

Finding the First Among Equals: Role of Cognitive Styles in Entrepreneurial Decision-making of Novices

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Abstract:

Effectuation theory explains how expert entrepreneurs differ in decision-making during situations of high uncertainty and low information availability. Exploring the cognitive reasoning behind effectual decision-making offers fertile ground for research as well as teaching entrepreneurship. Cognitive styles have proved to be useful in studying information processing and decision-making of individuals. With increasing attention being paid to entrepreneurial cognition, researchers have also studied the role cognitive styles in entrepreneurial decision-making. Using a sample of 400 university students from Germany and the Netherlands we investigate the relationship between the participants' cognitive style and their preference for making Causal versus Effectual decision-making. We find a strong relationship between the causal decision-making and the cognitive style index score as well as the affordable loss aspect of effectuation through our ANOVA analysis. We present our case for why these relationships matter in designing entrepreneurship education.

Introduction

Understanding the cognitive aspects behind decision-making has been stressed time and again as an important candidate for research inquiry (Baron,1998; Mitchell et al., 2007). Effectuation, derived from studying how expert entrepreneurs make important decisions during new venture creation is essentially a cognition based theory (Sarasvathy, 2001). Grégoire & Corbett (2011) assert that effectuation brings focus to, “cognitive implications of uncertainty and the consequent constraints it places on both information processing and the use of planning heuristics in entrepreneurship.” Information processing is an important aspect of entrepreneurial decision-making and exploring the differences in the way individuals gather, process and evaluate information has been the focus of cognitive styles (Allinson & Hayes, 1996). Numerous studies in entrepreneurship have examined the role of cognitive styles on decision-making. Hiemileski and Corbett (2006) found evidence that among others, cognitive styles of college students could predict their entrepreneurial intention. Drawing on a sample of ‘entrepreneurial students’. Barbosa, Gerhardt and Kickul (2007) have examined the interaction between cognitive styles and risk preference on the subjects’ notion of entrepreneurial self-efficacy and entrepreneurial intention. Following this, Kickul et al (2009) found that different cognitive styles determine the perceived self-efficacy of entrepreneurs at various stages of venture creation. Researchers have been successful in establishing notable relationships between cognitive styles of individuals and their entrepreneurial intention (Krueger and Kickul, 2006). Given the cognitive underpinnings of effectuation theory we argue that, first, it is germane to examine the relationship between cognitive styles of individuals and their preference to make effectual decisions in entrepreneurial situations. Second, once this relationship has been established, we make our case that

entrepreneurship education to business school students that teaches effectuation must also pay attention to individual differences in cognitive styles. In the following sections we have laid out the methodology, our preliminary analysis with results and possible implications.

Methodology

Validated scales were used for testing cognitive style of participants namely the Cognitive Style Index (CSI) by Allinson and Hayes (1996). Effectuation was measured by making use of scales of Brettel et al. (2012), combined with questions from the work of Chandler et al. (2011). The questions by Chandler et al. for which they found high loadings upon factor analysis were included. These were mainly limited to the construct of causation. The majority of the questions for measuring effectuation came from Brettel et al (2012). Scales as developed by Wiltbank (2009) were included to measure the concept of ‘planning’ vs ‘control’. All questions were adjusted to the research setting of asking students at universities. In order to still create an environment for the students with which they would feel comfortable, a scenario was created, inspired by scenario’s as described by Sarasvathy (2008) and Wiltbank (2009). The scenario was set in that the student was starting a coffee corner. Thus, original questions from Brettel et al. such as “the selection of the R&D-option was mostly based on minimization of risks and costs” could be replaced by “Decisions will be primarily based on minimization of risks and costs.”

The survey instrument was sent to 5000 students of the University of Twente in The Netherlands and the Westfälische Wilhelms-Universität Münster. 652 students filled out the survey. From the 652 responses, 252 were removed due to missing data, leaving us with a sample of 400. We calculated the CSI score and divided the sample based on their score into 5 groups namely 1)

Intuitive decision-makers, 2) Quasi-intuitive, 3) Adaptive, 4) Quasi-Analyst and 5) Analyst. We performed ANOVA analysis between these groupings that resulted from the CSI score and the scores on the Causation and Effectuation scales. We ran post-hoc tests to check our results from ANOVA. The ANOVA results are presented in the following tables.

Table1.0: ANOVA Results for Causal Decision-making and Groupings based on CSI

CAUSATION		Sum of Squares	df	Mean Square	F	Sig.
Expected returns	Between Groups	13.436	4	3.359	.850	.494
	Within Groups	1564.120	396	3.950		
	Total	1577.556	400			
Avoiding contingencies	Between Groups	128.229	4	32.057	4.657	.001
	Within Groups	2725.931	396	6.884		
	Total	2854.160	400			
Competitive analysis	Between Groups	128.701	4	32.175	4.221	.002
	Within Groups	3018.755	396	7.623		
	Total	3147.456	400			
Goal orientation	Between Groups	66.147	4	16.537	4.206	.002
	Within Groups	1557.010	396	3.932		
	Total	1623.157	400			
Prediction	Between Groups	7.821	4	1.955	.671	.613
	Within Groups	1154.393	396	2.915		
	Total	1162.214	400			
Total Causation	Between Groups	976.545	4	244.136	4.246	.002
	Within Groups	22770.687	396	57.502		
	Total	23747.232	400			

Table 2.0 ANOVA Results for Effectual Decision-making and Groupings based on CSI

Effectuation		Sum of squares	df	Mean square	F	Sig.
Levering contingencies	Between Groups	64.102	4	16.026	2.487	.043
	Within Groups	2552.023	396	6.445		
	Total	2616.125	400			
Partnerships	Between Groups	8.277	4	2.069	.309	.872
	Within Groups	2655.509	396	6.706		
	Total	2663.786	400			
Means orientation	Between Groups	72.381	4	18.095	2.854	.024
	Within Groups	2510.821	396	6.340		
	Total	2583.202	400			
Control	Between Groups	29.591	4	7.398	2.355	.053
	Within Groups	1243.845	396	3.141		
	Total	1273.436	400			
Affordable loss	Between Groups	203.618	4	50.904	10.993	.000
	Within Groups	1833.654	396	4.630		
	Total	2037.272	400			
Total Effectuation	Between Groups	39.604	4	9.901	.194	.941
	Within Groups	20172.326	396	50.940		
	Total	20211.930	400			

Preliminary Results

As shown in Table 1.0 and Table 2.0 we found that individual's cognitive style produced reliable differences in the way they made different decisions pertaining to the casual scale. In the tasks that deal with avoiding contingencies, performing competitive analysis, means-oriented behavior, we found significant between students grouped according to their cognitive styles. When it came to calculating expected returns and prediction related tasks this difference disappeared. On the effectuation scale there was no difference observed between the groups in all the tasks except Affordable Loss.

These preliminary results suggest that students even though not all of the participants are equally pre-disposed to Causal style of entrepreneurial decision-making there is some uniformity on the effectual style. This might be due to the relative inexperience of the students in having performed entrepreneurship related activity. Novices, as found by Sarasvathy and colleagues, generally tend to prefer causal decision making. But individual differences in cognitive styles on the preference for causation and affordable loss indicates that we might be able to identify individuals to whom teaching effectuation or similar non-prediction based entrepreneurial method might be more suitable. Further analysis into the nature of each CSI score-based group and their preferences would yield useful understanding of the predisposition of the participants to adhere particular decision-making styles.

Entrepreneur education that yields appreciable results involves designing a curriculum that encourages participants with different backgrounds and cognitive profiles to engage in smart decision-making. The introduction of effectuation aims at offering useful tools for beginning entrepreneurs. Instead of a one-size-fits-all approach teaching effectuation and expecting due

results, there seems to a subset of audience that can be treated as first among equals in their ability to cognitively process and learn the effectual tool set. That this group can be derived out of tried and tested cognitive style index, that has found wide application within entrepreneurship literature, further increases the validity of our results. In closing, our results provide empirical proof towards connecting causal and at least part of effectual reasoning, as measured, with cognitive style index of novices. Future studies could examine the same relationship with experienced entrepreneurs.

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Appendix 1: survey effectuation incl scenario.

After reading the following scenario, please use your imagination, put yourself in the context of the scenario, and answer each question following the scenario as if you were creating a new venture yourself.

Scenario

For a while, I have been thinking of starting my own coffee-corner. When I looked at what existing franchising coffee-corners offered, I felt the price-quality ratio was unbalanced. I think, it should be possible to start my own successful coffee-corner with a better price-quality ratio. In several reports in newspapers and magazines I read that there is an increasing demand for drinking coffee in my home country.

The few resources or means that I have at my disposal are: limited financial capital, a few close business relations, and knowledge of the coffee industry, since I have been working at a coffee corner for five years.

Below you can find statements designed to identify your own approach in starting a coffee-corner. Please indicate to what extent you agree or disagree with each statement.

	Statements	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
1	Decisions will be primarily based on analysis of potential future returns.							
2	I will always pay attention that my initially defined target will be met.							
3	I will try to identify markets by a thorough market analysis.							
4	I allow changes in my planning if needed, even during the implementation process of my new venture.							
5	Before starting my new venture, I will first acquire all resources needed to achieve my target.							
6	Beforehand, I will calculate how many resources I need to achieve the expected returns.							
7	I expect to change my original target when confronted with new findings.							
8	The uncertainty of a market will not block me since I rely on my own experience to imagine opportunities.							
9	The decisions I make when starting my new venture will be based on the resources I have available.							
10	I allow delays during the development of my new venture when new opportunities emerge.							
11	Decisions will be made together with stakeholders based on our competences.							
12	I take a clearly pre-defined target as a starting point of the new venture.							
13	I will try to control the future by creating it.							
14	Decisions will be primarily based on minimization of risks and costs.							
15	I will talk to people I know to enlist their support in making opportunities a reality.							
16	I only spend resources I have available and I am willing to lose.							
17	I will study expert predictions on the direction the market is "heading", to determine what course of action my new venture will follow.							

18	I start my new venture without defining a clear target.								
19	My first priority is reaching my pre-set target without any delay.								
20	I will focus on early identification of risks through market analysis.								
21	I will ask my private network to help me out with starting my new venture.								
22	My planning will be set before I start the implementation process and cannot be altered afterwards.								
23	I will try to identify risks by a thorough competitors analysis.								
24	I will ask customers and suppliers to pre-commit to my new venture in order to reduce risks.								
25	I will try to control the future based on predictions of my previously obtained knowledge.								