



Does Entrepreneurial Logic Impact Funding Evaluation of Startups?

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Abstract

From a neoclassical economics perspective, entrepreneurship involves rational decision-making and entrepreneurs engage in rational, goal-driven behavior. However, such a view is put to test in current, dynamic business environments characterized by high level of uncertainty. Expert entrepreneurs adopt a nimble, iterative and effectual approach to be able to navigate such dynamic environments. While there is growing confidence about the desirable outcomes of an effectual logic, there is limited evidence based understanding of how such a logic is perceived by stakeholders in the entrepreneurial ecosystem. For instance, how do investors assess causal vs. effectual logics of entrepreneurs? This study attempts to pursue this question. We use data from a national level entrepreneurship competition held in India in 2015 to understand the influence of entrepreneurs' logics on their funding outcomes. We find that the logics of the selected and not selected entries are significantly distinct. Furthermore, results from a binary logistic regression reveal an inclination of investors towards causal logic. Adoption of causal logic increases a startup's chances of funding by about 50%. Findings are discussed in reference to implications for the current entrepreneurship ecosystem.

Keywords: effectuation, causation, entrepreneurial logic, startups, funding

Introduction

Entrepreneurs are known to follow two distinct logics – causal and effectual (Sarasvathy, 2001a), while expert entrepreneurs follow an effectual - as against causal - logic (Dew, Read, Sarasvathy, & Wiltbank, 2009). Logics or points of view underlie human reasoning and action (Ford & Ford, 1994). Are there different outcomes of two distinct entrepreneurs' logics? While there is some expectation of effectual logic in early stages leading to more favorable outcomes, there is little empirical evidence to support/question this expectation. Do entrepreneurs who adopt an effectual (causal) logic get evaluated more favorably (adversely)? Considering new ventures' continual quest for legitimacy, a favorable evaluation is expected to enhance the venture's chances of survival and success. Comparing the logics adopted by entrepreneurs and examining the venture's outcomes, this study attempts to answer some of these questions.

Neoclassical economics assumes that entrepreneurs are rational while pursuing an opportunity (Bird, 1989). Such decision-making logic is called causation (Sarasvathy, 2001a). Under this logic, an entrepreneur decides a predetermined goal and then selects means to achieve the goal. This logic, thus, assumes that markets are predictable (Sarasvathy, 2001a) and an entrepreneur who is best able to predict the market could generate more opportunities and competitive advantage. However, research suggests that human beings are not strictly rational; their rationality is limited by their cognitive abilities (Simon, 1959).

Sarasvathy (2001b) introduced effectuation, a concept in contrast to the logic of causation. An effectual approach is characterized by an outlook in which entrepreneurs employ resources in the most profitable manner (Sarasvathy, 2001b). A causal logic is a predictive, goal-oriented with focus on increasing expected returns, and is characterized by conducting of in-depth market research and analysis, thus seeking to reduce the impact of uncertainties; on the other hand, effectual logic is a non-predictive, flexible approach, characterized by a focus on minimizing losses and collaborating with potential competitors (Sarasvathy, 2009). In settings where uncertainty is the norm (Xia, Lindsay & Seet, 2010), markets for certain products may not even exist currently and opportunities for such markets may not be recognized but created. Effectual logic can be suitable to such dynamic contexts (Fisher, 2012). Read and Sarasvathy (2005) posit that entrepreneurs who apply effectual logic in their

early stages of venture creation and causal logic in later stages are more successful. There is, however, no empirical evidence to support if and by how much is effectual logic of entrepreneurs rewarded/promoted? We examine this hypothesis in the context of evaluation by early-stage investors, wherein the favorable evaluation of entrepreneurs' logic would lead to their success in funding – a key aspect on which the survival of an early stage venture is contingent upon (Bygrave & Timmons, 1992).

We use data from a national level entrepreneurship competition held in India in 2015. This competition received about 19000 applications from all over India. Several rounds of training and mentoring sessions were conducted over 3-4 months, and 75 applications were shortlisted as finalists to be considered for funding. We compared the data of 69 selected applicants with an equal number of non-selected applicants and examined whether and to what extent does the choice of entrepreneurial logic impact evaluation of a venture.

Literature Review

Entrepreneur's Logic

Entrepreneurs were traditionally considered to be different 'kind' of people (Rauch & Frese, 2007; Zhang et al., 2009). However, recent focus on entrepreneurial cognition highlights that entrepreneurial thinking is based on beliefs that can be changed and behavior that can be learned (Krueger, 2007). Among multiple aspects comprising their cognition, entrepreneurs' logic is considered to underlie various entrepreneurial processes (Sarasvathy, Dew, Velamuri, & Venkataraman, 2003). For instance, entrepreneurs' causal versus effectual logic reflects in varied strategic choices of the venture (Chandler, DeTienne, McKelvie & Mumford, 2011; Harms & Schiele, 2012).

Causal and effectual logic depict a wide variety of their underlying principles and processes. The causal logic imbibes the rational choice perspective and emphasizes 'to the extent you can predict the future; you can control it' (Sarasvathy, 2001a, p.251). Under this approach, goals are fixed and an entrepreneur aims at achieving the specified end (Sarasvathy & Venkataraman, 2011; Sarasvathy, 2009). The rational choice paradigm underlies the scientific and linear thinking aspect of this logic.

On the other end, effectuation is the logic of non-predictive control and emphasizes ‘to the extent, we can control the future; we do not need to predict it’ (Sarasvathy, 2001a. p.251). This logic inverts several principles that are central to the rational choice paradigm and is considered suited to decision-making under uncertainty (Chandler et al., 2011). While traditionally, a rational predictive approach was desirable for all kinds of decision making (Simon, 1979) including that required of a typical entrepreneur (Wiltbank, Dew, Read & Sarasvathy, 2006), an effectual logic is now considered suited to creating a new venture (Dew et al., 2009). Specifically, expert entrepreneurs have been found to be more effectual during the initial stages of a venture while adopting a more causal logic as the venture matured (Read & Sarasvathy, 2005). Wiltbank and Sarasvathy (2010) clarify that effectuation is not merely a set of heuristic deviations from rational choice, rather a kind of non-overlapping, adaptive decision-making; not to be perceived as a replacement for predictive rationality, but a textured and systematic method with eminently learnable principles and practical prescriptions of its own.

What Makes Early Stage Ventures Successful?

The success of an early stage venture is attributed to a variety of components – broadly including entrepreneur’s experience, environmental dynamism, and financial resources (Song, Podoyntsyna, Bij, & Halman, 2008). An entrepreneur’s personality or ‘qualities’ such as technical knowledge or expertise are commonly known to be key determinants of success of an early stage venture (eg. Crane & Sohl, 2004; Sandberg & Hofer, 1987). An entrepreneur's education and prior experience in the line of business also influences financial outcomes of a venture (Jo & Lee, 1996). Research also affirms the formation of teams and their functioning as a factor that influences a venture’s success (Cooney & Bygrave, 1997; Vyakarnam, Bailey, Myers & Burnett, 1997).

In moving away from personality characteristics, Osborne (1993) emphasizes a firm’s underlying business concept and capacity to accumulate capital as impacting its success. Furthermore availability of financial capital also impacts performance of a venture and acts as a buffer against shocks as well (Cooper, Gimeno-Gascon, & Woo, 1994).

Investors’ Evaluation of Early Stage Ventures

Access to funding is critical for survival and growth of an early-stage venture i.e. a venture that has not yet reached break-even (Xia et. al., 2010). Additionally, faster a firm grows, the more voracious is its appetite for funds (Bygrave & Timmons, 1992) and this is especially true for ventures in their initial phases (Brush, Ceru & Blackburn, 2009).

On the other hand, investing in new ventures is fraught with risks for investors. Often, there is sparse information about the technology/product/market (Sahlman & Stevenson, 1985) and there is also a risk of investment ‘myopia’ i.e. ‘when investors ignore the logical implications of their individual investment decisions’ (p.13), which in turn leads to overfunding and unsustainable valuations (Sahlman & Stevenson, 1985). To address their investment risks, investors usually follow a multistage process and also evaluate the ‘quality’ of an entrepreneur (Dixon, 1991; Muzyka, Birley & Leleux, 1996). Investors are often known to ‘bet’ on the ‘jockey’ (entrepreneur), as against focusing on the product, market or other financial criteria in evaluating a venture for investment (McMillan, Seigel & Narsimha, 1985).

Entrepreneurs’ Logic and Venture Success

Rational decision-making approach holds limited value in uncertain business environments, where outcomes as well as personal choices both point towards a future that cannot be predicted with all certainty (March, 1982; Knight, 1921; Weick, 1979)

A planning-driven approach thus, might be unsuitable under such conditions; on the contrary, an adaptive one is more suited for decision-making in a dynamic environment of early-stage ventures (McMullen & Shepherd, 2006). Since planning is mainly linked to the causes and predictions of past events, its outcomes often appear to be inaccurate and/or irrelevant for the context where past experiences do not exist; for instance, new markets for innovative solutions (Honig & Samuelsson, 2009; Wiltbank et al., 2006). Causal or planned approaches are effective in situations with low uncertainty, while adaptive, effectual approaches are critical for venture creation under high uncertainty (Alvarez & Barney, 2005; Sarasvathy, 2001a; 2009). Adaptive and flexible approaches show better alignment to dynamic business environments (Alvarez, Barney, & Anderson, 2013), in which expert entrepreneurs are known to leverage available resources to create their future (Dew et al., 2009; Read, Dew,

Sarasvathy, Song & Wiltbank, 2009). Therefore, considering expert entrepreneur's adopting effectual logic as against a causal logic being suited for more stable business environments, we posit:

H1a: The logics of entrepreneurs leading ventures that are selected for funding are different from those leading ventures that are not selected for funding

Further, aiming to minimise their risk, we posit that investors will favour entrepreneurs and ventures that are equipped to work and succeed in nebulous contexts. In other words, investors will prefer effectual logic over a more causal one. Thus, we posit:

H1b: Investors will evaluate ventures led by entrepreneurs following an effectual logic more favorably than those led by entrepreneurs following a causal logic.

We aim to understand whether entrepreneurs' adoption of effectual logic is evaluated favorably by investors, thus distinguishing between funding success of various entrepreneurs and plausible reasons behind it.

Methods

We use data from a national level entrepreneurship competition held in 2015 in India. The competition was organized with an aim to invite ideas from all over the country, provide training and mentoring support to shortlisted startup ideas and finally provide seed funding to selected entries. Applications were sought online and included 52 fields. They included comprehensive information about the entrepreneurs, idea, product, business model, venture, team, and co-founder(s). Out of the 19000 applications received, 14996 valid and complete applications were evaluated in this competition.

In a multi-stage process, 500 startups were shortlisted (out of 14996), out of which 75 were selected for investment/grant. For this study, we used data for 69 (out of 75) selected entries. These 69 applications had all received funding or grant. For comparison, we selected 69 applications from the remaining pool of applications following a random sampling method.

Data Characteristics

The 14996 applications include all the age groups with an average age of an entrepreneur being 32 years. More than 50% of the applicants were in the range of 19 to 35 years. Average work experience of applicants was seven years; about 38% of the applicants had zero or less than one year of work experience. Almost 90% applicants were male. About 15% of the applicants' annual income was less than INR 0.2 million and about 50% of the applicants resided in six major, tier 1 cities i.e. New Delhi, Mumbai, Chennai, Kolkata, Bengaluru, and Hyderabad). Table 1 presents the demographics of the sample of applications used in this study.

Table 1

Demographics of the sample

Demographic parameter	Selected	Non Selected	
Average age (in years)	36	32	
Male:Female (%)	87:13	93:7	
Annual income (INR million)	<0.2 (in %)	74	87
	>0.2 (in %)	26	13
Entrepreneurial experience (years)	<1 (in %)	19	25
	1-5 (in %)	13	25
	>5 (in %)	68	50
Geographic location	Tier 1 cities	58	54

Coding and Analysis

To identify what kind of logic entrepreneurs were pursuing, we analysed responses in their application forms. Five fields of the application which described the various aspects of the venture and therefore provided comprehensive data to infer the logics adopted by respective entrepreneurs were identified. We also ascertained that these were the questions that the

evaluators also focused most on while making the choice to fund or not. The chosen fields were:

1. Describe your product or service and how did the idea originate?
2. Describe your revenue generation model
3. How do you plan to spread your solution to the target market?
4. What are the currently available alternatives to your proposed solution and how does your solution compare with the competition?
5. Who are your primary/target customers? What is the addressable size of your target market? What are growth prospects/trends in your target market?

Two researchers independently coded the responses in these fields. Following Read and Sarasvathy's (2005) classification, they coded each response as either causal or effectual (1 for causal, 0 for effectual). Thus, each application was scored as being effectual or causal in their approach for that particular description (see Table 2 for illustrations of causal and effectual logics). Inter-coder comparisons revealed high agreement between coders; disagreements were resolved through discussion.

Table 2

Illustrations of causal and effectual responses

Application field	Causal Logic	Effectual Logic
Describe your product or service and how did the idea originate?	On basis of market research conducted in over 100 villages in 4 states.	As we began exploring, we realized the most impactful intervention would (and has to) be through early education itself.
Describe your revenue generation model	The revenue streams comprise of user subscription charges & advertisement.	Fee driven Model (Training Fee), Franchise Model, Workshop for one day & two days for skill training (Workshop Fee), Partnership with Govt. schemes, Employment Generation (Placement Charge)
How do you plan to spread your solution to the target market?	B2B: Through enterprise sales strategies and Inbound marketing	To quote Steve Jobs, "A lot of times people don't know what they want until you show it to them. It's hard for

	B2C: Digital marketing, primarily SEO.	them to tell you what they want when they've never seen anything remotely like it". BYK2 is neither a need nor a want though the irony is that people do need it. Based on our experience with the pilot project, the best way to spread the solution would be to hold a lot of cycling events whereby customers get a chance to rediscover cycling, tie up with channel partners such as cafes, grocery stores, etc.
What are the currently available alternatives to your proposed solution and how does your solution compare with the competition?	The current competition is from multinationals such as GE, ABB, Siemens, Rockwell Automation Honeywell, etc.	Idea is to become big data analytics player in unorganized sector; "CRISIL of unorganized sector". There is no other player in unorganized sector as of now
Who are your primary/target customers? What is the addressable size of your target market? What are growth prospects/trends in your target market?	There are very few players in India who are involved but they focus only on export market. They have imported the machines from China...we have designed our own Process...even decided to patent the machine design and process.	No competition. current practice is by conventional methods which are not meeting the desired goals set by the GoI in National Water Policies since 2002 and other international organisations like UNDP, world bank.

An overall Causal Score (C-score) was, thus, calculated after scoring each response. In other words, for each entrepreneur, the overall C-score ranged from zero to five (i.e. zero as lowest causal score and five as highest).

As the overall causal score was a continuous variable ranging from zero to five, we performed an independent t-test to determine whether the two groups of entrepreneurs differed significantly based on overall C-score. To delve deeper, we also applied a chi-square test to distinguish the selected and not selected on each of the five fields from the application. Next, we applied binary logistic regression to ascertain the extent of impact of C-score, controlling for other factors, on the likelihood of venture's selection based on the

entrepreneur's logic. We expected that a lower C-score would positively impact selection of a venture.

Findings

Through the independent t-test we found that selected entrepreneurs had statistically higher mean C-score (3.19+/- 1.261) compared to the not selected entrepreneurs (2.19+/- 1.261; $t:4.038$; $p:0.000$; Table 3.1, 3.2). Therefore, H1a was supported.

Table 3.1

Results of Independent t-test results

(Selected=1/Not selected =0)		N	Mean	Std. Deviation	Std. Error Mean
Total C score	1	69	3.19	1.261	.153
	0	69	2.19	1.620	.195

		T	Df	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Total C score	Equal variances assumed	4.038*	135	1.003	.248	.512	1.494
	Equal variances not assumed	4.046	128.134	1.003	.248	.512	1.493

Significant at $*=.000$

Next, we delved deeper to understand whether the selected and not selected applications portrayed different logics in the five application fields. Except one field, the two groups differed significantly from each other (Table 4).

Table 4*Results of chi-square tests for each application field*

Field	C score count		Chi square value
	Selected	Not selected	
Who are/will be your primary customers? What is the addressable size of your target market? What are growth prospects/trends in your target market	53	31	15.07 ^a
Describe your revenue generation model	44	31	5.711 ^b
Describe your product. How did the idea originate	33	9	3.719 ^c
How do you plan to spread your solution to the target market	42	34	2.899 ^d
What are the currently available alternatives to your proposed solution and how does your solution compare with the competition?	45	40	0.441 ^e

p value for Pearson chi-square $p^a=0.000$, $p^b=0.017$, $p^c=0.050$, $p^d=0.089$, $p^e=0.507$

To test for H1b, a binary logistic regression was performed to ascertain the effect of C-score on the likelihood of entrepreneur's selection for next stage of funding evaluation. We applied regression without control variables (Model 1) and after considering the impact of control variables such as age, gender, entrepreneurial experience and entrepreneurial family history in (Model 2). We selected these four control variables based on our readings of investors' venture evaluation criteria such as age (Stuart & Abetti, 1990), gender (Greene, Brush, Hart & Saporito, 2001), experience (Van Osnabrugge & Robinson, 2000) and family background (Cooper et al., 1994).

Results indicate that after inclusion of the explanatory variable (C-score), the model prediction improved to 64% in Model 1 (without control variables) and to 69% in Model 2 (after adding control variables) as compared to the baseline prediction of 50% (Table 5).

Further, increasing the C-score was associated with an increased likelihood of selection; under Model 1 i.e. without control variables, exponential β of 1.593 ($\beta = 0.466$) confirms that with one unit increase in C-score, the odds of getting selected for funding evaluation increase by 1.593 times (there is a 59.3% more chance of getting selected for each unit

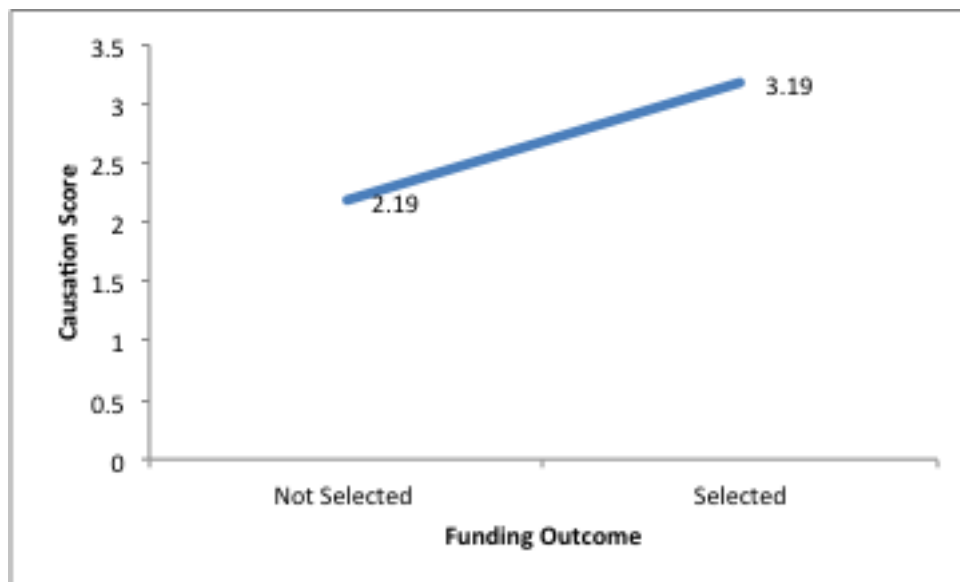
increase in C score) and under Model 2 (after adding control variables) exponential β of 1.648 ($\beta = 0.500$) confirms that with one unit increase in C score, the odds of getting selected for funding evaluation increase by 1.648 times (there is a 64.8% more chance of getting selected for each unit increase in C score; Table 5). Thus, H1b was rejected – effectual logic does not influence to a favorable funding evaluation; it was quite the contrary with higher causal score improving the chances of funding success by more than 50% (see Figure 1).

Table 5*Binary logistic regression results*

	Model 1					Model 2				
	B	S.E.	Wald	df	Exp(B)	B	S.E.	Wald	df	Exp(B)
Constant	-1.279	.393	10.564	1	.278	-2.146	1.096	3.836	1	.117
Total count C ^a	.466	.127	13.415	1	1.593	.500	.137	13.279	1	1.648
	$p^a = 0.000$									
Gender ^b (reference female)						-.483	.673	.516	1	.617
Median Age ^c						.048	.028	3.000	1	1.049
Length of entrepreneurial experience ^d						.003	.034	.006	1	1.003
Entrepreneur in family						-.609	.420	2.101	1	.544
	$p^a = 0.000, p^b = 0.473, p^c = 0.083, p^d = 0.938, p^e = 0.147,$									
Cox & Snell R ²	0.105					.175				
Nagelkerke R ²	0.139					.233				
Classification accuracy	64%					66%				

Figure 1

Impact of causation score on funding outcome



Discussion

Our study confirms that there is a significant difference in logics adopted between entrepreneurs who are evaluated favorably for funding as against those who are not selected. However, contrary to what we originally expected (as guided by research around expert entrepreneurs's adoption of effectual logic) evaluators and/or investors favored causal logic. Results of the binary logistics regression test reveal that for every unit increase of the causation score there is more than 50% chance of getting selected for funding. This indicates that the general worldview of entrepreneurship is still shaped by the neo-classical thinkers that entrepreneurs are expected to be masters of prediction. Such an expectation ignores or perhaps, undermines the iterative behavior that often accompanies experimentation and radical innovation.

Findings also make us reflect whether we are 'rewarding A while hoping for B?' (Kerr, 1975). While research and theory are in agreement of the expertise and subsequent success of effectual entrepreneurs (Read & Sarasvathy, 2005), are investors subconsciously rewarding entrepreneurs who have well-laid out business plans while hoping that their product/service might be innovative enough to cause some disruption in the market? These preliminary results bear implications for entrepreneurs looking for funds as well as investors looking for

profitable returns. This study calls for a reflection on the subtle inclinations and choices that underlie the various activities in the entrepreneurship ecosystem. This study provides initial directions and lays a foundation for us to examine this in greater detail. Further studies could also consider other outcomes of the ventures, in addition to the funding evaluation.

Our study relied heavily on secondary data and fields from an application form. Therefore, we can only infer on basis of the application form whether the particular entrepreneur was being causal or effectual. However, there is scope for future work to observe the logics of entrepreneurs and assess their influence on various outcomes across the lifecycle of the venture.

While we expect entrepreneurs to be adaptive and creators of their future, our predispositions towards certainty and planning, push us to favor the contrary characteristics in entrepreneurs. To the best of our knowledge, this is one of the first studies to highlight this dichotomy. There is a need to examine this phenomenon in greater depth, and thereby positively influence the outcomes of entrepreneurial activity.

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