

Locus of Control Risk Perception and New Venture Decisions --Based on Logistics Regression Model

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Abstract

Past studies have discovered that personality traits could influence the entrepreneurs' new venture decisions. However, previous literature only mentioned the influence of risk propensity on the new venture choice. Our study introduces the locus of control to the framework of Forlani and Mullins [1] to study the relationships between locus of control, risk perception, and new venture decisions related to entrepreneurship. We run a regression to test the relationship between the locus of control, risk perception, and new venture decision. The result suggests that the individuals with more internal control would perceive less risk and prefer the venture with a high level of hazards and a low level of variability. In addition, the ones that perceive more risk would choose the venture choice with a high level of variability and low level of hazards. The study extends the framework of Forlani and Mullins [1] by providing another factor when investors try to choose entrepreneurs whose venture choice would match the investors' goal.

Keywords-component; Entrepreneurship; Risk-taking; Personality trait; Entrepreneurial behavior

1. INTRODUCTION

Studying risk and entrepreneurs' new venture decisions can help improve entrepreneurship quality [1]. It is found that different people perceive risks differently [2, 3]. Some studies have found that risk perception is affected by personality traits [4] and affects the new venture decisions [1]. In addition, personality traits can also influence the new venture decision [5, 6].

Sitkin and Pablo [5] suggest that risk propensity as a personality trait affects risk perception. Forlani and Mullins [1] have researched the relationships between perceived venture risk, risk propensity, and new venture decision, and the results show that the influence of risk propensity on risk perception is insignificant. The findings suggest that individuals build a new venture because they do not perceive the venture risk instead of knowingly taking a risk [7]. In addition, the research of Forlani and Mullins [1] shows that individuals who perceive more venture risk tend to make less risky venture decisions, but the individuals who have a high risk propensity tend to make more risky venture decisions (See Figure 1). The further study shows that risk perception affects the venture choices with different gains and losses, while the risk propensity affects the venture choices with different possibilities of gains and losses [8].

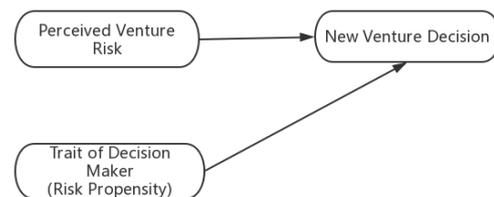


Figure 1 A Framework of the Role of Risk Perceptions in New Venture Selection [1]

Previous studies show that the risk propensity between entrepreneurs and non-entrepreneurs is not significantly different [2, 9]. However, the research of Forlani and Mullins [1] has only researched the relationship between one personality trait (risk propensity) and new venture choice. There are many other personality traits associated with entrepreneurship. Locus of control is a personality trait that can predict the individual's intention to start a new business [10, 11]. It is significant to study how the locus of control could influence decisions as the locus of control is an entrepreneurial-related personality trait and may extend the framework of previous work. This paper will research the relationships of the locus of control, perceived venture risk, and new venture decisions.

2. THEORY AND HYPOTHESES

2.1. Locus of Control and Risk Perception

Rotter [12] proposes that individuals with an internal locus of control believe that they can control their destiny and perform better than those with an external locus of control. Many studies have been done on personality and risk perception [13, 14]. It suggests that locus of control is correlated to risk perception [15].

A study with only 59 participants suggests that internal locus of control has a significant negative but weak relationship with the risk perception [16]. Crisp and Barber [17] have found that the drug users scoring high in the internal locus of control perceive the HIV risk more accurately than those scoring high in the external locus of control. Risk perception depends to a certain extent on the expectation of internal or external control of risk sources [16]. The individuals with more internal control may expect to have the ability to cope with the venture risk because it is found that individuals with internal controls perceive more desirability and feasibility of a new venture [18]. Based on the studies above, we propose hypothesis one:

H1: Individuals with more internal control would perceive less venture risk

2.2. Locus of Control and New Venture Decision

Forlani and Mullins [1] define the new venture decision as choosing one venture among four with different variability and magnitude of hazards. Previous

studies have discovered the relationship between locus of control and risky behavior. Individuals with internal control tend to overreact to irrelevant information and random outcomes [19]. Similarly, an internal locus of control is related to higher savings and an internal reference person holding significantly less financial wealth but significantly more pension wealth [20]. The researchers also find out that people with an internal locus of control are more engaged in investments with higher personal returns [21]. Internal controlled people are sensitive to risk and likely to make conservative choices instead of risky behavior. Thus our hypothesis two is:

H2: Individuals with more internal control would choose the less risky venture

2.3. Perceived Venture Risk and New Venture Decision

The individual perception might explain the decision to start a new venture [22, 23]. The perceived risk may explain why an individual starts a new business [2]. It is suggested that a manager who perceives less risk would take more risky action [24, 25]. Entrepreneurs are more likely to perceive strengths and opportunities and claim they are not taking risks [2, 26]. It is empirically tested that more perceived venture risk will lead to less risky venture decisions [1]. We can conclude that more perceived venture risk would prevent an individual from risky venture choices.

H3: The more venture risk an individual perceives, the less risky venture decision they would make.

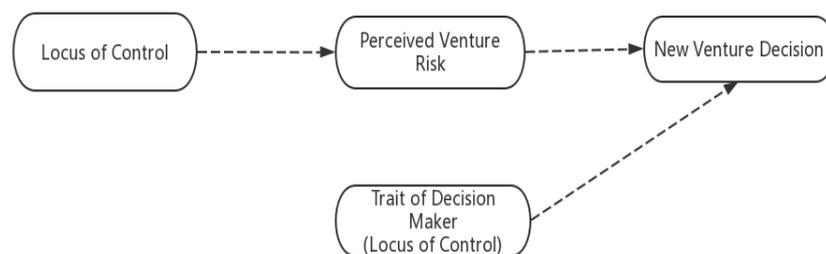


Figure 2 A Framework of Hypotheses

3. RESEARCH METHOD

3.1. Participants

One hundred sixty participants (75% male, 25% female) have taken part in the study. The participants include students from a university and participants recruited from the Wenjuanxing website.

3.2. Material

Three different questionnaires were used to test internal control, risk perception, and the new venture decision. All questionnaires were translated into Chinese.

The IE-Scale by Rotter [12] was adopted to measure the locus of control because the scale generally tests the locus of control without focusing on one particular area. The IE-Scale has 29 multiple-choice questions. Each question has two choices, one for external control and one for internal control.

The design of four different ventures is used for the variables perceived venture risk and new venture decision [1]. Four ventures were presented. The participants were told that the control variables like industry, products, familiarity with the industry were the same. The ventures have different degrees of variability and magnitude of hazards. Variability is defined as the

probability of actual returns based on the deviation in prior returns [27-29]. Hazard is defined as the potential financial loss [25]. In these ventures, there are two degrees of variability: 40% possibility of meeting the ROI, 30% possibility of losses, 30% possibility of gains versus 80% possibility of meeting the ROI, 10% possibility of losses, 10% possibility of gains. Besides, there are two magnitudes of hazards: possible losses and gains of 5 million versus possible losses and gains of 25 million. A 2x2 factorial design was applied to generate four ventures ranking from “Very Risky” to “little Risky” [1].

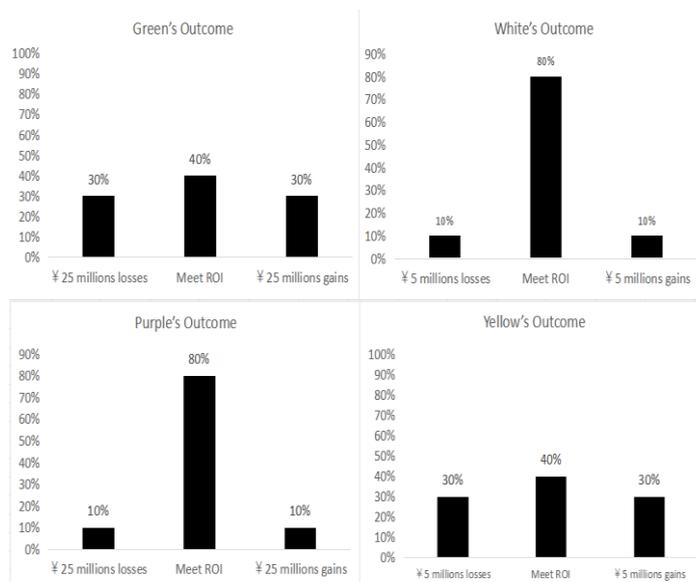


Figure 3 Venture Description [1]

3.3. Procedure

We did a digital survey with the Wenjuanxing website. The survey was sent to the participants. The participants get a financial reward for completing the questionnaire. Firstly, they write down their personal information. Secondly, they did the multiple-choice questions for the locus of control. Finally, they finish a Likert scale for risk perception and choose the new venture.

After collecting the data, we sum up the internal locus of control score and the risk perception for each participant. The new venture decision is coded as “1,2,3,4” to represent “Green (Very Risky), Purple, Yellow, White (Not Risky).” We use SPSS to test the relationships between the variables. Linear regression is used for testing the locus of control and risk perception. Logistics regression is used to test the effect of locus of control and risk perception on new venture decisions.

The measure of perceived new venture risk was a seven-point scale. The participants were asked to report how much risk they have perceived in the four ventures above. We reduced the original scale dimensions [1] to concentrate on the perceived new venture risk. The score for perceived new venture risk would be the sum of each scale.

For the new venture decision, the participants were asked to choose one of the ventures about starting a new business. The degree of risk of four ventures has been tested [1]. The ranking of the ventures above was Green (Very risky), Purple, Yellow, White (Not risky).

4. RESULTS

The risky degree of the four ventures is as follows: White (least risky), Purple. Yellow and Green (most risky). Most people chose the venture with a high level of hazards. The Green Venture was chosen by 46 participants and Purple Venture by 45 Participants. Moreover, 33 chose White Venture, and 36 chose Yellow Venture. The average risk perception score is 11.18 (maximum 24 minimum 4). The average score of internal control is 11.76 (maximum 14 minimum 10). The statistics show a significant difference in the perceived risks but fewer differences in the scoring on locus of control.

We run a regression test to assess whether the H1 can be supported. The relationship between locus of control and risk perception is significantly negative ($\beta = -.248$ $p = .002$), which means that the more internal control one has, the less risk one perceives. H1 can be supported.

TABLE 1: COEFFICIENT OF LOCUS OF CONTROL AND RISK PERCEPTION

R.P.	B	Standard Error	β	t	Significant
Constant	20.176	2.838		7.110	.000
LOC	-.765	.238	-.248	-3.215	.002

(R.P.: Risk Perception LOC: Locus of Control)

For H2, we run a logistics regression, and the model is significant according to the likelihood-ratio test ($p = .006$). The result suggests that the relationship between Purple and Green is significant ($B = .393$ $P = .002$), and the relationship between Purple (less risky) and Yellow (riskier) is also significant ($B = .336$ $P = .013$). It means that individuals with more internal control would be more likely to choose the less risky venture than the riskier ones. However, the relationship between

White Venture (the least risky) and the other types of ventures was not significant ($p > .05$). It may suggest that individuals with a higher locus of control prefer to choose the ventures with a lower degree of variability and high magnitude of hazards. Therefore, H2 can not be supported. Locus of control does not influence the least risky decision. However, ones with internal control prefer the venture with a lower degree of variability and high magnitude of hazards.

TABLE 2: COEFFICIENT OF THREE VENTURES COMPARED WITH PURPLE

NVD		B	Standard Error	Wald	df	Significant
White	LOC	-.158	.142	1.236	1	.266
Yellow	LOC	-.336	.135	6.226	1	.013
Green	LOC	-.393	.129	9.254	1	.002

(NVD: New Venture Decision LOC: Locus of Control)

For H3, we also run a logistics regression, and the likelihood-ratio test model is significant ($p < .001$). The result shows there is a significant relationship between White and Yellow ($B = -.589$ $P < .001$), Purple and Yellow ($B = -.464$ $P < .001$), Green and Yellow ($B = -.550$ $P < .001$). It means compared to White and Purple (less risky) Venture, the individual with more perceived

venture risk would choose the Yellow (riskier). However, compared to the Green venture (riskier), the individual with more perceived risk would choose the Yellow (less risky) venture. It may suggest that individuals who perceive greater venture risk prefer to choose the ventures with a lower magnitude of hazard and a high degree of variability. The H3 cannot be supported.

TABLE 3: COEFFICIENT OF THREE VENTURES COMPARED WITH YELLOW

NVD		B	Standard Error	Wald	df	Significant
White	R.P.	-.589	.111	28.159	1	.000
Purple	R.P.	-.464	.096	23.141	1	.000
Green	R.P.	-.550	.103	28.574	1	.000

(NVD: New Venture Decision R.P.: Risk Perception)

5. DISCUSSION

We introduce an entrepreneur-related trait (locus of control) to investigate its relationship with risk perception and new venture decisions, which extends the work of Forlani and Mullins [1]. H1 proposes that individuals with more internal control would perceive

less venture risk. The result shows that ones with more internal control perceive less risk, which supports the study of Kallmen [16]. Some findings have discovered that individuals with internal control will be more likely to display an illusion of control [30, 31]. Simon, Houghton [7] found that cognitive biases, the illusion of control lead to less risk perception. Therefore, the illusion

of control may influence the relationship between locus of control and risk perception.

H2 proposes that Individuals with more internal control would choose the less risky venture. However, the result shows that ones with internal control prefer the venture with a lower degree of variability and high magnitude of hazards. Slovic [32] proposed a two-dimensional risk perception model: the control of risk and dread that the risk evokes. The ones with more internal control may prefer the venture choice that they can control. The hazard of a venture, such as the gains or losses, are controllable for those with more internal control. In contrast, the variability of a venture is uncontrollable for them. Thus it could influence their risk perception.

H3 proposes that the more venture risk an individual perceives, the less risky venture decision they would make. However, the result shows that individuals who perceive greater venture risk prefer to choose the venture with a low level of hazard but a high level of variability. It supports the study of Mullins and Forlani [8] that risk perception only influences the venture choice differing in the magnitude of gains and loss, while risk propensity influences the venture choice differing in the likelihood of gains and loss. Therefore, the participants' high risk propensity could explain that people with more perceived risk choose the venture with a high level of variability.

6. IMPLICATION AND LIMITATION

6.1. Practical Implication

Forlani and Mullins [1] suggest that investors should entrust their investment to entrepreneurs whose personal characteristics match their objectives. In the previous study, the relationship between risk propensity and new venture decision was discovered. This paper studies the effect of other personal characteristics (locus of control) on risk perception and new venture decisions. Our study suggests that the decisions with more internal control would choose the ventures with a high level of hazards but a low level of variability. The implication is that the investors can forecast the entrepreneurs' future venture choices with the IE-Scale.

6.2. Theoretical implication

Sitkin and Pablo [5] suggest that the risk propensity may affect the new venture decision, supported by the empirical study of Forlani and Mullins [1]. It is also suggested that the other personality traits would affect the new venture decision [1]. This study suggests that the personality trait, locus of control also influence the new venture decision. In addition, Kallmen [16] studied the relationship between the locus of control and personal and public risk perception. This study has enriched the

range of risk perception with entrepreneurial risk scenarios.

We extended the framework of Forlani and Mullins [1] by introducing the variable, locus of control. Our study challenges the finding that more perceived risk would lead to less risky venture choice [1]. Our study shows that individuals with more perceived risk would choose ventures with a low level of hazard. However, risk perception may not explain the variability dimension of risk.

6.3. Limitation

Most of the participants were recruited online. Our research was based on a decision-making task that is related to starting a new business. The data might be more accurate if all participants were entrepreneurs.

6.4. Future Research

Our study has suggested the significant and negative relationship between internal control and risk perception, which means one with more internal control would perceive fewer risks. Future research should focus on the relationship between locus of control and illusion of control to determine whether personality traits affect cognitive biases. To be exact, whether an individual with more locus of control would exhibit more illusion of control, or illusion of control mediates locus of control and risk perception.

7. CONCLUSION

This study proposed that locus of control may influence the perceived venture risk and new venture decision. Apart from that, we researched the relationship between perceive venture risk and new venture decisions. The result suggests that the individuals with more internal control would perceive less risk and prefer the venture with a high level of hazards but a low level of variability. In addition, the ones that perceive more risk would choose the venture with a high level of variability and low level of hazards.

REFERENCES

- [1] Forlani, D. and J.W. Mullins, *Perceived risks and choices in entrepreneurs' new venture decisions*. Journal of business Venturing, 2000. **15**(4): p. 305-322.
- [2] Palich, L.E. and D.R. Bagby, *Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom*. Journal of business venturing, 1995. **10**(6): p. 425-438.
- [3] Busenitz, L.W. and J.B. Barney, *Differences between entrepreneurs and managers in large organizations:*

- Biases and heuristics in strategic decision-making.* Journal of business venturing, 1997. **12**(1): p. 9-30.
- [4] Sitkin, S.B. and L.R. Weingart, *Determinants of risky decision-making behavior: A test of the mediating role of risk perceptions and propensity.* Academy of management Journal, 1995. **38**(6): p. 1573-1592.
- [5] Sitkin, S.B. and A.L. Pablo, *Reconceptualizing the determinants of risk behavior.* Academy of management review, 1992. **17**(1): p. 9-38.
- [6] Lopes, L.L., *Between hope and fear: The psychology of risk*, in *Advances in experimental social psychology.* 1987, Elsevier. p. 255-295.
- [7] Simon, M., S.M. Houghton, and K. Aquino, *Cognitive biases, risk perception, and venture formation: How individuals decide to start companies.* Journal of business venturing, 2000. **15**(2): p. 113-134.
- [8] Mullins, J.W. and D. Forlani, *Missing the boat or sinking the boat: A study of new venture decision making.* Journal of Business Venturing, 2005. **20**(1): p. 47-69.
- [9] Brockhaus Sr, R.H., *Risk taking propensity of entrepreneurs.* Academy of management Journal, 1980. **23**(3): p. 509-520.
- [10] Pandey, J. and N.B. Tewary, *locus of control and achievement values of entrepreneurs.* Journal of occupational psychology, 1979. **52**(2): p. 107-111.
- [11] Brockhaus, R.H. *I.E. locus of control scores as predictors of entrepreneurial intentions.* in *Academy of Management Proceedings.* 1975. Academy of Management Briarcliff Manor, NY 10510.
- [12] Rotter, J.B., *Generalized expectancies for internal versus external control of reinforcement.* Psychological monographs: General and applied, 1966. **80**(1): p. 1.
- [13] Sjöberg, L., *Worry and risk perception.* Risk analysis, 1998. **18**(1): p. 85-93.
- [14] Sjöberg, L., *Distal factors in risk perception.* Journal of risk research, 2003. **6**(3): p. 187-211.
- [15] Wallston, K.A., B. Strudler Wallston, and R. DeVellis, *Development of the multidimensional health locus of control (MHLC) scales.* Health education monographs, 1978. **6**(1): p. 160-170.
- [16] Kallmen, H., *Manifest anxiety, general self-efficacy and locus of control as determinants of personal and general risk perception.* Journal of risk research, 2000. **3**(2): p. 111-120.
- [17] Crisp, B.R. and J.G. Barber, *The effect of locus of control on the association between risk perception and sexual risk-taking.* Personality and individual differences, 1995. **19**(6): p. 841-845.
- [18] Yan, J., *The impact of entrepreneurial personality traits on perception of new venture opportunity.* New England Journal of Entrepreneurship, 2010.
- [19] Pinger, P., S. Schäfer, and H. Schumacher, *Locus of control and consistent investment choices.* Journal of Behavioral and Experimental Economics, 2018. **75**: p. 66-75.
- [20] Cobb-Clark, D.A., S.C. Kassenboehmer, and M.G. Sinning, *Locus of control and savings.* Journal of Banking & Finance, 2016. **73**: p. 113-130.
- [21] Caliendo, M., et al., *locus of control and investment in training.* Journal of Human Resources, 2020: p. 0318-9377R2.
- [22] Krueger Jr, N.F. and D.V. Brazeal, *Entrepreneurial potential and potential entrepreneurs.* Entrepreneurship theory and practice, 1994. **18**(3): p. 91-104.
- [23] Krueger, N., *The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability.* Entrepreneurship theory and practice, 1993. **18**(1): p. 5-21.
- [24] Kahneman, D. and D. Lovallo, *Timid choices and bold forecasts: A cognitive perspective on risk taking.* Management science, 1993. **39**(1): p. 17-31.
- [25] March, J.G. and Z. Shapira, *Managerial perspectives on risk and risk taking.* Management science, 1987. **33**(11): p. 1404-1418.
- [26] Corman, J., B. Perles, and P. Yancini, *Motivational factors influencing high-technology entrepreneurship.* Journal of Small Business Management, 1988. **26**(1): p. 36.
- [27] Armour, H.O. and D.J. Teece, *Organizational structure and economic performance: A test of the multidivisional hypothesis.* The Bell Journal of Economics, 1978: p. 106-122.
- [28] Bowman, E.H., *A risk/return paradox for strategic management.* 1980.
- [29] Fisher, I.N. and G.R. Hall, *Risk and corporate rates of return.* The Quarterly Journal of Economics, 1969: p. 79-92.
- [30] Tennen, H. and J.P. Sharp, *Control orientation and the illusion of control.* Journal of Personality Assessment, 1983. **47**(4): p. 369-374.
- [31] Hong, Y.-Y. and C.-Y. Chiu, *Sex, locus of control, and illusion of control in Hong Kong as correlates*

of gambling involvement. The Journal of Social Psychology, 1988. **128**(5): p. 667-673.

[32] Slovic, P., *Perception of risk*. Science, 1987. **236**(4799): p. 280-285.

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