or condition of whether facing anomalies in practice or discontinuous events.

In just the same way, Heidegger (1962) argued, nothing is what shapes Being generally. This reveals the transcendent reality, beyond notions of what-is slipping over into what-is-not. Entrepreneurs exist, yet our "being-there" (*Dasein*) is subject to a radical uncertainty. Because we may experience nothing, our concern with our nothingness and not being at home is an ever-present feature of human experience. Compared to other concepts of uncertainty within the entrepreneurial literature this is a radical term. Uncertainty is not just lack of information (as proposed by the opportunity recognition view; Miller 2007), but may also include existential nothingness. Nothingness is contingent upon an emergent entity. The freedom of Dasein is the

origin of knowledge grounds, not the ground itself, but the groundless ground. Then what is the value of such a priori and nonsubstantial resoluteness? What still largely remains unanswered in the literature is consequently the question of *how* entrepreneurs dwell on nothing and may develop entrepreneurial knowledge that indirectly may have a positive impact on subsequent venture performance and the creation of new worlds. This issue is also attributed to the fact that nothing by its very nature resists any attempt of a priori definition or characterization (Heidegger 1962). That is to say, it is not possible to predict or calculate with absolute certainty how or when the entrepreneurs' experience of nothingness occurs and how this experience affects the entrepreneurial knowledge and practice as a life project. It may prove to be very difficult, both for the researcher and the researched, to define precisely and describe the nothing in entrepreneurial practice. However it is possible to delineate some central aspects of this theory.

OUTLINING ASPECTS OF 'THE THEORY OF NOTHING'

How is it possible delineate some aspects of this theory in relation to entrepreneurial practice and research? How would such a theory look like? First of all this cannot be a theory in the traditional sense. Whereas theorizing decision making has its own challenges, developing thinking about nothing and that the entrepreneur is played (out) by nothing without doubt goes against the very notion of theory. Here theory implies a shift from the priority of actuality to the priority of possibility. I am trying to show that nothing in entrepreneurship represents a phenomenon that often escapes theorizing in entrepreneurial decision making. Theory is not necessarily concerned with the contemplation of existent decisions or objects. Theory involves stepping back from the world, and dwelling upon things seen as merely present in the world. This theoretical stance is looking at things, without looking at them in terms of use, but in terms of possibilities of (non)use. The idea is that a paradigm of decision making (priority of actuality) could, as a mutual dependent part, contain a 'theory of the Nothingness' of decisions, i.e. one condition of how decisions arise in the first place (priority of possibility). Such a 'theory of Nothingness' would obviously go against the notion of entrepreneurial decision makers as masters of the situation who can solve any problem (as long as it is recognized as a problem). It seems like the existence of entrepreneurs depends on their ability to make decisions all the time about something or somebody else. This is a one-sided view, because entrepreneurs, in their nothingness and Angst for their identity, rest on a being-in-the-world, i.e. being with their environment so as to keep their existence restless and open for disclosure. There is always the danger that the entrepreneurs (or how researchers frame entrepreneurs) are playing the game and ignores that entrepreneurial being is also played with. But maybe a 'theory of Nothing' can rest on the actual practice of decision making, where the experience of nothing and the Dasein plays an important part and are being played with. Developing a 'theory of Nothing' will require a lot of work, but with this in mind I present four preliminary remarks about how a 'theory of Nothing' can be delineated.

The nothing which dwells upon our being-in-the world does not really enter into the realm of entrepreneurial knowledge, but may rather function as a transcendence of entrepreneurial knowledge. We do not see the future we already anticipate; we simply live it. The manner in which entrepreneurial beings now ' are' their past in their anticipation of their future, says Heidegger (1962), may thus be seen to involve its always already occurring for them out of their future. The border next to nothing, however, often remains hidden from entrepreneurs in everyday preoccupations with decision making. In other words, in practice entrepreneurs normally avoid the task of genuinely responding to what comes back at us from the future, because they do not need to in order to accomplish their daily tasks. For example the entrepreneurs narrated by Hytti (2003), who undergo severe experiences seem to transcend their current understanding of what it means to be an entrepreneur and how entrepreneurial knowledge can be used. A 'theory of Nothing' may serve to mediate for example to researchers and entrepreneurs the importance of nothing experiences which may lead to new knowledge and new ways of seeing and understanding entrepreneurship.

There is more to the entrepreneurial way of life than which can be ordered and justified by the standing-reserve. Heidegger's critique of man (*Das Man)* and modern technology (standing-reserve) emphasizes that here there is a constant temptation to "falling," that is, to covering over the ontological structure of nothing by interpreting it in the publicly available terms of everyday (ontic) life, i.e. everyday decision making in entrepreneurial life. And as a result, though entrepreneurs always remain capable of recognizing the unexpected, unusual, untried, or more promising possibilities offered to them, and though they might and always can thus change the course of their lives, more typically, both habitual and novice entrepreneurs (or as the researchers frame it) may continue to just anticipate more of the same in habitual and predictable ways. This is indicated by research which shows that most new firms fail (Sarasvathy & Menon, 2004, Schollhammer, 1991), largely because they face many unexpected events which cannot be handled in an 'planned' manner.

But if it is possible to claim that nothing precedes entrepreneurial practice and decision making, there is perhaps no fixed and predetermined entrepreneurial decision making habits. The entrepreneurial self (Dasein) is not predetermined and while the entrepreneurs' past actions might influence the direction of the future, they do not determine it. Instead it may be that the future shapes the way things show up for entrepreneurs in that the projects that define them extend into the unpredictable and indefinite future, like the end of the horizon which life-projects can neither occupy nor secure (because a new horizon will arise when we reach the one we see). MacDonald (2000: 35) notes Heidegger's use of an ancient Greek time metaphor to illustrate this: *"like a rower in a boat, a person fixes his or her position by looking backward, while his or her actions move the boat forwards".* Deflected by this never-ending and impenetrable horizon, the entrepreneurial life-projects may come back subtly in an uncanny feeling of not-being-at-home in the things with which they are most familiar. That is, we can come to understand that, for the most part, entrepreneurs 'are' already acting as if the future must be like the past. Precisely with

this recognition, we can see that this way of being need not be so, and then we are open to see new possibilities within the familiar contours of our already-having-been. In short, change-of-life projects can occur, and habitual ways of acting can be transformed as has been illustrated above. Maybe the original aspects entrepreneurs are facing are not the decisions about calculation of profits, utility, and reduced to the certainty-equivalent of uncertainty and risks, but the exercise of nothing and the realization of ambition, dreams, and the will to cope with the unknown future. The aspect of nothing is the aspiration for realizing the meaning of Being as the bundle of possibilities and is different from the notion of rationality implied by the maximizing principles of profits and utility. Perhaps entrepreneurship is nourished by nothing and should therefore not be under communicated in entrepreneurial research. Perhaps a merging takes place and like Alice in Wonderland we find ourselves in a new reality. This submissiveness makes it possible to understand contexts from new perspectives. Other dimensions become visible and expose themselves. This is the opening offered by Dasein and the theory of Nothing.

Nothing involves ethics. It is related to being at home, the 'place' where you can become what you are. It shows us the many ways life can unfold itself, a web of possible possibilities, and the responsibility of being-there (Da-sein) and to think from one point of view or place. If existence (Da-sein) precedes essence (Bestand) we are responsible for what we are and what we do. However, it can develop into a negative ethic – not caring – or a positive one, but it will relate to our being in the world. For example the Hytti (2003) entrepreneurs seems to take responsibility for their 'powerless' experiences and thus turn their situation of nothingness into a 'sustainable uncertain' life-projects. In other words, during nothingness the entrepreneur may accept responsibility for his or her own situation and feelings (such as powerlessness), and transforms them – through a new look at his or her self-understanding – into a life-project which is fruitful for entrepreneurial activity and venture creation.

What Heidegger (1962) stresses, however, and what we understand from experience is that our continuous, everyday routines and decision making arise not out of some unalterable flow of 'fact' but instead out of the uncertain projects we are thrown into. In other words, entrepreneurial temporalizing (nothing) is really not, at bottom, the linear progression of moments by which entrepreneurs usually 'measure' their lives and the success or failure of ventures. To summarize this may also have some implications for how it is possible to conduct research or re-searching entrepreneurship.

IMPLICATIONS FOR RE-SEARCHING ENTREPRENEURSHIP

'The theory of Nothing' enables us to focus on the relationship between theoretical development in a field and the research questions posed by the researcher. In the case of decision-making theories/paradigm, this means that certain types of problems have occurred in the (research) field which only seem to provide evidence of this relationship. This is possibly reflected in a crisis in the basic concepts in decision theory, which has led to the emergence of

questions regarding the usefulness and applicability of the theories (Simon and March 1966). An example is the emergence of the notion that (budding) entrepreneurs do not always act as a decision-making paradigm tells us that they should. Maybe this is due to important considerations besides rational decision making, which this paradigm omits and the 'theory of Nothing' may disclose.

Heidegger's concept of 'Dasein' and 'being-in-the-world' involves seeing the entrepreneur inextricably within his/her own world context. These concepts assume an examination of an entrepreneur in a temporal context, framed both by history and by the perspectives (standing-reserve) of the current context. Taking this perspective, entrepreneurs cannot be studied outside the context in which they are regarded as entrepreneurs. Such research which aims at re-searching entrepreneurship can imply describing a transcendent (Da-sein) quality of entrepreneurship. Even though this quality cannot be defined a priori because it would destroy the very nature of becoming, entrepreneurs cannot be said to operate without context, i.e. without other people, without a network, without the basic s such as a market or customers. On the contrary, one implication of this is the symbiotic nature of ourselves in our own context: we make our world and our world makes us; entrepreneurs make their world and are made by it. If we wish to understand this in more detail we need to know how the entrepreneurial world is interpreted. We may need to explore what 'entrepreneurship' means to the people involved (Berglund 2007).

CONCLUDING REMARKS

The depth of this paper indicates that it is maybe wrong to indiscriminately exclude all kinds of nothing from the decision-making paradigm within entrepreneurial research. Instead we should treat the subject more seriously by engaging with the experiences connected to nothing with the purpose that we may eventually know better-what there is not. It is the merit of Heidegger's philosophy teaching us that every lesson about being may be a lesson in homelessness and nothing. It does not make sense to try to escape from nothing and inhospitability; nor does it_make sense to "cope" with it. The task is to learn that being entrepreneurial also means nothing and inhospitability, and to pave the way through it. We can look deeper into the reasons that entrepreneurs or entrepreneurial managers indicate about what matters for their existence. In doing this, we look through the ambition, uncertainties, risk behavior and opportunities and decisions and we see that it only looks as if the entrepreneurial decision-making paradigm tries to overcome nothing and homelessness. In reality, it may be nourished and fed by it. Entrepreneurial decision-making management throws people back onto themselves and refers people back to themselves. But entrepreneurs are also thrown back, and refer back, to themselves. We need to hear more of such voices in the research literature which reminds us about the importance and experience of Nothingness in entrepreneurial practice.

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CONTRIBUTORS TO AN ENTERPRISING GENDER: EXAMINING THE INFLUENCE OF CREATIVITY ON ENTREPRENEURIAL INTENTIONS AND THE MODERATING ROLE OF POLITICAL SKILL CONTROLLING FOR GENDER

Simone T. A. Phipps, Macon State College

ABSTRACT

Previous research indicates a positive relationship between creativity and entrepreneurship. Research also indicates a tendency for successful entrepreneurs to possess certain skills and abilities and to engage in activities that reflect their political astuteness. In addition, numerous studies have supported the importance of behavioral intentions as they relate to actions. Thus, this research endeavor focused on intentions, as it investigated the relationship between creativity and entrepreneurial intentions among female and male undergraduate students, and attempted to determine whether political skill moderated the relationship. The results revealed that there was a statistically significant positive relationship between creativity and entrepreneurial intentions among both female and male undergraduate students. The results also revealed that although political skill did have a positive correlation with entrepreneurial intentions, it did not moderate the relationship between creativity and entrepreneurial intentions.

Keywords: Creativity, Political Skill, Entrepreneurial Intentions

INTRODUCTION

The field of entrepreneurship has garnered significant research interest, and the volume of entrepreneurship research continues to grow (Chandler & Lyon, 2001). One of the reasons for continued interest in entrepreneurship is the realization that entrepreneurial activity plays a role in economic progress. According to Zacharakis, Bygrave and Shepherd (2000), entrepreneurship is strongly associated with economic growth, and entrepreneurial companies account for between one-third and one-half of the variance in Gross Domestic Product (GDP) between countries. Another reason for the continued interest in entrepreneurship is its social impact, as many entrepreneurs go beyond the quest for commerce and economic gain, and contribute to "worthy causes," using their resources as a vehicle for social change. Steyaert and Katz (2004) mention entrepreneurship becoming a visible process in multiple sites and spaces, and diverse areas including the health sector, ecology (e.g., ecopreneurs), non-governmental development organizations, education, and art and culture.

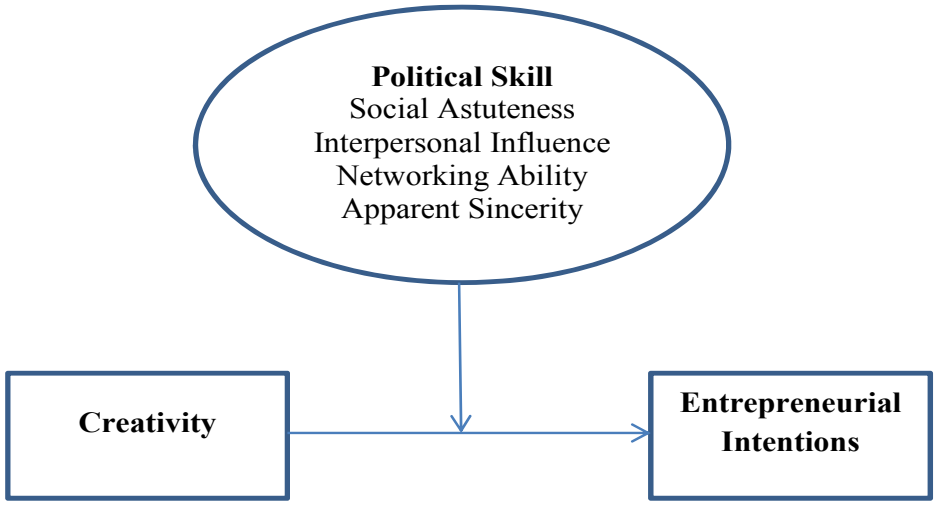
Despite the "glass ceiling" barrier being a mechanism to persuade women to leave larger businesses and start their own operations (Orhan & Scott, 2001), and although there is

widespread agreement concerning the economic and social benefits of entrepreneurship, statistics show that women are less likely to engage in entrepreneurial activity than their male counterparts. The Center for Women's Business Research (2009) reports that only 28.2% of all businesses in the United States (US) are owned by women, and only 4.2% of all revenues are generated by women-owned businesses in the US.

This seeming under-representation of women in entrepreneurship provides sound rationale to study women's entrepreneurial intentions separately from those of their male counterparts. Results from research may then be used to address the dearth of entrepreneurial activity among women (compared to men). Entrepreneurial intentions form the initial strategic template for new organizations and are important underpinnings of new venture development (Bird, 1988). Therefore, in the quest to understand entrepreneurial behavior among women, it is logical to first investigate entrepreneurial intentions, and to discover the influencing factors that affect entrepreneurial intentions among women.

Personal characteristics are often investigated to aid in the explanation of phenomena pertaining to entrepreneurial activity. Support from the literature regarding the relevance of personal characteristics, particularly creativity and political skill, when studying entrepreneurship constructs, leads this researcher to examine these variables' influence on entrepreneurial intentions, which precede entrepreneurial behavior (Bird, 1988; Katz & Gartner, 1988; Krueger & Carsrud, 1993). Consequently, the primary purpose of the study is to examine the influence of creativity on entrepreneurial intentions among female and male undergraduate students, as well as to investigate the moderating effect of political skill on the creativity-entrepreneurial intentions relationship among these students. The research model is illustrated in Figure 1.

Figure 1: Research Model



THEORETICAL FOUNDATION

According to the theory of planned behavior (TPB), intentions predict behavior, and these intentions are determined by attitude(s) toward the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991). Behavioral attitude refers to how favorable the person's appraisal is of the behavior, and depends on expectations and (behavioral) beliefs about the personal impact of outcomes resulting from the behavior (Ajzen, 1991; Gird & Bagraim, 2008). Subjective norms refer to perceived social pressure to perform the behavior, stemming from normative beliefs based on what important or influential people in the person's life think about the particular behavior (Ajzen, 1991; Gird & Bagraim, 2008). Perceived behavioral control refers to the perceived ease or difficulty of performing the behavior and is underpinned by control beliefs based on actual and perceived personal inadequacies and external obstacles (Ajzen, 1991; Gird & Bagraim, 2008).

The model of thinking upheld by the TPB can be applied to entrepreneurship. Ajzen (1991) affirms that intentions to perform a given behavior capture motivational factors that influence a behavior, and that they are indicators of how hard people are willing to try, and how much effort they are planning to exert, in order to perform the behavior. According to the author, the stronger the intention to engage in a behavior, the more likely should be its performance, but only under volitional control (i.e., the individual can choose at will whether or not to perform the behavior).

Likewise, it is logical to assert that entrepreneurial intentions embrace motivational factors that influence entrepreneurial actions, and that these intentions are preceded by (1) the individual's attitude toward entrepreneurial activity/behavior, (2) the individual's subjective norms which are guided by his/her referents' beliefs about entrepreneurial activity/behavior, and (3) the individual's perceived behavioral control based on his/her perception of the resources and opportunities that are available to him/her. This assertion is confirmed by results of Gird and Bagraim's (2008) study, which indicate that the theory of planned behavior significantly explains 27% of the variance in university students' entrepreneurial intentions, suggesting that the theory is a valuable tool for predicting entrepreneurial intentions. In this study, it is the researcher's view that creativity and political skill fall in the realm of perceived behavioral control as they both enable the performance of entrepreneurial behavior, facilitating processes that contribute to successful entrepreneurship. Individuals may perceive entrepreneurship behavior as less difficult if they are creative and/or politically skilled, and thus possess greater entrepreneurial intentions.

ENTREPRENEURIAL INTENTIONS

There is a growing body of literature arguing that intentions play a very relevant role in the decision to start a new firm (Liñán & Chen, 2009). Thus, the study of entrepreneurial intentions, or the intention of carrying out entrepreneurial behaviors (Liñán & Chen, 2009), is a worthwhile approach to gaining further understanding of the field of entrepreneurship. According to Bird (1988), intentionality is a state of mind directing a person's attention (and therefore experience and action) toward a specific object (goal) or a path in order to achieve something (means). Krueger (1993) asserts that intentions represent the degree of commitment

toward some future target behavior, and that entrepreneurial intentions refer to the specific target behavior of starting a business. Therefore, for the purpose of this study, entrepreneurial intentions are defined as an individual's desire and commitment to start and run his/her own business (Krueger, 1993; Llewellyn & Wilson, 2003).

Entrepreneurial intentions embrace the dimension of rationality versus intuition and motivate perseverance (Bird, 1988). According to the author, personal contexts (e.g., personality) and social contexts (e.g., economic variables) interact with rational and intuitive thinking during the formation of entrepreneurial intentions. Both of these contexts embrace dynamics that influence what Ajzen (1991) refers to as perceived behavioral control, which signals the viability of entrepreneurial behavior to the individual, and thus affects his/her entrepreneurial intentions.

CREATIVITY AND ENTREPRENEURIAL INTENTIONS

Although most researchers and theorists agree that creativity involves the development of a novel product, idea, or problem solution that is of value to the individual and/or the larger social group, psychologists have had great difficulty finding consensus as to definitional components that reach beyond the two criteria of novelty and appropriateness (value) (Hennessey & Amabile, 2010). For purposes of this study, creativity is defined as the production of novel (i.e., different from what has been done before) ideas, in any realm of human activity, from science, to the arts, to education, to business, to everyday life, that are appropriate to the problem or opportunity presented (Amabile, 1997). This definition is especially relevant to entrepreneurship as entrepreneurs emerge from and contribute to many diverse fields, where they encounter a variety of problems and seek new ways to solve them.

Studies have shown that one factor that affects entrepreneurial intentions is creativity. For example, Zampetakis and Moustakis (2006) found that students' self-perceptions of creativity and a family environment that promotes creative thinking can predict increased levels of entrepreneurial intentions. Also, Olawale (2010) found creativity to be one of five motivators of entrepreneurial intentions among university students in their final year of study. In addition, a study by Hamidi, Wennberg, and Berglund (2008) revealed that creativity among university students is an important antecedent of their entrepreneurial intentions. In their study, high creativity scores had a strong and positive effect on entrepreneurial intentions.

H1 *A positive relationship exists between creativity and entrepreneurial intentions among women.*

H2 *A positive relationship exists between creativity and entrepreneurial intentions among men.*

POLITICAL SKILL AND ENTREPRENEURIAL INTENTIONS

Ferris et al. (2005) define political skill as the ability to effectively understand others at work and to use such knowledge to influence others to act in ways that enhance one's personal and/or organizational objectives. As such, politically skilled individuals combine social astuteness with the capacity to adjust their behavior to different and changing situational demands in a manner that appears to be sincere, inspires support and trust, and effectively

influences and controls the responses of others (Ferris et al., 2007). Politically skilled individuals are socially astute, possess strong networking ability, have the knack of influencing others interpersonally, and exhibit apparent sincerity (Ferris et al., 2005).

Research suggests that political skill also impacts entrepreneurial intentions. For example, Douglas and Shepherd (2000) mention the tendency for individuals with greater entrepreneurial abilities such as persuasive skills to have greater entrepreneurial intentions and to self-select as entrepreneurs. Additionally, a model by Witt (2004) proposes networking abilities as a precursor to entrepreneurial intentions.

Political skill provides the most theoretically complete and valid measure of social competence/skill, which describes an individual's ability to effectively interact with others (i.e., to effectively develop, maintain, and utilize social capital and networks) (Baron & Markman, 2003; Lux, 2005). Social capital, according to Lux (2005), is a source of competitive advantage to the entrepreneur, aiding him/her in identifying and evaluating opportunities, obtaining resources, and establishing customer relationships. Therefore, political skill enables the entrepreneur to capitalize on social capital in order to succeed entrepreneurially. Politically skilled individuals should be more confident in their ability to build, maintain, and use social capital effectively in an entrepreneurship context, and this confidence should be reflected in increased entrepreneurial intentions.

H3 *A positive relationship exists between political skill and entrepreneurial intentions among women.*

H4 *A positive relationship exists between political skill and entrepreneurial intentions among men.*

Apart from political skill having a direct impact on entrepreneurial intentions, it is reasonable to posit that political skill should also moderate the creativity-entrepreneurial intentions relationship. Politically skilled individuals should feel more confident to use their creativity to pursue entrepreneurial endeavors, and thus, their entrepreneurial intentions should be higher than individuals who are less politically skilled. There is evidence of social skills, including political skills, playing a positive role in high creativity scientists (Amabile & Gryskiewicz, 1987), with the authors suggesting that such skills allowed the scientists access to the ideas and insights of other people. Like scientists, entrepreneurs need to be able to develop and utilize the right connections to get the most out of their creative ideas and solutions.

Hollingsworth et al. (2002) suggests that networking facilitates creativity and the development of new products. It is quite possible that this phenomenon may lead to entrepreneurial intentions, as individuals with high networking ability may see entrepreneurship as a means to express and benefit from their creativity, and commercialize the new products. It is therefore, rational to investigate political skill as a potential moderator of the relationship between creativity and entrepreneurial intentions.

H5 *Political skill will moderate the relationship between creativity and entrepreneurial intentions among women, such that the relationship will be stronger when women are more politically skilled than when they are less politically skilled.*

H6 *Political skill will moderate the relationship between creativity and entrepreneurial intentions among men, such that the relationship will be stronger when men are more politically skilled than when they are less politically skilled.*

METHODOLOGY

The population for the study was full-time, degree-seeking, undergraduate students attending a research extensive university in the southern part of the United States of America during the Spring 2011 semester (N = 20,115). The population consisted of 10,313 females and 9,802 males. The frame was acquired via the institution's registrar, and a stratified random sample (n = 5,340) by gender was drawn. The sample size was determined by Cochran's sample size determination formula for continuous data (Cochran, 1977), specifying a 0.05 alpha level, and 2% margin of error, and oversampling to account for non-response. The sample consisted of 2,670 females and 2,670 males.

Creativity, was measured using the ten-item Problem Solving/Creativity Subscale (PSCS) from the Self Description Questionnaire III (SDQ III), which was developed by Marsh and O'Neill (1984). A sample item is "I am an imaginative person." Respondents indicated how true or false each item was as a description of them, and the items were rated on an eight-point scale, ranging from definitely false (1) to definitely true (8). The coefficient alpha estimate of reliability for this scale was 0.84 (Marsh, 1990).

Political skill, was measured using the eighteen-item Political Skill Inventory (PSI) developed by Ferris et al. (2005). The networking ability subscale of the PSI has 6 items. A sample item is "I am good at building relationships with influential people at work." The apparent sincerity subscale has 3 items. A sample item is "I try to show a genuine interest in other people." The social astuteness subscale has 5 items. A sample item is "I have good intuition or "savvy" about how to present myself to others." The interpersonal influence subscale has 4 items. A sample item is "I am good at getting people to like me." All items were rated on a seven-point scale, ranging from strongly disagree (1) to strongly agree (7). The internal consistency reliability estimate for the entire 18-item scale was 0.90, while the subscales, networking ability, apparent sincerity, social astuteness, and interpersonal influence, yielded reliability estimates of 0.87, 0.81, 0.79, and 0.78 respectively (Ferris et al., 2005).

Entrepreneurial intentions, was measured using the six-item Entrepreneurial Intention Questionnaire (EIQ) developed by Liñán and Chen (2009). A sample item is "I am determined to create a firm in the future." All items were rated on a seven-point scale, ranging from total disagreement (1) to total agreement (7). This scale has been found to have a high reliability coefficient, with a Cronbach's alpha of 0.94 (Liñán & Chen, 2009).

Data was collected from participants in the study via a web-based survey, which was accessible by means of their email accounts, as an internet link was provided for students via email. Students received an email from the researcher that described the research and requested their participation. Since Deutskens, De Ruyter, Wetzels, and Oosterveld (2004) found that lotteries did make a significant difference in response rate and that the value of the lottery mattered, the email also informed them about a drawing in which participants would be entered for the chance to win one of three monetary prizes, if they completely responded to the survey

before its closing date. Throughout the data collection process, no personal identification information (i.e., name, social security number, school identification number) was collected from survey participants, and the latter were assured that their responses would be kept confidential.

Data was analyzed to meet the study's objectives using the Statistical Packages for Social Sciences (SPSS) software program. Frequencies, percentages, means, and standard deviations were used to describe the undergraduate students on the basis of demographic characteristics (i.e., gender, ethnicity, age, and year classification) and psycho-social characteristics (i.e., creativity, political skill, and entrepreneurial intentions). The Pearson Product Moment Correlation Coefficient was used to determine the relationship between creativity and entrepreneurial intentions, and between political skill and entrepreneurial intentions. In addition, moderated multiple regression analysis, an inferential statistical procedure, was used to determine if political skill moderated the relationship between creativity and entrepreneurial intentions.

RESULTS

Of the 5,340 students to which the survey was sent during the Spring 2011 semester, a total of 1,057 students responded to the survey, resulting in a response rate of 19.8%. The majority of the participants (n=614, 61.6%) reported that they were female. The remaining subjects who specified their gender (n=383, 38.4%) indicated that they were male. Sixty individuals failed to indicate their gender.

As regards ethnicity, the majority of the respondents identified themselves as Caucasian (n= 782, 78.5%). The second largest group identified themselves as African American (n=92, 9.2%). The data regarding the ethnicity of respondents is illustrated in Table 1. As regards age, the largest number of respondents indicated that they were between 18 and 25 years of age (n= 962, 96.6%). The second largest group indicated that their ages fell between 26 and 35 years (n= 24, 2.4%). The respondents' age distribution is provided in Table 2. Regarding year classification, the largest group of respondents indicated that they were juniors (n= 263, 26.5%). The second largest group of respondents was freshmen (n=262, 26.4%). The least number of respondents indicated that they were sophomores (n=211, 21.2%). The data pertaining to year classification of students can be found in Table 3.

For each of the three psycho-social characteristics measured, the researcher divided the scale into quartiles in order to classify scores as low, moderate or high, based on the study sample. Individuals with scores in the lowest quartile ($\leq 25^{th}$ percentile) were described as having low scores. Those with scores in the middle quartiles ($26^{th} - 74^{th}$ percentile) were described as having moderate scores. Finally, respondents with scores in the highest quartile ($\geq 75^{th}$ percentile) were described as having high scores. The students in the sample showed moderate levels of creativity, political skill, and entrepreneurial intentions. A summary of the distribution of respondents' creativity, political skill, and entrepreneurial intentions scores is illustrated in Table 4.

Table 1: Ethnicity of Undergraduate Students at a Research Extensive University in the Southern US		
Ethnicity	Frequency	Percentage
Caucasian	782	78.5
African American	92	9.2
Asian	56	5.6
Hispanic	35	3.5
Other	31	3.1
Total	996[a]	100
[a] Sixty one respondents failed to indicate their ethnicity.		

Table 2: Age Distribution of Undergraduate Students at a Research Extensive University in the Southern US		
Age in Years	Frequency	Percentage
Under 18	4	.4
18-25	962	96.6
26-35	24	2.4
36-45	4	.4
46-55	1	.1
56-65	1	.1
66 and Older	0	0
Total	996[a]	100
[a] Sixty one respondents failed to indicate their age.		

Table 3: Year Classification Distribution of Undergraduate Students at a Research Extensive University in the Southern US		
School Classification	Frequency	Percentage
Freshman	262	26.4
Sophomore	211	21.2
Junior	263	26.5
Senior	257	25.9
Total	993[a]	100
[a] Sixty four respondents failed to indicate their school (year) classification.		

Table 4: Distribution of a Southern United States Research Extensive University's Undergraduate Students' Creativity, Political Skill (PS), and Entrepreneurial Intentions (EI) Scores

Construct	Mean	SD	Min	Max	Percentile ($\leq 25^{th}$)	Percentile (26^{th}-74^{th})	Percentile ($\geq 75^{th}$)
Creativity Possible Score: 10-80	58.19	9.81	29	80	52 (n= 268) (27.6%)	52 - 65* (n= 446) (46%)	65 (n= 256) (26.4%)
PS Possible Score: 1-7	5.5	.92	1	7	4.94 (n= 236) (25.1%)	4.94 - 6.17* (n= 460) (48.8%)	6.17 (n= 246) (26.1%)
EI Possible Score: 1-7	3.34	1.77	1	7	1.83 (n= 264) (25.4%)	1.83 - 4.67* (n= 507) (48.7%)	4.67 (n= 270) (25.9%)

Note. Of the 1057 survey respondents, 970 responded to the creativity scale, 942 responded to the political skill scale, and 1041 responded to the entrepreneurial intentions scale.
*Score range is exclusive of the lower and upper limits.

The Pearson Product Moment correlation coefficient was used to determine if creativity was positively correlated with entrepreneurial intentions among this group of undergraduate students. Results revealed that at the 0.01 level, there was a statistically significant positive relationship between creativity and entrepreneurial intentions ($r = 0.264$, $p < 0.001$) among the female undergraduate students. Thus, hypothesis one was supported. Results also revealed that at the 0.01 level, there was a statistically significant positive relationship between creativity and entrepreneurial intentions ($r = 0.332$, $p < 0.001$) among the male undergraduate students. Thus, hypothesis two was supported.

The researcher also employed the Pearson Product Moment correlation coefficient to determine if political skill was positively correlated with entrepreneurial intentions among the students. Results revealed a statistically significant positive relationship between political skill and entrepreneurial intentions among the women ($r = 0.233$, $p < 0.001$). Thus, hypothesis three was supported. Results also revealed a statistically significant positive relationship between political skill and entrepreneurial intentions among the men ($r = 0.282$, $p < 0.001$). Thus, hypothesis four was also supported. Again, these correlations were significant at the 0.01 level.

Moderated multiple regression analysis was then performed to determine if political skill moderated the relationship between creativity and entrepreneurial intentions among the female undergraduate students. Creativity and political skill were entered in Step one of the regression analysis. The degree to which the two variables were related to entrepreneurial intentions (R) was 0.294. The cumulative measure revealed that 8.6% of the variability in entrepreneurial intentions was accounted for by creativity and political skill ($R^2 = 0.086$, $F_{Change} = 25.548$, $p < 0.001$). In Step two, the interaction term, computed as the product of the creativity and political skill variables (Creativity x Political Skill), was entered. The addition of the product

term resulted in an R square change of 0.004 ($F_{Change} = 2.236$, $p = 0.135$). This finding suggests that political skill does not moderate the relationship between creativity and entrepreneurial intentions among female undergraduate students. Therefore, hypothesis five was not supported. The results of the moderated multiple regression are provided in Table 5, Table 6, and Table 7.

Table 5: ANOVA Table Presenting the Significance of the Overall Regression Model of Political Skill Moderating the Relationship between Creativity and Entrepreneurial Intentions among Female Undergraduate Students at a Southern United States Research Extensive University

Model (Source of Variation)	Df	MS	F	p
Regression	3	46.527	17.816	< 0.001
Residual	541	2.611		
Total	544			

Table 6: Model Summary Explaining the Ability of Creativity, Political Skill, and the Interaction of Creativity & Political Skill to Account for Variation in Entrepreneurial Intentions among Female Undergraduate Students at a Southern United States Research Extensive University

Model	R	R^2	R^2 Change	F Change	p
1	0.294	0.086	0.086	25.548	< 0.001
2	0.3	0.090	0.004	2.236	0.135

Table 7: Coefficients Table Presenting Significance of model variables and Expected Changes in Entrepreneurial Intentions with Changes in Creativity and Political Skill among Female Undergraduate Students at a Southern United States Research Extensive University

Model	Variables	Beta	t	p
1	Creativity	0.191	4.176	< 0.001
	Political Skill	0.155	3.402	0.001
2	Creativity	-0.195	-0.744	0.457
	Political Skill	-0.176	-0.778	0.437
	Creativity x Political Skill	0.611	1.495	0.135

The same procedures were used to test for a moderating effect among the male undergraduate students. Creativity and political skill were entered in Step one of the regression analysis. The degree to which the two variables were related to entrepreneurial intentions (R) was 0.377. The cumulative measure revealed that 14.2% of the variability in entrepreneurial intentions was accounted for by creativity and political skill ($R^2 = 0.142$, $F_{Change} = 27.957$, $p < 0.001$). In Step two, the interaction term, computed as the product of the creativity and political skill variables (Creativity x Political Skill), was entered. The addition of the product term resulted in an R square change of 0.000 ($F_{Change} = 0.071$, $p = 0.790$). This finding suggests that

political skill does not moderate the relationship between creativity and entrepreneurial intentions among male undergraduate students. Therefore, hypothesis six was not supported. The results of the moderated multiple regression are provided in Table 8, Table 9, and Table 10.

Table 8: ANOVA Table Presenting the Significance of the Overall Regression Model of Political Skill Moderating the Relationship between Creativity and Entrepreneurial Intentions among Male Undergraduate Students at a Southern United States Research Extensive University

Model (Source of Variation)	Df	MS	F	p
Regression	3	53.427	18.611	< 0.001
Residual	337	2.871		
Total	340			

Table 9: Model Summary Explaining the Ability of Creativity, Political Skill, and the Interaction of Creativity & Political Skill to Account for Variation in Entrepreneurial Intentions among Male Undergraduate Students at a Southern United States Research Extensive University

Model	R	R^2	R^2 Change	F Change	p
1	0.377	0.142	0.142	27.957	< 0.001
2	0.377	0.142	0.000	0.071	0.790

Table 10: Coefficients Table Presenting Significance of model variables and Expected Changes in Entrepreneurial Intentions with Changes in Creativity and Political Skill among Male Undergraduate Students at a Southern United States Research Extensive University

Model	Variables	Beta	t	p
1	Creativity	0.279	4.868	< 0.001
	Political Skill	0.153	2.679	0.008
2	Creativity	0.212	0.827	0.409
	Political Skill	0.083	0.307	0.759
	Creativity x Political Skill	0.118	0.266	0.790

CONCLUSIONS, IMPLICATIONS, AND FUTURE INQUIRY

Findings revealed that for both male and female undergraduate students, there was a statistically significant positive relationship between creativity and entrepreneurial intentions. Educational institutions, in conjunction with interested corporate partners, should strive to introduce programs whereby students, and particularly women, can allow the flow of their "creative juices" and also hone other entrepreneurial skills as they work on entrepreneurial projects/initiatives. Krueger, Reilly, and Carsrud (2000) state that gender differences in career choice are largely explained by self-efficacy differences, and that raising entrepreneurial efficacies will raise perceptions of venture feasibility, thus increasing the perception of opportunity.

One of the reasons that women do not intend to become entrepreneurs or choose entrepreneurship as a career route is that they lack self-efficacy in terms of creativity (Phipps, 2011). Since creativity is an important entrepreneurial efficacy, women need to have more opportunities that will allow them to raise their own creativity perceptions, and as a result, elevate their entrepreneurial efficacy, so that their perceptions of entrepreneurial feasibility can be increased, and also their entrepreneurial intentions.

Political skill did not moderate the relationship between creativity and entrepreneurial intentions. For both male and female undergraduate students in this study, no significant effects resulted from the addition of the interaction term to the model. It could be that the sample of undergraduate students did not consist of sufficient diversity in terms of age groups. Younger individuals may not understand the full value of political skill and may not use it as frequently as older individuals. Thus, the study should be replicated with older men and women at different stages of their lives. The study should also be replicated using women in "Women in Business" programs that are especially tailored to address the challenges and opportunities encountered by female entrepreneurs, to determine if results would differ. In addition, future research should examine the political skill dimensions separately, to determine whether there is the existence of moderating effects of each dimension on the creativity-entrepreneurial intentions relationship.

Although no moderating effects were observed, political skill is, nevertheless, an important construct, as findings revealed that it has a direct correlation with entrepreneurial intentions. For both male and female undergraduate students, there was a statistically significant positive relationship between political skill and entrepreneurial intentions. Therefore, its possession can only aid in an individual's "journey" toward entrepreneurial behavior, and thus, attention should be directed toward the cultivation of political skill among students, and particularly women, in educational institutions. In this way, they will be equipped with political skill in their entrepreneurial "toolbox," and they will be confident enough in their political abilities to envision themselves as entrepreneurs, and to commit to the pursuance of entrepreneurial opportunities.

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INDIVIDUAL ENTREPRENEURIAL ORIENTATION: FURTHER INVESTIGATION OF A MEASUREMENT INSTRUMENT

Dawn Langkamp Bolton, Western Kentucky University

ABSTRACT

Bolton and Lane (2012) recently proposed, developed, and validated a measure of individual entrepreneurial orientation (IEO) using a student sample. Their recommendations for future research included testing the instrument with non-student samples. In keeping with Hubbard, Vetter, and Little's (1998) call for publishing of replications with extensions in business research, a sample of 340 entrepreneurs in Western Kentucky was used to further validate the IEO. The ten items on the IEO measuring the dimensions of Innovativeness, Risk-taking, and Proactiveness loaded as separate factors as in the original study, with the exception of one item (for Innovativeness) which loaded on two factors (Innovativeness and Risk-taking). Cronbach alphas computed for the three factors from the sample of entrepreneurs were all above 0.765, further verifying the internal consistency of the IEO. External validity was verified with correlations and t-tests for the IEO with self-reported performance measures by the entrepreneurs. This investigation of the IEO further demonstrates that it is a reliable and valid measure of entrepreneurial orientation at the individual level. A better understanding of entrepreneurial orientation at the individual level could be valuable to potential investors and to those determining business resource allocations.

INTRODUCTION AND BACKGROUND

Bolton and Lane (2012) recently proposed, developed, and validated a measure of individual entrepreneurial orientation (IEO) after pointing out that there is disparity in the literature on how entrepreneurial an individual may be and how that has been assessed. For example, while research has shown that entrepreneurs are more open, conscientious, extraverted, and less neurotic and less agreeable than regular managers (Zhao & Siebert, 2006), a recent meta-analysis (Zhao, Seibert, & Lumpkin, 2010) shows only openness and conscientiousness to be highly correlated with entrepreneurial performance and intentions. Entrepreneurial orientation (EO) at the organization level has been shown to correlate with entrepreneurial performance (Rauch, Frese, Koenig, & Wang, 2009). And yet, no research effort has been directed specifically at the trait and attitude measures that are inherent in the original EO scale for assessing the individual. Bolton and Lane's IEO attempts to fill that void.

The work of Bolton and Lane (2012) surveyed a large student sample (n = 1102) from a regional mid-south university with items generated from Lumpkin and Dess's (1996) original five EO variables (innovativeness, willingness to take risks, proactiveness, competitive

aggressiveness, and autonomy). Validated measures of entrepreneurial orientation used by Lumpkin, Cogliser, and Schneider (2009) were adapted for individuals (e.g., "my firm" changed to "I") and students responded to the Likert scale items for these measures and for measures of propensity for entrepreneurship (i.e., I would like to work for myself; I would like to start my own venture).

Bolton and Lane (2012) analyzed their data with principal component factor analysis. Three distinct factors resulted and accounted for 60% of the total variance: Innovativeness, Risk-taking, and Proactiveness. These were the same three variables that have been examined predominantly in EO research (Rauch, et al., 2009). Cronbach's alpha for internal consistency for all three were above Nunnally and Bernstein's (1994) standard for scale development studies. Bolton and Lane further analyzed the items of the subscales and measures of students' entrepreneurial intentions and found correlations among the three subscales as well as with entrepreneurial propensity. This is in keeping with past EO research which shows that the subscales of the EO correlate with each other and with firm performance (Rauch et al., 2009) and provides construct validity to their study.

Bolton and Lane (2012) conclude that their scale development process resulted in three distinct factors as measured by their ten-item Individual Entrepreneurial Orientation which demonstrated reliability and validity. Their recommendations for future research included testing the instrument on non-student samples. In keeping with Hubbard, Vetter, and Little's (1998) call for publishing of replications with extensions in business research, it is the intent of this researcher to further validate the IEO by administering it to a sample of non-students; specifically entrepreneurs. The following hypotheses are to be tested:

Hypothesis 1: *The IEO items measuring Risk-taking, Innovativeness, and Proactiveness will load as distinct and separate factors when the IEO is administered to a sample of entrepreneurs.*

Hypothesis 2: *There will be a positive relationship between IEO and business success for entrepreneurs.*

SURVEY AND METHODOLOGY

A modified version of Dillman's (2000) Tailored Design Method was used for survey data collection. A hand-signed letter, indicating that a survey was to follow, was sent to 3560 potential business owners in a region that included south-western Kentucky and north Tennessee (but not the Nashville Metro area). After adjusting for incorrect or incomplete addresses from the first mail-out, surveys with a cover letter were then sent to 3530. Ten days later, a reminder post-card was mailed. The original mailing list came from Chambers of Commerce in the area and from the regional Small Business Development Center. Not all recipients of the mail-outs were entrepreneurs. An initial question asked respondents if they currently owned or shared ownership in a business. Three hundred forty completed surveys, on which the respondents indicated that they currently owned a business, were then analyzed. This represented just over an 11% response rate. Non-response bias was tested using Venkatraman's (1989) method of

comparing early and late respondents. Chi-Square tests of independence indicated no significant differences for gender, level of education, how the business was started or industry.

The ten-item IEO was administered as part of the survey. Additional questions about the respondent, the business, and the success of the firm were also asked of participants. The measure for business success was a self-report, five-item scale ranging from Unsuccessful to Extremely Successful used by Zhu and Chu (2010) in which they ask "How would you describe your business success?" All statistical analyses were performed in SPSS.

The methodology for data analysis included using Principal Component Analysis to determine the content validity of the measure and assessing the internal consistency of the scale using Cronbach's alpha. Construct validity was analyzed using Pearson product correlations with the subscales and the measure of self-reported business success. External validity was verified with t-tests for the IEO with self-reported performance measures by the entrepreneurs.

RESULTS

Three hundred forty surveys were analyzed. The characteristics of the respondents are found in Table 1. Approximately 75% of the sample was male. Almost 25% of the entrepreneurs were high school graduates; the rest had some level of post-secondary education. The business characteristics of the sample included 234 of the 340 businesses started from scratch and 65 from acquisition. The rest started through inheritance, franchise and other means. The majority of the businesses were from the service industry followed by retailing, construction, manufacturing and wholesaling as shown in Table 1.

Table 1: Sample Characteristics of Entrepreneurs in Western Kentucky (N=340)

ENTREPRENEURIAL CHARACTERISTICS	Frequency	Percent
Gender:		
Male	254	75.1
Female	84	24.9
Level of Education:		
High School	79	23.4
Associate Degree	24	7.1
Bachelors Degree	143	42.4
Graduate Degree	91	27.0
BUSINESS CHARACTERISTICS		
How the Business Was Started:		
Started from Scratch	234	68.8
Acquisition	65	19.1
Inheritance	11	3.2
Franchise	11	3.2
Other	19	5.6

Table 1: Sample Characteristics of Entrepreneurs in Western Kentucky (N=340)		
Industry:		
Retailing	74	21.8
Wholesaling	10	2.9
Service	160	47.2
Manufacturing	17	5.0
Construction	31	9.1
Other	47	13.9

The ten-item IEO was factor analyzed using Principal Component Analysis to determine content validity. The ten items on the IEO measuring the dimensions of Innovativeness, Risk-taking, and Proactiveness loaded as separate factors as in the original study, with the exception of one item (for Innovativeness) which loaded on two factors (Innovativeness and Risk-taking) as shown in Table 2. Almost 68% of the variance was explained by the three factors. Cronbach alphas computed for the three factors from the sample of entrepreneurs were all above 0.765, further verifying the internal consistency of the IEO. (See Table 2 for Cronbach Alphas and percentage of variance explained by the factors.)

Table 2: Factor Analysis			
Individual Entrepreneurial Orientation	INNOV	RISK	PROACT
RISK-1. I like to take bold action by venturing into the unknown.	.301	.748	.024
RISK-2. I am willing to invest a lot of time and/or money on something that might yield a high return.	.023	.783	.241
RISK-3. I tend to act "boldly" in situations where risk is involved.	.268	.803	.104
INNOV-4. I often like to try new and unusual activities that are not typical but not necessarily risky.	.505	.507	.167
INNOV-5. In general, I prefer a strong emphasis in projects on unique, one-of-a-kind approaches, rather than revisiting tried and true approaches used before.	.740	.349	.006
INNOV-6. I prefer to try my own unique way when learning new things rather than doing it like everyone else does.	.806	.156	.221
INNOV-7. I favor experimentation and original approaches to problem solving rather than using methods others generally use for solving their problems.	.824	.110	.090
PROACT-8. I usually act in anticipation of future problems, needs or changes.	.309	.038	.748
PROACT-9. I tend to plan ahead on projects.	.121	.080	.863
PROACT-10. I prefer to 'step-up' and get things going on projects rather than sit and wait for someone else to do it.	-.057	.268	.777
Percentage of Variance:	40.466	15.755	11.570
Cronbach's Alpha:	0.800	0.765	0.767
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 5 iterations.			

The data was further analyzed by removing the item that loaded on two factors from the IEO. A factor analysis of the remaining nine items resulted in three distinct factors that accounted for almost 70% of the variance (69.9%) with a decreased Cronbach's Alpha of .785 for the revised Innovativeness subscale. The percent variance explained by the revised Innovativeness factor decreased to just below 40% while the percent variance explained by the remaining two factors increased from 15.755 to 17.165 for Risk and from 11.570 to 12.786 for Proactiveness.

The factor analysis and Cronbach's Alpha analysis of the original IEO demonstrates an internally consistent set of items with content and face validity. The ten items loaded as hypothesized with only one exception. Therefore, Hypothesis One is mostly supported.

Replicating Bolton and Lane's (2012) methodology, the correlations among the subscale items and between the IEO and a self-reported measure of business success were analyzed using Pearson's correlation coefficient. The results are presented in Table 3. As with the original study, all three subscales correlated with each other significantly ($p < .01$). Two of the subscales, Risk-taking and Proactiveness also significantly ($p < .01$) correlated with the self-reported measure of Business Success. However, Innovativeness did not significantly correlate.

Table 3: Correlation Matrix of Validated Constructs

	1.	2.	3.	4.
1.RISK-TAKING SUBSCALE	1			
2.INNOVATIVE SUBSCALE	.53**	1		
3.PROACTIVENESS SUBSCALE	.38**	.32**	1	
4. BUSINESS SUCCESS	.17**	.05	.21**	1

**Correlation is significant at the 0.01 level (2-tailed)

Further validation involved examining differences in high and low individual entrepreneurial orientation as measured by the IEO. Since norms for the IEO scale have not been reported, and as was suggested in the recent work of Prieto (2011), this researcher contacted the scale developers and was told to base norms on the study sample. The sum of the scores of the ten items of the IEO was used to determine categories. Also in keeping with Prieto (2011), quartiles were used to divide the scale into high, moderate, and low IEO. The High IEO category included respondents who scored in the highest quartile (>= 75th percentile). The Moderate IEO category was designated for those in the middle quartiles (26th – 74th percentile) and the Low IEO category was reserved for those in the lowest quartile (<= 25th percentile). Based on these quartiles, a respondent was classified as Low IEO if the sum of the items on the IEO scale for that individual was 32 or less out of a possible 50 (the original ten items each measured on a five-point scale). The Moderate IEO was scored as 33 -38 and a respondent who scored 39 or above was classified as High IEO.

Using the categories of IEO, t-tests were performed between groups of high and low IEO individuals and the means for these groups on self-reported business success (as measured on a five-point scale). The mean score of business success for those categorized as High IEO was

statistically significantly different (p = .03) and higher than the mean score of business success for those classified as having Low IEO.

Hypothesis Two of this study tests the relationship between IEO and business success for Entrepreneurs, hypothesizing that the relationship will be positive. Results of the Pearson's correlation coefficient indicate a statistically significant positive relationship for two of the three subscales (Risk and Proactiveness) and the self-reported business success measure. Further analysis testing the differences between High IEO and Low IEO entrepreneurs indicate that respondents classified as High IEO describe their business success as higher. Therefore, Hypothesis Two is mostly supported.

DISCUSSION AND CONCLUSIONS

Bolton and Lane (2012) recommended testing their recently proposed, developed, and validated measure of individual entrepreneurial orientation (IEO) using a non-student sample. Responding to this and answering Hubbard, Vetter, and Little's (1998) call for publishing of replications with extensions in business research, this researcher tested the IEO on a sample of 340 entrepreneurs in an effort to further validate the IEO. In this study the ten items on the IEO measuring the dimensions of Innovativeness, Risk-taking, and Proactiveness loaded as separate factors as in the original study, with the exception of one item (for Innovativeness) which loaded on two factors (Innovativeness and Risk-taking). Cronbach alphas computed for the three factors from the sample of entrepreneurs were all above 0.765, further verifying the internal consistency of the IEO.

It is not altogether surprising that the one item of the IEO purported to measure innovativeness loaded on both the Innovative factor (.505) and on the Risk factor (.507). The item "I often like to try new and unusual activities that are not typical but not necessarily risky" contains the word "risky" although it is intended to measure innovativeness. Given that the item loaded only on the Innovativeness subscale in the student sample, this may indicate that a level of maturity is associated with "unusual activities" or with "not typical" activities. For example, the more mature responder may view unusual or not typical activities as those that are defined more by risk than by innovativeness. The reverse may be true for the student respondent.

The cross-loading of the one item for Innovativeness and the increased percent variance explained by the revised factor, suggest that perhaps the IEO scale would be more efficient with the item removed. However, this author cautions against making changes until the IEO can be studied further.

External validity was assessed with correlations and t-tests for the IEO with self-reported performance measures by the entrepreneurs. In the original study, all three subscales were correlated and significant as were the subscales and the measures of entrepreneurial propensity. In the present study, one of the subscales, innovativeness, was not significantly correlated with the performance measure. A possible reason for this lies with research on EO. The IEO is derived from the constructs in the EO. Although researchers (Rauch et al. 2000) have argued that the EO construct is unidimensional; Stetz, Howell, Stewart, Blair, and Fottler (2000) suggest that the different dimensions of EO may relate differently to firm performance. This may also be the case with IEO.

When entrepreneurs were classified as high IEO or low IEO, differences did exist in the hypothesized direction for the performance measure. T-tests indicated significant differences: High IEO individuals self-reported higher levels of success.

Overall, this investigation of the IEO further demonstrates that it is a reliable and valid measure of entrepreneurial orientation at the individual level. As such, the IEO is worthy of additional consideration in the field of entrepreneurship.

There are some limitations to this study. The sample represented only entrepreneurs in a particular region of the United States. Entrepreneurs in other regions may differ significantly. Additionally, the measure of performance was self-reported and although Rauch et al., conclude that social desirability of self-reported performance measures "does not generally pose a serious threat to the validity of the EO-performance relationship" (2009, p. 780) this has not been fully tested with the IEO. An additional limitation is that this study only looked at entrepreneurs currently in business. No assessment of entrepreneurs who were not successful was attempted or undertaken.

As Bolton and Lane (2012) suggest, there are valuable implications for the use of the IEO measure for researchers, trainers, career planners and educators. Researchers can use the IEO to enhance their understanding of entrepreneurial orientation at the individual level. Small Business Development Centers could use the IEO to help potential clients determine if they have what it takes to start their own business. The IEO could be valuable in career counseling as a tool for assessing career possibilities. Finally, universities with entrepreneurship programs may find the IEO useful in teaching entrepreneurship and in helping students understand the strengths needed to undertake a successful entrepreneurial venture.

A better understanding of entrepreneurial orientation at the individual level could be valuable to potential investors and to those determining business resource allocations. The additional insight provided by the IEO may minimize the risk-level associated with new businesses.

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THE IMPACT OF INDUSTRY CLUSTERS ON THE ECONOMY IN THE UNITED STATES

Terrance Sanchez, Southern University at New Orleans
Adnan E. Omar, Southern University at New Orleans

ABSTRACT

In the technology industry, people from different companies are trying to find ways of sharing employment, industry, and other characteristics that help strengthen their company. The information technology cluster identified in this study will provide useful information about a regional economy's strengths and weaknesses.

The research shows an industry can compete around the world provided some of the incentives. Also the research shows an IT cluster can produce quality innovative personnel for when they join other business companies around the U.S., they can enhance performance and increase efficiency in those areas.

Keywords: Cluster, Silicon, Jobs, Unemployment, Industry, Region.

INTRODUCTION

It is important that we first understand what clusters are before attempting to highlight their importance. Harvard business school defines the term 'clusters' as "a geographically proximate group of interconnected companies and associated institutions in a particular field, including product producers, service providers, suppliers, universities, and trade associations".

Michael Porter is responsible for the introduction and popularization of clusters. Porter stated that "clusters have the potential to affect competition in three ways: by increasing the productivity of the companies in the cluster, by driving innovation in the field, and by stimulating new businesses in the field. In the modern global economy, comparative advantage, how certain locations have special endowments to overcome heavy input costs, is less relevant. Now, competitive advantage, how companies make productive use of inputs, requiring continual innovation, is more important" (Porter, 1998).

Clusters are groups of inter-related industries that drive wealth creation in a region, primarily through export of goods and services. The use of clusters as a descriptive tool for regional economic relationships provides a richer, more meaningful representation of local industry drivers and regional dynamics than do traditional methods. An industry cluster is different from the classic definition of industry sectors because it represents the entire value chain of a broadly defined industry from suppliers to end products, including supporting services and specialized infrastructure. Cluster industries are geographically concentrated and inter-

connected by the flow of goods and services, which is stronger than the flow linking them to the rest of the economy. Clusters include both high and low-value added employment.

Industry clusters are not new to the business. They have been in development for years. This research focuses on how American companies clustered together, are beneficial to their businesses. Observing various regions, this study takes a look at the importance of information technology clusters. According to Michael Porter, similar companies are not the only companies that tend to cluster together. It happens in virtually every business and it has to do with natural competitive advantages created by the clustering process (Porter, 1998). It has been proven that when companies cluster together, they tend to have a mutual reinforcement and the flow of information is enhanced when these companies work in the same field. It is much more efficient to do business within a cluster because companies can turn to suppliers or other companies who are near them, rather than creating everything from zero. It is also easy to find people, new business partners and it is a self-reinforcing process that tends to feed on itself. In fact, the government plays a strategic role to improve the performance of each key industry through the development and deployment of such project (Tan, 2009).

Statement of Problem

Many businesses in the United States have trouble competing nationally and globally. This is due to a lack of skilled manpower, government policies, the cost and quality of the labor force, the supplier networks and a lack of economic development incentive programs. Businesses unfortunately cannot maintain steady industry clusters because of these key issues necessary to establish an area for a thriving industry cluster.

Statement of Objective

This research was initiated to show how industry clusters work and how they came into existence. It explains the advantages and disadvantages of industry clustering and how certain geographic areas are essential to the practice. Knowing the key issues is very important in order to establish growth and success within an industry cluster. The data from this research is intended to initiate the best practice to keep the industry cluster moving upward.

LITERATURE REVIEW

Carlsson and Mudambi (2003) found that one of the primary challenges for policymakers is to create a favorable climate for private entrepreneurship, often related to the formation of clusters. This however cannot be directed, only facilitated. Furthermore, once clusters have been formed, a comprehensive set of facilitating policies, from information provision and networking to tax codes and labor laws, are necessary (Braunerhjelm & Carlsson, 2003).

Cluster industries are geographically concentrated and inter-connected by the flow of goods and services, which is stronger than the flow linking them to the rest of the economy. Clusters include both high and low-value added employment. As such, the deployment of

innovation is important from the national development point of view, and in order to benefit the stakeholders in the national economy, the deployment should take place in industry level instead of supporting individual companies only. Clusters also often extend downstream to channels and customers and laterally to manufacturers of complementary products and to companies in industries related by skills, technologies, or common inputs. Finally, many clusters include governmental and other institutions such as universities, standard-setting agencies, think tanks, vocational training providers, and trade associations that provide specialized training, education, information, research and technical support (Tan, 2009).

Advantages of Industry Clusters

According to *References for Business* (2011), industry clusters have proven to be advantageous due to:

1. *Advantageous for business due to lower overall costs of doing business.*
   A well-developed concentration of related business spurs three important activities: increased productivity (through specialized inputs, access to information, synergies, and access to public goods), more rapid innovation (through cooperative research and competitive striving), and new business formation (filling in niches and expanding the boundaries of the cluster map).

2. *Direct access to a more, larger and growing customer base.*
   Clustering helps cities and counties direct their economic development and recruiting efforts. It also encourages communities to refocus efforts on existing industries. Communities understand that the best way to expand their own economies and those of the surrounding region is to support a cluster of firms rather than to try to attract companies one at a time to an area. Chambers of Commerce, business incubators, and some universities work with companies to develop clusters and synergies in business communities.

3. *The ability to attract and retain high quality.*
   Strong domestic clusters also help attract foreign investment. If clusters are leading centers for their industries, they will attract all the key players from both home and abroad. In fact, foreign-owned companies can enhance the leadership of the cluster and contribute to its upgrading (Julian Birkinshaw, 2000).

4. *Producing IT professionals and technical talent.*
   Clusters are always changing. They respond to the constant shifting of the marketplace. They usually begin through entrepreneurship. Silicon Valley is a relatively new cluster of computer-related industries; in the past, Detroit was the same for automobiles. Nothing sparks productive innovation better than having your competitor across the street.

5. *Having an overall better quality of life.*
   For small and developing businesses, locating in a cluster near competitors and related industries may aid the firm in faster growth, recognition, and status within the market. Economies of scale can be gained by group purchasing within the cluster. There can be discussions among cluster members about their unique competitive advantages and future challenges. Linked supply chain networks can naturally be created within a tightly-linked cluster. Informal day-today contact with similar companies is also important (Natasha Muktarsingh, 2000). Of course, physical location proximity is not always required to be a cluster. Many firms, including retailers and publishers, can be grouped together on an Internet site.

Disadvantages of Industry Clusters

There are also several disadvantages to industry clusters due to:

1. *Industry clusters have a broad definition* – Despite their popularity, there is little consensus on the boundaries for an industry cluster (both geographic and industrial boundaries). More specifically, there are no rules on how strong linkages need to be among industries, the geographic concentration that clusters require, or what level of industrial specialization is necessary (Martin and Sunley, 2003). The popularity of industry clusters and its broad based definition has somewhat diluted its meaning and there is a risk that industry clusters will be used to describe every industrial structure in every region. Furthermore, if policies are used to support clusters, then all industries will seek assistance as a cluster, whether or not they do in fact constitute a legitimate cluster (Colgan and Baker, 2003).

2. *Regions will have difficulty determining the industries best suited for clustering* – Developing an industry cluster requires identifying a region's competitive advantage based on its labor force, unique regional characteristics, availability and quality of infrastructure and proximity to markets. While a detailed analysis of a region's economy can assist in this process, there are many factors critical to future success that cannot be measured. In particular, industry growth projections and future market forces are difficult to assess (Barkley and Henry, 2001).

3. *Trust and supportive institutions are not easily established* – Industry clusters require trust and cooperation among firms and organizations. Creating trust and encouraging collaboration may seem counterintuitive to many firms as it may appear to undermine a company's internal strategy and sales potential. Many economists are doubtful that appropriate institutional arrangements will emerge as cooperation is limited by incomplete information, rivalries and opportunistic behaviour. Accordingly, these researchers suggest that a consensus for promoting joint economic development will only occur when the total gains are expected to be large; when the distribution of

costs and benefits are clear; and when the region can reach an agreement on helping those who may be harmed (Barkley and Henry, 2001).

Silicon Valley is a perfect representation of information technology clusters at work. The term Silicon Valley was coined by Ralph Vaerst, a Central California entrepreneur. The term Valley refers to the Santa Clara Valley, located at the southern end of San Francisco Bay, while Silicon which is used to create most commercial semiconductors, refers to the high concentration of companies involved in the semiconductor and computer industries that were concentrated in the area. These firms slowly replaced the orchards which gave the area its initial nickname, the Valley of Heart's Delight (SiliconValley.com, 2011).

A powerful sense of local harmony is attributed to the growth of Silicon Valley. From the 1890s, Stanford University's leaders saw its mission as service to the West and shaped the school accordingly. Realizing their best interest was fated for eastern control, a more self sufficient destiny was encouraged among the local industries. Stanford's interests were combined with those of the area's high-tech firms for the first fifty years of Silicon Valley's development.

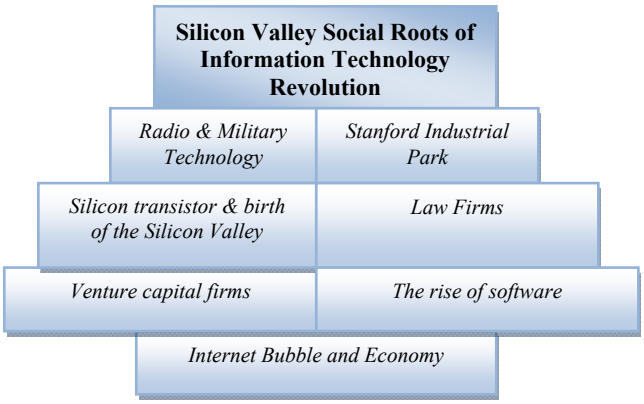
During the 1940s and 1950s, Frederick Terman, as Stanford's dean of engineering and provost, encouraged faculty and graduates to start their own companies. He is credited with nurturing Hewlett-Packard, Varian Associates, and other high-tech firms, until what would become Silicon Valley grew up around the Stanford campus. Terman is often called "the father of Silicon Valley."

During 1955-85, solid state technology research and development at Stanford University experienced a revolution in technology made possible by support of Bell Telephone Laboratories, Shockley Semiconductor, Fairchild Semiconductor, and Xerox PARC, among others. In 1969 the Stanford Research Institute (now SRI International), operated as a core network in a network that comprised the Advanced Research Projects Agency Network, ARPANET., still recognized today as the predecessor to the Internet. The network was funded by the Defense Advanced Research Projects Agency (DARPA) of the United States Department of Defense for use by its projects at universities and research laboratories in the US. The packet switching of the ARPANET was based on designs by Lawrence Roberts of the Lincoln Laboratory.

It was in Silicon Valley that key technologies were developed and has been the place of innovation for over 40 years and having at least 250,000 million information technology workers. Silicon Valley was formed as an environment of innovations by the convergence on one site of new technological knowledge; a large group of engineers and scientists; funding from an assured market with the Defense Department; the development of an efficient network of venture capital firms; and the leadership provided by Stanford University.

In 1909, Charles Herrold started the first radio station in the United States with regularly scheduled programming in San Jose. Later that year, Stanford University graduate Cyril Elwell purchased the U.S. patents for Poulsen arc radio transmission technology and founded the Federal Telegraph Corporation (FTC) in Palo Alto. Over the next decade, the FTC created the world's first global radio communication system, and signed a contract with the U.S. Navy in 1912 described in Figure 1 is a graphical representation of the roots of the IT revolution in Silicon Valley.

Figure 1: Silicon Valley Social Roots of Information Technology Revolution



Source: SiliconValley.com

In 1933, Air Base Sunnyvale, California, was commissioned by the United States Government to house the airship USS Macon. Between 1933 and 1947, US Navy blimps were based at NAS Moffett Field. A number of technology firms had set up shop in the area around Moffett to serve the Navy. The Navy gave up its airship ambitions, moved most of its West Coast operations to San Diego, NACA (the National Advisory Committee for Aeronautics, forerunner of NASA) took over portions of Moffett Field for aeronautics research. Many of the original companies stayed, while new ones moved in. The immediate area was soon filled with aerospace firms such as Lockheed.

In an effort to meet the demands of students returning from World War II, Frederick Terman proposed leasing land from Stanford University to use as an office park. The park was named Stanford Industrial Park, later changed to Stanford Research Park. Occupancy was limited to high technology companies. The first tenant was Varian Associates, founded in the 1930s by Stanford alumni. Terman also founded Venture Capital for civilian technology start-ups. Other tenants included Eastman Kodak and General Electric in the mid-1990s.

Hewlett-Packard, founded by Stanford graduates William Hewlett and David Packard, moved from Packard's garage to Stanford Research Park in 1953. Hewlett-Packard has become the largest personal computer manufacturer in the world and has transformed the home printing market with the release of the first ink-jet printer in 1984. Hewlett Packard also introduces the first laser printer (HP Laser Jet) intended for the personal computer user.

In 1956, William Shockley founded Shockley Semiconductor Laboratory. It was his belief that silicon was a better material than germanium for making transistors. When the design proved to be more difficult to build, he ended research, and Julius Blank, Victor Grinich, Jean Hoerni, Eugene Kleiner, Jay Last, Gordon Moore, Robert Noyce and Sheldon Roberts, left the company and formed Fairchild Semiconductor. Gordon Moore and Robert Noyce later became the founders of Intel.

The rise of Silicon Valley was also bolstered by the development of appropriate legal infrastructure to support the rapid formation, funding, and expansion of high-tech companies, as

well as the development of a critical mass of litigators and judges experienced in resolving disputes between such firms. From the early 1980s onward, many national (and later international) law firms opened offices in San Francisco and Palo Alto in order to provide Silicon Valley startups with legal services.

By the early 1970s, there were many semiconductor companies in the area, computer firms using their devices, and programming and service companies serving both. Industrial space was plentiful and housing was still inexpensive. The growth was fueled by the emergence of the venture capital industry of Kleiner Perkins in 1972, and was fueled by the initial public offering (IPO) of the sale of stock by a private company to the public of Apple Computer in December, 1980.

Although semiconductors are still a major component of the area's economy, Silicon Valley has been most famous in recent years for innovations in software and Internet services. Silicon Valley has significantly influenced computer operating systems, software, and user interfaces. Doug Engelbart invented the mouse and hypertext-based collaboration tools in the mid-1960s while at Stanford Research Institute. In the 1970s and 1980s, Xerox's Palo Alto Research Center played a pivotal role in object-oriented programming, graphic user interfaces, Ethernet, PostScript, and laser printers. Xerox marketed equipment using its technologies, as they flourished elsewhere. The dispersion of Xerox inventions led directly to 3Com and Adobe Systems and indirectly to Cisco, Apple Computer and Microsoft.

Silicon Valley is generally considered to have been the center of the dot-com bubble which started from the mid-1990s and collapsed after the NASDAQ stock market began to decline dramatically in April 2000. Even after the dot-com crash, Silicon Valley continues to maintain its status as one of the top research and development centers in the world. As the bursting of the Internet bubble approached, Cisco Systems, EMC, Sun Microsystems, and Oracle were known as "the Four Horsemen of the Internet" (Krantz, 2011).

According to a 2008 study by American Electronics Association, in 2006, Silicon Valley was the third largest high-tech center (cyber-city) in the United States, behind the New York metropolitan area and Washington metropolitan area, with 225,300 high-tech jobs. Silicon Valley has the highest concentration of high-tech workers of any metropolitan area, with 285.9 out of every 1,000 private-sector workers. Silicon Valley has the highest average high-tech salary at $144,800. The region is the biggest high-tech manufacturing center in the United States.

METHODOLOGY

In order to successfully run an industry cluster, crucial steps need to be addressed. In an industry cluster based on a study entitled, "Critical Step in the Cluster Building Process", the following steps are taken once a particular industry has been identified as a target of cluster-based economic development:

1. Core Industry
2. Potential Cluster Region
3. Potential Cluster Members
4. Conduct Supply Chain Analysis

5. Conduct a Social Network Analysis
6. Conduct SWOT Analysis
7. Select Cluster Strategy Team, Program Manager, Champion
8. Implement and Manage the Cluster

It has been noted that implementing the critical steps in the cluster building process requires peeling back each layer, unveiling key issues and opportunities while engaging each participant. A more detailed description of each step is listed below:

Core Industry

The core industry is a mature and established industry within a region. Recommend use of the North American Industrial Classification System (NAICS) codes for defining the core industry is advantageous, because one can easily access public data for analytical purposes. A core industry is essential in the way that an industrial cluster works.

Potential Cluster Region

It is important to define the geographic region within which the potential cluster is going to function. Our strategy is to identify the "spatial footprint" (potential area of development) of Potential Cluster Regions (PCR). PCR is an area that has the possibility to support clustering activities because they contain the necessary concentration of firms in the industry and its associated supply chain. There are two basic approaches to defining the PCRs. The easiest method is to choose a predefined region. A metropolitan statistical area (MSA), for example, is generally accepted by many analysts as an operational definition of a regional economy (Mayer, 2005). Another method of defining the potential cluster region is to obtain investigational industry data to define the geographic footprint of the industry. Every industry has a unique spatial footprint, which may not conform to predefined regions. Some industrial spatial footprints are localized; taking in only a small number of counties, such as the greenhouse industry, while others are more geographically unrestrained covering a larger region, such as the auto industry. Sweeney Feser and Henry Renski chose to primarily rely on census data, to define the geographic footprint of potential cluster industries (Feser, Sweeney & Renski, 2005).

Potential Cluster Members

Potential Cluster Members are defined as prospective individuals or organizations having the potential to add value to the cluster initiative, through their contributions. PCMs should come from industry, academia, and community. The list of PCMs should be compiled by the Cluster Strategy Team, in consultation with regional industrial experts. In assembling the list, open-minded ideas and inclusiveness should be guiding principles, which allows for adjustments in the future, should they be necessary. PCMs will provide the basis for the Social Network Analysis that will be conducted at a later date.

Conduct Supply Chain Analysis

A cluster comprises much more than just the core industry. Supply Chain Analysis includes all the downstream suppliers of inputs and upstream customers. Identifying these downstream suppliers and upstream customers is crucial. The input/output (I/O) model is suggested and has been found useful in identifying forward and backward linkages in the regional economy. Entered into the formula are dollar amounts based on amounts sold to and purchased from other industries in that concentrated market. It measures the amount consumed by residents of the region, as well as how much is exported from the region by each industry (MIG Inc., 2004). Data obtained from each county is then combined to conform to the larger regional economy. Information such as this is necessary because it helps to define potential cluster members beyond the core industry, identifies existing relationships among regional production units, and identifies gaps in the local supply chain. Local economic developers find this information useful in helping them identify potential targets for their industrial recruitment efforts. The supply chain analysis permits identification of local industries (by NAICS codes) in the chain. Specific data on firms within relevant industries that are located within the region can be obtained from business directories.

Conduct a Social Network Analysis

The establishment of a triumphant cluster initiative requires personal associations. It necessitates people who have the most suitable and significant relationships based on conviction and respect. Identifying key people, as well as relationships among cluster members, can be accomplished with social network analysis (SNA). SNA provides a quantitative measure of the nature and strength of inter-personal relationships within a defined group of people. These relationships are revealed by asking potential cluster members questions about their business-oriented social networks. The basis for a success in conducting a social network analysis is best described in Malcolm Gladwell's book titled 'The Tipping Point'. He identifies three types of key individuals. They are Mavens comprised of persons with unrestrained data reserves regarding their particular industry. The second among key individuals are Connectors. These are people who are well acquainted with people within and outside of their industry. Salesmen make up the last person within the key group. They are very influential individuals with high-quality persuasive skills. It matters not what label they wear, as long as they possess the connections, knowledge and inter-personal skills that are basic to the successful development of an industrial cluster (Gladwell, 2003).

Conduct SWOT Analysis

It is useful with respect to developing an industrial cluster because it can provide focus for the Cluster Strategy Team as they develop action step priorities for the cluster. The information and data that are necessary to complete the SWOT analysis can be attained by a variety of methods including surveys, interviews, focus groups, reading trade journals, and conducting quantitative analysis (US Department of Agriculture, 1994).

Select of Cluster Strategy Team, Program Manager, Champion

The Cluster Strategy Team (CST) can be created from the mavens, connectors, and salesmen identified by the SNA. Ideally, the CST should comprise 10-12 individuals (CLOE 2006), and be representative of industry, academia, and the community. CST is to hire both a Cluster Program Manager and Cluster Champion. Briefly, the Program Manager is charged with the day to day running of the cluster. This person should understand the process of economic development, be able to communicate effectively with members of industry, academia, and the general community, and have the ability to rally disparate groups of people around the common goal of developing the cluster. The Champion is the cluster's field agent and spends much of his or her time with visiting and talking with cluster members (particularly firms).

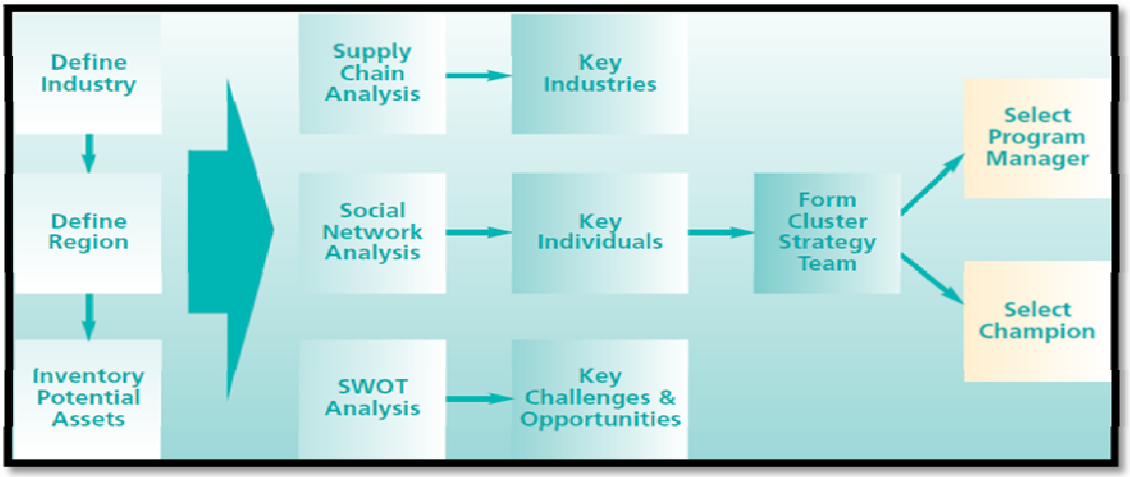
Implement and Manage the Cluster

In other words, it is time to move from having a *potential* cluster to having a *functioning* cluster. In brief, the CST should meet monthly. There should be monthly membership meetings that are open to all interested stakeholders. Monthly CST meetings should be held during the week preceding the membership meeting. At these meetings, the agenda for the membership meeting should be established. Both the Program Manager and Champion should attend monthly CST meetings. The CST should identify some early cluster projects that satisfy two key criteria. First, they should have a high probability of success. Second, they should demonstrate the value of the cluster initiative to cluster members.

The issue of industry definition is a basic, but necessary, first step in the process of building a successful cluster. It is particularly important if there are limited resources to support cluster development. Concise definition of the core industry or industries permits efficient allocation of limited financial resources. It also facilitates efficient use of human resources by helping to identify who should and who should not be involved in the planning for cluster implementation.

It is important that there is a web of relationships that exist among potential cluster members. Also of importance is the identification of influential people within the potential cluster, as well as the people who members of the potential cluster currently pool resources with and go to for advice, support, and new ideas. These people may not be among the political, social, or economic elite. They are, however, the people who can get things done when it comes to moving the cluster forward and making it successful. In other words, they are the mavens and connectors (DeSantis, 2006). The above mentioned steps are graphically represented in Figure 2.

Figure 2: Critical Steps in Developing a Cluster



Source: Economic Development Journal, Fall 2007, Volume 6, Number 4

Data Collection

The data was collected from resources such as the 2011 Silicon Valley index and Bloomberg Businessweek and analyzed using the SWOT (**S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats) Analysis. SWOT analysis is one of the most valuable tools in strategic planning. It is useful in the development of the Industry Cluster by providing a guidance and direction as well as prioritizing and initiating a strategic plan of action.

A collection of facts and statistics is necessary to complete the SWOT analysis. This information can be acquired through, interviews, surveys, trade journals, focus groups, and conducting quantitative analysis. All potential cluster members should be invited to provide their input to the SWOT analysis (U.S. Department of Agriculture, 1994).

Having completed the supply chain, social network, and SWOT analyses, the Cluster Strategy Team (CST) can be created from the mavens, connectors, and salesmen identified by the Social Network Analysis (SNA). Preferably, the Cluster Strategy Team should include representatives of industry, academia, and the community. This group being representative of all other groups is clearly an assemblage for progress and problem solving as a result of the exchange of ideas of people from diverse viewpoints. The make-up of the group should contain half of the members from industry, with the other half equally divided between academia and the community. In order to show productivity, it is imperative that the primary focus remain on the needs of industry. This would assist the group in remaining focused on the needs of the industry. Once the Cluster Strategy Team is established, the role of the Cluster Steering Committee begins to diminish, as the CST is responsible for supervision of the cluster. With first duty of the Cluster Strategy Team is to appoint a Cluster Program Manager and a Cluster Champion.

The Program Manager's main responsibility is to oversee and coordinate cluster activities. This person is charged with the day to day running of the cluster. This person should

understand the process of trade and industry expansion; be able to communicate effectively with members of industry, academia, and the general community; and have the ability to bring together contrasting groups of people to the common goal of developing the cluster.

The Champion's main responsibility is to visit prospective clients in the field and identify opportunities for collaboration. The champion is the cluster's field agent and spends much of his or her time visiting and talking with cluster members (particularly firms). One of the Champion's major functions is to identify opportunities for collaboration among cluster members and to work with the Program Manager in implementing collaborations. The Champion should have experience and knowledge of working in the industry and should be someone who is highly respected and trusted by cluster members. The choice of individual to fill the role of Champion should have wide acceptability among members of the cluster. The ideal Champion should be a salesman, a maven, and a connector. For example, in the early days of the cluster the Champion will be required to sell the advantages of cluster participation to cluster members. As the cluster matures, the Champion will likely interface, as a salesman, with political and community leaders, suppliers, and other key organizations on behalf of the cluster.

With the essential personnel now in place, it is time to *implement and manage the cluster.* In other words, it is time to move from impending to implementing. Separate, yet regular cluster strategy team and stakeholders' meetings should be held monthly. At these meetings, the agenda for the membership meeting should be established. Both Manager and Champion should attend the monthly meetings. The CST should determine, cluster membership rules, identify some early cluster projects that determines whether they should have a high probability of success and demonstrate the value of the cluster initiative to cluster members.

RESULTS AND DISCUSSIONS

In the current study, the SWOT step in Figure 3 was analyzed and the results are shown below.

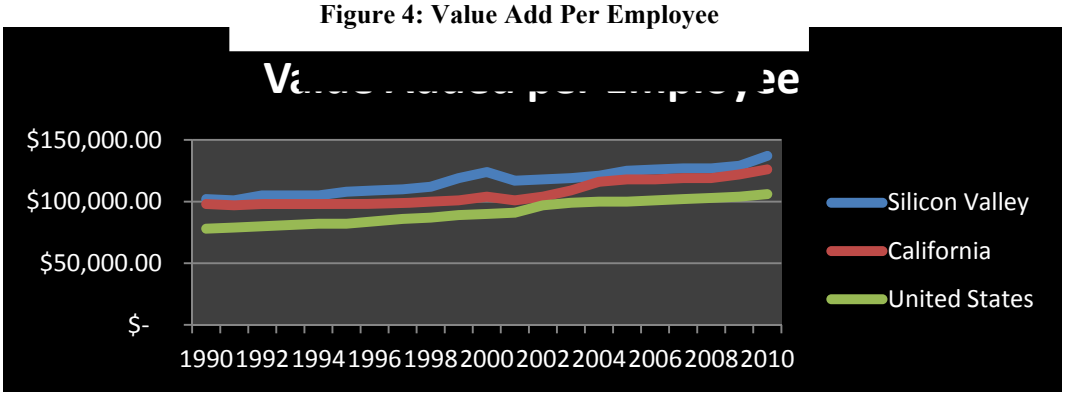
Figure 3: SWOT Analysis

STRENGTHS - Access to local university, products, resources, expertise - Growing experience - Plenty of talented workers	**WEAKNESSES** - High cost of living - Local Infrastructure
OPPORTUNITIES - Increase collaboration - Facility Modernization - Build on higher quality standards	**THREATS** - Global Competition - Prices between competitors in the regional and global perspective

In Silicon Valley an employee earns more than $100,000/year. The wages in Silicon Valley rose at a faster rate than those of California and the United States. The combination of

rising wages and more concentrated high-tech employment has been the driving force for innovation and creativity shown in Figure 4.

Figure 4: Value Add Per Employee

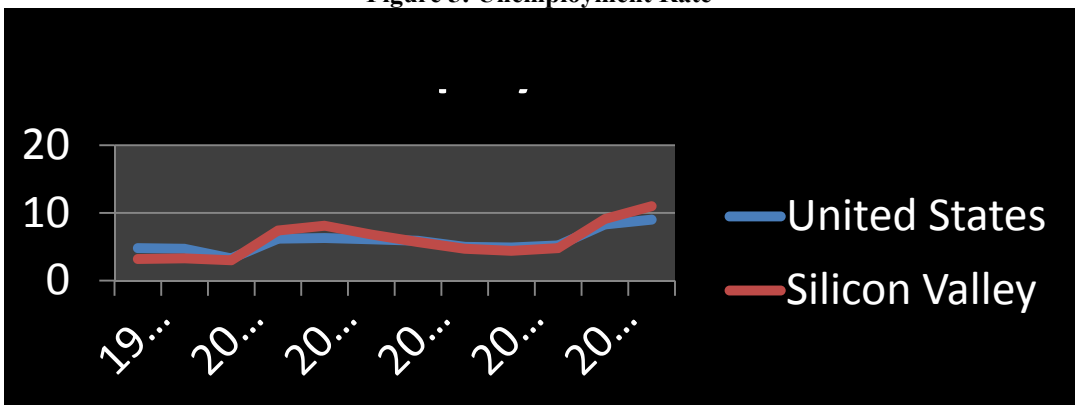


In Figure 5, Silicon Valley displays an 11% unemployment rate compared to the 9% U.S. Figure as of October 2011. The reasons unemployment rate is so high is due to:

1. Politics
2. Higher Taxes
3. Growing public sector union
4. Hiring illegal aliens/ Outsourcing
5. High cost of living

The aforementioned reasons caused some or all operations from California to move or relocate to other states and foreign countries such as Apple Computer Inc., Ebay, Hewlett Packard, Intel Corporation, and Time-To-Market (TTM) Technologies, to achieve big cost savings (BakersfieldIndustrialRealEstate.com, 2012).

Figure 5: Unemployment Rate



A recent survey conducted by Hankin & Co., a Los Angeles consulting firm, 10 percent of the 90 Southern California companies responding said they "definitely" plan to move some or

all operations from California within a year, and an additional 13 percent said they would "probably" do so. The picture is much the same in Silicon Valley and the San Francisco area. Richard Pimentel, managing partner in the accounting firm of BDO Seidman in San Francisco, says: "Any expansion by my clients is being done outside California. It just costs too much money to do business here" (DeMott, 1993).

Another example from a different sector of industry: The automaking industry jobs are being added at automaking U.S. plants in November 2011 in the southern states because of the higher cost of labor in markets for China and India. Thus the U.S. becomes an attraction for foreign car production due to weaken dollar value against the yen and euro and rising wages in developing markets. Table 1 shows the southern states automakers are attracted with incentives such as:

1. Lower business taxes
2. Fair labor pay
3. Lower land and utility costs
4. Not requiring employees to join labor union

Table 1: Global Automakers Jobs

State	Manufacturer	New Jobs
Greensburg Indianapolis	Honda	1,000
Chattanooga, Tennessee	Volkswagen	2,100
Spartanburg, S.C.	BMW	200
West Point, Georgia	Kia Motors	1,000
Blue Springs, Mississippi	Toyota	1,500
Montgomery, Alabama	Hyundai	214

Success Factors

In summary, based on the findings and SWOT analysis on the industry clusters, factors which can lead to cluster improvement have been identified as follows:

1. A strong innovative base, with supporting Research & Development activities
2. Advisory board for companies in industry clusters
3. Competitive pricing
4. Market expansion nationally and globally
5. Using technology to improve productivity

CONCLUSION

Clusters continue to develop because they increase their productivity since companies can compete in a highly competitive global market. Clusters are the main factors for increasing

jobs, income, and global export goods. In order to compete on a national and global level, the United States would have to become more of an **innovative economy** rather than a **service economy**. There are ways that United States can become a stronger innovative economy such as creating a strong collaborative workforce, maintain a suitable infrastructure for innovation, having a government dedicated in research investment for the advancement in innovative technology, provide incentives to the companies like tax breaks, fair wages, ease on regulations, joining of employees' union is not required.

Currently, high tech industry dominates every aspect of life in Silicon Valley. Despite the higher wages of IT, particularly in Silicon Valley, the study showed that many IT companies as well as IT individuals who gain vast experience are forced to relocate throughout the nation and join offshore companies due to high cost of living. Finally, IT workforce system and its partners play a vitally important role in helping a region's workers and businesses succeed across the country. Preparing workers to navigate the rapidly changing Information Communications and Technology cluster and increasing the value businesses receive from the workforce investment boards and their education partners are among the most important ways that the public workforce system can help respond to the challenges of the evolving world of work.

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