

Review of Entrepreneurial Cogniton: Concept and Dimensions

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Abstract—the perspective of entrepreneurial cognition (EC) brings a new way of thinking and method for the entrepreneurial research. This paper tries to give a review of EC research, point out the fundamental questions and theory base, show the widely accepted definition and dimensions, and summarize the antecedents and consequence. On the base of review, some topics for the future research are proposed.

Keywords: entrepreneurial cogition, entrepreneurship, opportunity definition

1. Introduction

Baron (2004) pointed there were three basic questions in the entrepreneurial research area: Why do some people but not others choose to become entrepreneurs? Why do someone but not others who can identify opportunities of profitable business, including product or service? Why do some entrepreneurs have a better performance? In the previous studies, researcher tried to explain the entrepreneurship with some variables, such as demographic differences, companies' internal control points, need for achievement, risk taking and so on, but the results are ambiguous. The perspective of entrepreneurial cognition (EC) brings a new way of thinking and method for the entrepreneurial research. With its rigorous theory basis and empirical test, entrepreneurial cognition systematically explains the role individuals play in the process of entrepreneurship, so EC can become an effective tool to explore and explain the phenomena in the entrepreneurial research field.

2. proposition and development of EC

There is a premise assumption for the study of entrepreneurial cognition that the concept of "entrepreneurship" itself represents the different thinking and behavior manners. Recently, the use of social psychology, especially the social cognition, in the entrepreneurial field brings a powerful support for the link of "thinking-doing".

The entrepreneurial cognition literature relevant to concepts from institutional theory research begins with Shapero and Sokol (1982), who suggested that new venture formation would occur when entrepreneurs thought about desirability first and later, about feasibility. Krueger and Brazeal (1994) then proposed that desirability and feasibility cognitions were actually concurrent—more gestalt-like. This idea has been adopted by some entrepreneurial cognition researchers because it explains how individual behavior is shaped by person–environment interaction.

Later, papers talked about entrepreneurial cognition emerged in the study of entrepreneurial decision, as well as entrepreneurial intension and effectiveness. EC gives an explanation of the difference between entrepreneur and non-entrepreneur. Palieh and Bagby (1995) studied the risk-taking with cognition theory, Mitehell and his colleague (2002) showed that interactive education from the perspective of entrepreneurial cognition has a better effect than the only entrepreneurial knowledge teaching.

With the development of cognition theory in the entrepreneurial field, researchers began to study the difference between entrepreneur and non-entrepreneur from a deeper level. Baron (1998) thought cognitive

mechanism, such as counterfactual thinking, planning fallacy, self-justification, self-serving, affect infusion etc, has a higher level of effectiveness when explain the entrepreneurial behavior. Then, Busenitz and his colleagues (2003) gave an explanation of why the entrepreneurs' cognitive heuristics based logic is seemed to be better than the normal person with the cognition model. Mitchell etc (2000) also used the cognitive theory to explain the cross-cultural risk decision. Mitchell et al. (2000) built their explanation of how the expert information processing theory-based notion of arrangements, willingness, and ability cognitive scripts influenced the venture creation decision.

Entrepreneurial cognition focuses on the entrepreneurs, investigating their ways' of thinking (Mitchell et al., 2007) Entrepreneurial cognitions are defined to be "the knowledge structures that people use to make assessments, judgments, or decisions involving opportunity evaluation, venture creation, and growth" (Mitchell, Busenitz, et al., 2002). During the last decade, research on entrepreneurial cognition has achieved substantial developments in both theory and empirical testing. For example, researchers have found that entrepreneurs have knowledge structures that are different from non-entrepreneurs, and that these differences influence the venture creation decision.

3. Fundamental question and theory base

The study of entrepreneurship from entrepreneurs' perspective is trying to answer one question: why do some people but not others can define and explore the unique business opportunity? Two main issues affect it: 1. the possession of necessary information for opportunity identification. 2. Cognition process to explore the entrepreneurial opportunity. Entrepreneurial cognition research is relevant to both entrepreneurial theory and social cognition theory.

Entrepreneurship means the interactive and connection between individual (team) and opportunity, organizational models (Busenitz, 2003). Essentially, individual (or team) creates new job opportunity, like new product or service, for the others in the market (Mitchell, 2002). It is entrepreneur not others that identify the opportunity, and develop it through integrative methods.

Cognitive Psychology pays attention to individual behavior from the perspective of perception, memory and mental model. Neisser's (1967) widely recognized perspective, which defines cognition to be: all processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used. Because entrepreneurial cognition research concerns the foregoing processes as they occur within a socioeconomic setting, recent research has drawn heavily (but more often only implicitly) upon the field of social cognition. Social cognition is the way people explain, analyze, store, and use social environmental information. Social cognition theory comprehensively explains the interactive of people and environment affect the individual's behavior.

Based on the research of entrepreneurship and cognition, scholars gave the definition of entrepreneurial cognition, and the widely accepted one is "the knowledge structures that people use to make assessments, judgments or decisions involving opportunity evaluation and venture creation and growth (Mitchell, Busenitz et al., 2002)". In another words, entrepreneurial cognition is about how entrepreneurs use simplified mental model to scramble the information which is used to be unrelated, to help themselves to create new products or service, and make use of them into the business opportunity, then gain the necessary resource for growth. Entrepreneurial cognition contains the social cognition theory, and focus in the entrepreneurial field.

So the fundamental question for the entrepreneurial cognition research is, "how do entrepreneurs think? How Entrepreneurs develop their unique knowledge structure, and become the experts in information processing?"

4. Concepts and dimensions

A widely accepted definition of entrepreneurial cognition is proposed by Mitchell and Busenitz: the knowledge structures that people use to make assessments, judgments or decisions involving opportunity evaluation and venture creation and growth (Mitchell, Busenitz et al., 2002). In this definition, the key elements: knowledge structures (whether heuristical or scripted) and decision making (including assessment and judgment) are set within the larger context of entrepreneurship's distinctive and inclusive domain / situation (Mitchell et al., 2004) of opportunity evaluation, venture creation, and growth.

Based on the expert information processing theory (Leddo & Abelson, 1986), Mitchell et al., (2000) developed three dimensions of entrepreneurial cognition. According to this theory, experts with knowledge or scripts could have better performance than those non-experts in some specific domains. Expert information processing theory is of particular interest to entrepreneurship scholars because it successfully accounts for the ability of entrepreneurs to transform, store, recover, and use information that non-entrepreneurs miss. Expert information processing theory divided the information process into three levels. First is arrangement script, which focuses on the access to tools and materials. Afterwards are willingness scripts and ability scripts. Mitchell applied the theory to entrepreneurial area, and developed the three levels of entrepreneurial cognition.

4.1. Arrangements scripts

Arrangements scripts are the knowledge structures individuals have about the use of the specific arrangements that support their own performance and expert-level mastery in a given domain. Possession of, or access to, specific arrangements is an integral part of a script, since knowledge structures involving the appropriate use of arrangements are arrangements-specific. In the entrepreneurship literatures, arrangements scripts including, (1) idea protection; (2) possessing a venture network, (3) having access to general business resources, and (4) having venture-specific skills.

4.2. Willingness scripts

Willingness scripts are commitment to venturing and receptivity to the idea of starting a venture. Willingness scripts are the knowledge structures that underlie (inform) this commitment. They include actionable thoughts about (1) opportunity seeking; (2) commitment tolerance; (3) venture opportunity pursuit. Entrepreneurs are expected to have more highly developed scripts relating to opportunity seeking, commitment tolerance, and opportunity pursuit than business non-entrepreneurs, which clarifies understanding of the true nature of the venture creation decision and its associated risks. Willingness scripts permit entrepreneurs to experience less risk than business non-entrepreneurs because these scripts reduce uncertainty.

4.3. Ability scripts

Ability scripts consists of the knowledge structures or scripts that individuals have about the capabilities, skills, knowledge, norms, and attitudes required to create a venture (Bull & Willard, 1993). At least three scripts relating to ability appear in the entrepreneurship literature: (1) venture diagnostic scripts, (2) situational knowledge scripts, and (3) ability opportunity fit scripts. Venture diagnostic scripts concern the ability to assess the condition and potential of ventures and to understand the systematic elements involved in their creation (Krueger & Brazeal, 1994). Situational knowledge scripts involve the ability to draw on lessons learned in variety of ventures and apply those lessons to a specific situation.

Mitchell et al (2000) think that arrangements such as creation protection, venture network, lack of resource, will eliminate new venture decision. Willingness scripts, such as focus seeking, commitment tolerance, venture opportunity pursuit, will reduce the perceived uncertainty and then have an impact on entrepreneurial decision. Finally, ability scripts, such as ability-opportunity fit, risk diagnose will increase the level of self-efficacy (Gist & Mitchell, 1992). In the study of cross-culture of entrepreneurs and non-entrepreneurs, Mitchell (2002) found these cognition scripts could be used to explain the difference between entrepreneurial decisions on a significant level. Then the relationship between individual cognition and result has been built.

5. effect on entrepreneurial process

5.1. Opportunity identification

Researchers in entrepreneurial cognition area have been explaining why entrepreneurs could identify entrepreneurial opportunities while others couldn't. Is it a coincidence or a systematic engineer? For now the interests have been transferred to the entrepreneurs' mental models. Baron & Ensley (2006) thought opportunity identification includes model identification, which means entrepreneurs could identify the effective models throughout a series of complicated incidents and trends. The cognition structures obtained from former experience play an important role in the process. The cognition structures could help individuals

to find out the relationship among incidents or trends which looks unrelated facially. New business opportunities could be identified when the entrepreneurs are using “pattern recognition”. The comparison showed that the “entrepreneurial prototype” of experienced entrepreneur is much more distinct, rich statement and pay more attention to the factors related to the practical entrepreneurship.

5.2. Entrepreneurial intention

Markman, Balkin, & Baron (2002) conducted a survey on 217 patent holders, which found the individuals’ self-efficacy and regret thinking are different between entrepreneurs and non-entrepreneurs. Technical entrepreneurs are likely to have higher self-efficacy. On the other hand, technical entrepreneurs are more likely to possess regret thinking through business opportunities while technical non-entrepreneurs are more likely to have regret thinking on education and career decision.

Simon et al., (2000) found, if individuals perceived low level risks, they intended to have stronger entrepreneurial intention. The perceived feasibility and fitness will also influence entrepreneurial behavior.

5.3. Decision making

Keh, Foo & Lim (2002) thought the perception of opportunity is a result of cognition, and over-confidence, belief in the law of small numbers, planning fallacy, and illusion of control will affect the risk perception, and then influence the entrepreneurial opportunity assessment.

Some other researches focus on the impact of cognitive bias on the entrepreneurial decision making. Researchers of cognitive bias believe individuals who have been participated in entrepreneurship are more likely to have stronger cognitive bias since they are facing a decision making environment full of uncertainty and complexity. Under these circumstances, cognitive biases could make the entrepreneurs have a more positive attitude on the potential entrepreneurial behavior. Simon & Houghton (2000) thought different environment will influence cognition and then has a further influence on the result under some specific scenarios, considering entrepreneurial decision making environment.

6. Influence factors

Entrepreneurial cognition research to date has focused primarily on the “how entrepreneurial cognition connects to the consequences, implications, or results of EC” and has been successful in confirming that there are cognitive differences between entrepreneurs and non-entrepreneurs (that is, the consequences of entrepreneurial cognitions on the venture creation decision). However, the relationships between entrepreneurial cognitions and their antecedents remain relatively underexplored.

A wide range of factors has been proposed as antecedent variables of entrepreneurial cognition, such as cultural value, social environment, individual factors, previous experience, gender etc (Gatewood, Shaver, Powers & Gartner, 2002; Mitchell et al, 2000; Mitchell, Smith, 2002). Gatewood (2002) an experiment on 179 undergraduate students of business showed that, the assessment and feedback affect the individual’s entrepreneurial prospection, for the positive assessment increase the expectation and the negative feedback decrease the expectation. However, until now, the relationships between entrepreneurial cognitions and their antecedents have only been conceptualized with very general models, and empirical testing of these relationships has been limited.

Baron (2008) pointed out that affect has influenced cognition from several aspects, for example, opportunity identification. There are two ways of affect: 1. Influence the creativity. 2. Moderate the process of antecedent influencing the opportunity identification. Positive affect increase the entrepreneur’s persuasion and widen their social network, strengthen their ability to obtain the key financial and human resources. And the negative affect works on the contrary. Besides, positive affect promote the entrepreneur’s capability to take effective reaction to the change of environment, which increase their intention to expand their ability and social capital.

7. Conclusion

Entrepreneurial cognition provides a new way of thinking and testing for the entrepreneurial research. During the last decades, bunch of researches have talked about the concept, dimension, antecedents and

consequence. For the future study, from author's perspective, there are two issues will become the research consideration: 1. although the theoretical analysis is rich now, there is a few of empirical test. Future studies will do more for the empirical test. 2. since more and more entrepreneurship is carried out by entrepreneurial teams not individuals, the research level will move from the individual level to the group level.

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