Review Article

Challenges in Data Driven Decision Making in the Early Stages of a Startup

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Abstract
Entrepreneurship is usually considered a chaotic process paved with uncertainties. Without a method to the madness, entrepreneurship can become detrimental to the well-being of the entrepreneur. The early stage of a start-up refers to all important activities that help identify a potential business from an idea. This discovery process is characterized by stress and uncertainty which makes data-driven decision-making particularly challenging. Unlike mature phases (post-launch and product-market fit phase) where data is available in plenty, early phase decision-making depends on either limited data or generating one's own data. Uncertainty gives rise to biases in decision-making. The two most negatively impacting biases are confirmation bias and self-serving bias. In combination, they affect the way an entrepreneur in the early phase interprets both data and the consequences of his/her decision. Through a qualitative interview-based study involving 30 entrepreneurs in the early phase and 10 entrepreneurs in the mature stage, this study focuses on recognizing the presence of these biases and proposes a habit-based process for grooming early-stage entrepreneurs. The scientific principles underlying the proposed framework have been detailed out and pragmatic solutions for improving early-phase decision-making have been derived.

Keywords: Decision Making, Early-Stage Entrepreneurs, Habits and Biases

1. Introduction
Department for Promotion of Industry & Internal Trade (DPIIT) in India has recognized over 61,400 start-ups with at least 14,000 recognized during the financial year 2021-22 and this wave of start-up activity has ushered India in becoming the third largest start-up ecosystem in the world [1,2]. The growing political emphasis on leveraging the information economy is the foundation for the recent trend in startup activity and the ensuing support (eco)system. As a result, a large number of highly successful technology-based companies have been formed [3]. India is home to 103 unicorns with a total valuation of US$ 335.80 Bn. In the last three years (2021, 2020 & 2019), India has witnessed an increased number of unicorns with 44, 11, and 7 unicorns coming each year respectively [4]. The increased vigour in start-up funding into the Indian ecosystem is depicted in Figure 1 by comparing the funding amount and the number of deals done. This is an indication of increased investor confidence in Indian start-ups during the pandemic and post-pandemic. There is momentum gain in terms of investment across various stages of a startup journey, including seed stage funding. Early-stage investments in potential startups are one of the key propellants of the entrepreneurial ecosystem. Between 2014 and 2020, 5,985 investment transactions in the Indian startup ecosystem were documented [5]. Out of which 3,016 funding were done with start-ups at the seed stage (Table 1 and Figure 2).
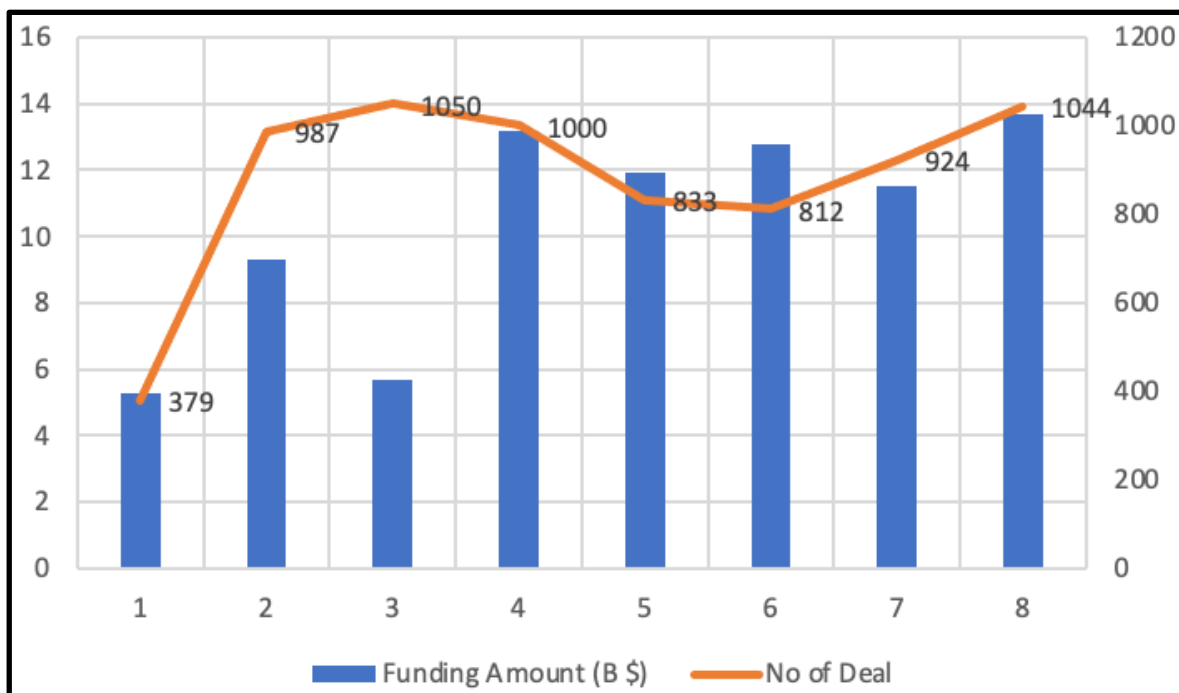
Figure 1: Investment & number of deals in start-up from 2014-2021 [4].

Year	Stages of Investment			
	Bridge	Growth	Late	Seed
2014	121	108	47	102
2015	43	280	78	587
2016	86	225	79	660
2017	54	253	97	596
2018	58	274	122	379
2019	67	274	159	312
2020	127	261	156	380

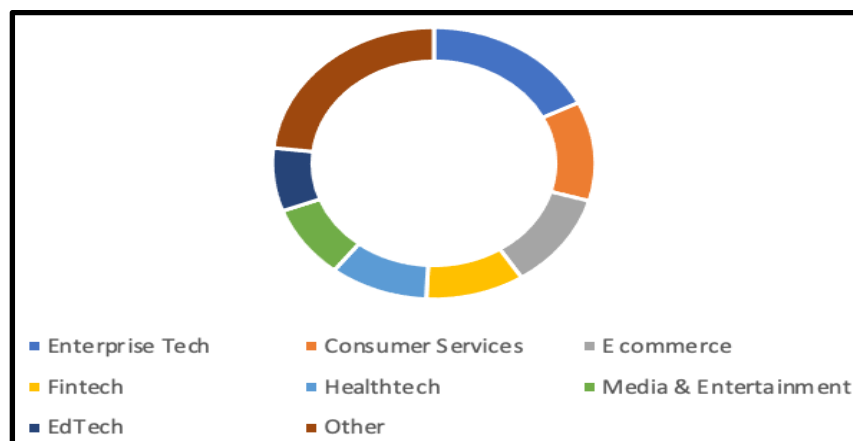**Table 1: Number of Deals across various stages of Investment [4].**

Figure 2: Sector-wise spread of the Number of Deals [4]

Over the years, entrepreneurs and students (aspiring entrepreneurs) are seeking clear direction for entrepreneurial action. There are sufficient references and process suggestions describing a variety of entrepreneurial methods, both from academic scholars and entrepreneurship practitioners. An overview of the widely accepted theories regarding entrepreneurial approaches and procedures has been highlighted in Table 2 [6]. In contrast to business planning, lean startups, and design thinking entrepreneurial methodologies, the author emphasizes how effectuation, discovery-driven planning, and prescriptive entrepreneurship are distinct. The former provides an array of tools in the form of frameworks & processes relevant at different stages of the venture creation. A demarcation is thus evident between two schools of thought namely scholarly grounded entrepreneurship methods & practitioner grounded entrepreneurship methods. The widespread acceptance of Practitioner grounded entrepreneurial methods was evident as it provides tools to take actions, detailed instructions, and prescriptions for behavior [7,8]. But it doesn't mean that the practitioner-grounded methods are not without their limitations.

For instance, the author highlights how neither business planning nor design thinking fails to provide thorough groundwork for uncertainty management. The lean start-up methodology does discuss uncertainty to some extent but fails to engage in any form to provide sound arguments around characteristics of uncertainty [6]. Uncertainty is an essential aspect of any entrepreneurial journey, it goes without saying. Practitioner-based entrepreneurial approaches may display a "lack of rigour" if they fail to take the uncertainty and its effects into account (either by leaving it out entirely or providing a flimsy reference [9]. Therefore, scholarly-based entrepreneurial strategies may be more relevant in the early stages of a venture's development, which are marked by continual learning and the extension of the knowledge base. For example, the effectuation entrepreneurial method resembles the early phase of a startup journey [6]. In a later phase of the enterprise, there is a requirement for more structure [10]. The practice of hypothesis testing through design thinking or the lean startup methodology may be of higher use for the entrepreneur when embracing continual learning and knowledge expansion.

No.	School of Thought	Entrepreneurial Method	Assumptions	Key Attributes
1	**Scholarly grounded entrepreneurship methods**	Effectuation	This theory assumes the challenge in predicting the future. Hence it encourages the entrepreneurs to *control* the future. Effectuation teaches to build sufficient conditions for success, given present constraints and context	Present means (resources), risk assessment, partnership building
		Discovery-driven planning	Assumes entrepreneurship must include uncertainty at its core. It suggests that by methodically validating assumptions, uncertainty can be decreased. Utilizing the newly acquired knowledge can help you take advantage of important possibilities and lower your risk.	Reverse income statement, focused experiments, assumptions checklists

		Prescriptive entrepreneurship	Instead of the anecdotally based pedagogies, this approach lays out a programme of research to develop and test. So, instead of describing what entrepreneurs should do, this approach prescribes the steps and tests to be done.	Customer Problem Fit, Problem Product Fit, Product Market Fit
2	**Practitioner grounded entrepreneurship methods**	Business planning	Build on the assumption that outcomes are largely unknown but predictable. The risk involved can be reduced through careful examination of data.	Market research, focus groups, PEST model, SWOT analysis,
		The lean startup methodology	Assume uncertainty is part of the entrepreneurial process. This is reducible by formulating working presumptions about the idea, testing & validating them in order to find a gap in the market. All this to identify the most efficient way possible for venture growth.	Targeted experiments, customer interviews, physical prototypes, concierge, A/B tests, fake door tests
		Design thinking	Focuses on a systematic approach to problem formulation and validation from the system users point of view.	Physical prototypes, Pretyping, user interviews,

Table 2: Overview of popular understanding of entrepreneurial processes [60].

It appears that the essential components of a successful start-up ecosystem, such as a sizable market, top-notch talent, and easy access to capital, are present in India [3]. There are some informal signs of several issues in the ecosystem. For instance, successful exits mark entrepreneurs and venture capitalists realizing their investment returns. In the absence of this, the capital gets locked up. The locked-up capital leads to slowing down entrepreneurial recycling by creating scarcity in liquidity and thereby funding support for the next generation of startups [3]. Another issue is more cultural, low tolerance towards failure in India. Entrepreneurship is an activity with a high failure rate. The expectation from the ecosystem and other stakeholders (family, friends) is instant success. Though the market appears too large but is fragmented and price-sensitive in nature. This increases the chances of error in market understanding by entrepreneurs thus raising questions on the potential of the Indian ecosystem to support highly profitable businesses [3].

An important area of study in the field of entrepreneurship is the factors that influence the success or failure of new companies [11]. Startup firms are usually studied from financial performance and using quantitative methods in analysis. The skill of the entrepreneur, the key competencies, and the market features are only a few of the variables that are correlated with this data in numerous ways [12]. This is especially important for start-ups in the high-tech industry or any other industry that prioritizes high-risk and high-reward opportunities. The prevalence of this type of study arises from the fact that this suits the strategy of the venture capital firms that fund these start-ups. A low (or quick) cycle time to success (or failure), is a strategy that works well from the VC perspective. For instance, early methods by and Beaver (1966) concentrated on forecasting a firm's failure probability using financial data. Early models for startup analysis were built using discriminant analysis and multiple discriminant analysis [13,14,34]. Then came more contemporary strategies using sophisticated regression analysis methods. Artificial intelligence techniques have been used to analyze and forecast business venture success/failure since the 1980s. Techniques like decision tree algorithms, artificial neural networks, and clustering were suggested as answers [12,15,6]. Because they

were scalable and replicable, approaches based on financial data were accepted by the general public. The public/annual reports may contain the data required for such analysis. Furthermore, the was a fair consistency in the usage and interpretations of financial terminologies. Thus, it was simpler to potentially apply to a large number of businesses. The impact of additional factors on business profits was further illuminated by the study, including entrepreneur skills, organizational core competencies, and market, to name a few. This idea inspired scholars to look into whether or not these factors could affect a venture's success or failure. For instance, research was done to determine the impact of entrepreneurs' ethnicity and gender on their chances of success or failure [17]. The work in used 15 independent variables to predict success versus failure [18]. These variables included the work experience, the education level, and the age of the owner. A stream of researchers focused on the effect of attitudes on entrepreneurship. Few studies linked start-up failure to conflicts between business goals and its founders' goals [19]. Others studied failure from entrepreneurs' overconfidence perspective [20]. In contrast to these studies, some researchers argued a need for a reasonable level of positive perception of one's abilities, in the absence of which several successful companies would not have been formed [21]. Interestingly failure is usually analyzed from the viewpoint of the entrepreneur [22]. Cultural and societal perceptions towards failures have also been studied. In regions that show a high business failure ratio, for example in Silicon Valley, failure appears to be more tolerated [22]. A new perspective of studying entrepreneurial failure (or successes) opened up – from an ecosystem perspective. Works emphasized that the environment could also have an influence to determine start-ups' success [23,24]. These works investigated factors relating to regional differences in terms of public-private infrastructure, existing industries, and sectors. More recent works analyzed other potential factors of success by looking at decisions and choices. For instance, the decision to innovate a product or to rely on the support of ecosystem partners like VCs [25]. Interestingly, the dominant number of works in the aforementioned literature tends to work top-down [26]. The basic assumption made by researchers in this work assumes causal models for new venture success or failure. Interestingly, the attention of researchers tends to be inclined more towards studying success (smaller dataset) even though failure is a more common outcome in the case of start-up ventures.

Entrepreneurship is among the few livelihood options that satisfy multiple human needs. It satisfies the need for autonomy, personal growth, significance, and even the need to contribute back to society. Entrepreneurship, if carefully nurtured, has the potential to unlock human potential. It's critical to comprehend how entrepreneurship affects one's personal well-being. Entrepreneurs' work qualities (such as task demands and autonomy) and personal characteristics (such as personality traits, abilities, and motivations) are the most commonly researched aspects surrounding well-being, according to a review of the research on entrepreneurs [27]. The fact that these personality domains were an established area of study may be a major factor. There are further aspects of well-being. Financial circumstances and social aspects are included (for example social support, and work-family balance). According to certain studies, these variables have a detrimental effect on entrepreneurs' well-being [28]. However, there are a few studies that have shared an opposite perspective and findings. For example, Bradley and Roberts (2004) discovered that for a subset of entrepreneurs (such as single founders), an increase in work demands was proportional to job satisfaction, whereas Millan, Hessels, Thurik, and Aguado (2011) found a positive correlation between working hours and job satisfaction. Entrepreneurs may view some workplace pressures as necessary for advancement and success [28]. According to this definition, stressors are "the stimuli that generate the stress process," which causes tension, anxiety, and tiredness [29]. The physical, social, and organizational components of a job that demand persistent physical or mental effort and are thus linked to specific physiological and psychological costs are referred to as work stressors (also known as job demands) [30,31]. Surprisingly, little is currently known about how workplace pressures affect entrepreneurs' well-being. It is vital to gain insight into the mechanisms of how these factors affect well-being and thereby advance theoretical understanding of entrepreneurs' stress processes. There exist possibilities to unearth new findings that could help design intervention opportunities to help entrepreneurs and thereby entrepreneurial success.

From the above paragraphs, it is evident that the Indian entrepreneurial ecosystem is booming. However, despite access to various process-related information, there have been no common guidelines or framework on pedagogies around the "grooming of entrepreneurs" especially in their early stages. It is also important to understand an early-stage startup. To be classified as a startup in India, the age of the venture should be less than 10 years or revenue less than 100 crores. However, this definition does not help in defining the early stage. For the purpose of the current paper, an early-stage startup has been characterized as one which is yet to achieve a product-market fit (PMF). PMF is a stage where, as per the theory of innovation diffusion, the product has saturated the early adopter and early majority segments. The significance of PMF is such that it indicates the time and readiness to scale the venture. Usually, knowledge of the process of entrepreneurship is imparted through incubation centers across the country. Needless to say, there is no one methodology that is being propelled in the domain of entrepreneurship. However, an incubation centre, is a prima facie of entrepreneurial process related information apart from online learning resources. Most incubation centres support ventures in the pre PMF stages and usually the incubation period lasts somewhere from 6 to 18 months depending upon the incubation centre. These are institutions where some form of help and grooming is expected and claimed. Typically, they provide access to mentors, networks, financial support, office space, support systems related to legal and compliance aspects, and expert sessions on popular topics useful in this journey. Usually the "why" and "what" of entrepreneurship are made understood through the methods followed by incubation centres. The "how" is left for the entrepreneur to figure out. For a few, things might fall in place. But a majority struggle. The cause for this struggle has been the prime motivation behind the present research work. It is imperative to understand the entrepreneurial process in order to groom entrepreneurs so that they improve the odds of success not only from a financial perspective but also from a personal well-being perspective. In order to do so

we have attempted to comprehend entrepreneurship from the decision-making lens of the entrepreneur. This paper sheds light on the decision-making challenges, especially in uncertainty, and also brings out a framework to address them.

2. Methodology

An entrepreneur has to continually make choices and act upon them. Therefore, the journey of an entrepreneur can be considered as the sum total of all the choices made. The present paper attempts to understand entrepreneurship from this perspective of decision-making. Thus, the study methodology involved reviewing relevant literature from the domain of decision-making (psychology, neuroscience, and behavioral science) and entrepreneurial processes to draw

parallels and then interviewing entrepreneurs in their early stages to verify the lens of decision-making. The following subsections shed light on this methodology.

3. Literature Review - Entrepreneurship as a Series of Decision-Making Activity

Any startup can be categorized into four major phases around which most activities are undertaken. Finding a problem-market fit is the first step in most cases, followed by finding a problem-solution fit, a product-market fit, and then a business model-market fit. Each choice facilitates the transition from one stage to the next. Every phase signifies a major decision relevant to the

strategy to be employed for the venture which has been elucidated in the table below. It is not necessary that every venture reaches the final stage. Many entrepreneurs may choose to be content with their current scale of operations. The processes involved in decision-making involve a wide range of complex choices. For instance, drawing inferences in scenarios of social or moral dispositions, or selecting an alternative with the highest benefit, instances like these involve various layers of complexities. Conceptually, the degree of uncertainty in decisions can be utilized to distinguish between various decision kinds. Some decision-making circumstances provide more information about potential outcomes and their likelihood of occurring than others (Weber & Johnson, 2009) [39]. It will aid in the continuum representation of decision-making. Each choice can be positioned on a continuum between "total ignorance" (where not even the potential outcomes are known) and "certainty" (where just one option is known to occur). In between, further categorization into "uncertainty" or "ambiguity" (the outcomes are known but the probability of occurrence is unknown) and "risk" (the outcomes and probabilities of occurrences are known) can be made depending on the quantity of information one has. Three main types of decision-making have been recognized in the literature from a decision-making perspective: decision-making under certainty, decision-making under risk, and decision-making under ambiguity. Which category of decision-making is appropriate for the entrepreneurial process must be determined.

Entrepreneurship Phase	Entrepreneurial Decision
Problem-Market Fit	Is there a market need to solve the identified problem?
Problem-Solution Fit	Is it possible to develop prototypes of the product that provides the solution identified?
Product-Market Fit	Is it time to scale?
Business Model-Scale Fit	Is it time to diversify?

In rational decision-making, preference is established by maximizing a personal utility function (Neumann & Morgenstern, 1944) or by applying game theory to reach equilibrium. The product of the probability of the outcomes and their corresponding values can be used to calculate personal utility (usually monetary). The decision-making process is constrained by a person's cognitive capacity and the amount of time they have to consider their options. In recent decision-making research, explicit rule-based decision-making has been examined, for example, to maximize benefits or minimize losses. In such scenarios, individuals can often attribute the amount of risk associated with each choice. Thus, if outcome probabilities are available with some certainty, decisions can be made strategically [32]. Various mathematical models are available to assist in the decision-making process and these models are called deterministic models. Numerous researches have time and again demonstrated that humans, even though rational, do not always make decisions based on probabilities and calculations. Instead, "heuristics, biases and

other 'non- rational' or intuitive tendencies" tend to affect the decision-making process (Gigerenzer & Todd, 1999). Kahneman and Frederick's work (Kahneman & Frederick, 2007) emphasises how framing effects are important tools for helping instinctive responses prevail over rational discussions. Use of archetypes and "neglect of probabilities" are two further biases (Kahneman & Frederick, 2002). The dual process theory tries to combine these two methods. According to the hypothesis, humans are capable of both strategic (rational, objective) and intuitive (irrational, subjective) decision-making (Epstein et.al. 1996). In situations requiring decision-making, reasonable human behavior is assumed. These decisions involve the rational-analytical system (Epstein et al. 1996). "Slow and serial but controlled, flexible, neutral, rule-governed and effortful information processing" is a trait of the rational-analytical brain. However, this does not imply that everyone has the capacity for making logical decisions, and it does not ensure that the decision will be followed through when it comes time to act. The so-called "intuitive-experiential

system" is the basis for the other way humans make decisions. This system has characteristics of a "fast, parallel, associative, and emotional type of processing" (Tversky & Kahneman, 1974). Both systems are vital for individuals and have had a vital role in the evolution of the species.

Thus, in situations of decision-making under uncertainty, developing a strategic approach based on certain rules of mathematical calculation or logic of the algorithm is not possible. This could be either because outcomes of a decision are not given explicitly upfront as an input during the process of decision making or it could be because the complexity of the information available might render an individual (the decision maker) unable to process it instantly and in entirety. The dual process theory may be applicable in scenarios where uncertainty exists only to a moderate degree. Especially if some indicators of possible outcomes can be estimated with certain certainty. Thus, a trigger of deliberative thought (slow reacting) can adjust the temporary first automatic response (fast reacting). Different types of decisions have used this theory. For instance (Gilbert, 1999) highlights the role of "anchoring and adjustment" when making inferences either from the data available or from the feedback. Or in work of (Chabris, 2007) where "intertemporal choice" effect in decision making is highlighted (preference of small immediate gains against larger long-term gains). Here, it must be emphasized that a conflict between instinctive and deliberate responses does not necessarily suggest that the decision-making process is uncertain. For instance, when making moral decisions, the decision-maker may face a conundrum. As a result, there may be a clash between intuition and thought (Greene, 2002; Haidt, 2007), underscoring the tension between the two. The same conflict may arise in many scenarios. For instance, there are some behaviors that, while advantageous to the individual, are seen negatively by society (Yamagishi, 2009) (and the decision maker knows the perception of the society). In this case, the intuitive system of the decision-maker can override a rational decision despite being aware that the outcome is detrimental. It appears that drawing any sort of analytics which would indicate which of the two systems will be used by an individual in decision-making is difficult. Especially when there is a contradiction between emotional intuition and rational thought or when there is some degree of doubt present. Therefore, the intuitive-experiential system may take on a more significant role in decision situations where it does not provide the decision maker with the necessary cues to make a rational choice. Makes an argument in his writing about the various ways that decisions are affected by sentiments [34]. The study demonstrates how, on the one hand, they act as stand-ins for ideals and, on the other, they help to stimulate thought.

The usual terms associated with entrepreneurship are risk and uncertainty. It is very common to loosely use these two terms interchangeably when describing the start-up process. However, the two are not the same and therefore require different mindsets to approach. A simple example would elucidate these scenarios and the complexities involved in the decision-making associated. The example involves different variations of a jar. In the first scenario, the jar is transparent and contains different colored balls. In the second scenario, the jar is opaque and contains different colored balls while in the third scenario, the jar is opaque

and the contents inside the jar are unknown. Let us look at picking up a ball of a certain color, say red in all three scenarios. Picking up the red ball from the first jar is simple and straightforward and with certainty, the ball can be picked up in the first attempt. In the second jar, although we know that different colored balls exist, the opaqueness of the jar makes it difficult to choose the specified red ball on the first attempt. However, there is a definite probability that exists in picking up the red ball. In the third jar, nothing is known which makes it extremely difficult to predict. Let's look at the three consequences. For the first jar, in the very first attempt, the red ball is picked up. For the second jar, the first attempt resulted in a green ball, the second in a blue, and the third in a red ball. In the case of the third jar, however, in the first attempt a blue ball is picked, and in the second attempt a snake! From the first jar to the third jar, the movement is from complete certainty to complete uncertainty. In the purview of decision-making, the three jars represent decision-making under certainty, decision-making under risk, and decision-making under uncertainty respectively. In the third case, however, it is to be noted that post the experience of picking up a snake, the act of picking it up the next time itself becomes doubtful. This is exactly the process of entrepreneurship. Probabilities of future outcomes are usually unknown and there are even possibilities of Black Swan events (very low probabilities to occur but when occur can cause significant losses or change). The Covid pandemic, economic recession, the policy of demonetization could all be classified as Black Swan events. Many ventures have been doomed and many others have flourished as a result. If we account for the various pedagogies available for grooming entrepreneurs as elucidated in the table, it can also be inferred that not all decisions may be uncertain (without any probabilities). For instance, the lean startup method or design thinking method does provide techniques to experiment and gather information about possible outcomes. However, one thing can be clearly understood; entrepreneurship is not by any sense decision making under certainty at least in the early stages (ideation to product-market fit). At best it can be classified as decision-making under risk and uncertainty. This theoretical claim needs to be validated.

4. Startup Interviews - A Qualitative Assessment

It was demonstrated in the previous section that entrepreneurship may be modeled as a sequence of decision-making activities carried out in an uncertain and risky environment [44]. In order to validate the model of viewing entrepreneurship from the lens of decision-making, this paper focuses on interviewing startups in their early stages as defined in this paper. It was decided to identify ventures who have undergone some form of grooming considering a reasonable assumption that groomed entrepreneurs may have a better understanding of the process. Hence entrepreneurs have been shortlisted from incubation centres across the country. Only those centres that had been willing to share information were contacted. Every incubation centre stresses the venture idea and to some extent the characteristics of the entrepreneur as selection criteria for incubation. Ideas are usually evaluated in the form of pitch decks. Entrepreneurial characteristics are attempted to decode through personality traits. Interestingly, there is no consensus on the "necessary qualities of an entrepreneur". The flaw in both these aspects is that rarely an idea first thought of ever gets executed and rarely can all the necessary qualities of an entrepreneur be possessed by an individu-

al. The criterion finalized for shortlisting entrepreneurs for this study included ventures having co-founders and ventures yet to achieve product-market fit. The purpose of this study has been to understand the challenges that an early-stage entrepreneur faces and correlate them with decision-making challenges. Therefore, the domain of the venture, the age (or educational qualification) of the entrepreneur and the funds raised by the venture have not been considered important for the study. Ventures who were part of an existing cohort at an incubation centre alone were shortlisted and asked to submit their business model canvas (BMC).

A BMC is a condensed pictorial representation of a startup which makes communication easy and effective [1]. A BMC consists of nine components consisting of value proposition, customer segments, distribution channels, customer relationships, cost structure, revenue structure, key partnerships, key resources, and key activities. These nine components can be further classified into three pillars of any business - feasibility (key partnerships, key resources, and key activities), viability (cost structure, revenue structure, and distribution channels), and desirability (value proposition, customer channels, and customer relationships [30]. Feasibility answers "Can the entrepreneur deliver the product/solution?", viability answers "Can profit be generated in delivering the product/solution?" and desirability answers "Is there a market for the product/solution?" 66 ventures (who had met the criterion) had been contacted and of them, 30 ventures consented to be part of the study. The shortlisted startups have been distributed across domains like fintech, agritech, EdTech, social and assistive tech. They have been a mix of for-profit and not-for-profit entities. Online interviews were conducted with respective teams. Each interview lasted for 30 - 45 minutes and questions were framed to understand their approach towards entrepreneurship, their motivation, the presence of biases, the habit of documentation, and introspection. This was achieved by understanding their respective BMCs qualitatively. Qualitative data collected through audio recordings were transcribed and analyzed for patterns. The results have been discussed in the subsequent section.

5. Results
Decision-making is the process of choosing a preferred alternative among available sets of choices. The Decision indicates that all deliberation has been put to an end and action can be taken. Decision-making, therefore involves options, actions, and consequences. Whether a decision is good or bad should be judged by the process of decision-making. However, this judgement is usually done through the quality of the consequence. If the outcome or consequence of a decision is favorable to the decision maker, it is considered to be a good decision and vice versa. The fact that there is no strong causal relationship between a decision and its outcome since there are only a very limited set of variables in the control of the decision maker. This is where luck paves its way into the process.

1. All the interviewed ventures had their starting points rooted in the venture's feasibility. This was evident from the amount of clarity that the ventures had in their BMCs.
2. It's noteworthy to note that none of the entrepreneurs who were questioned ascribed their success to luck (in terms of timing or a favorable environment or policy). On the other hand,

more than 85 % of the interviewed entrepreneurs attributed negative outcomes to luck. This was a strong indication of the presence of self-serving bias [13].

3. When asked about the size of their respective market segments, the mean average market size (irrespective of the sector) was reported to be in the range of a few billion dollars. When asked to justify the market size, it was realized that all of them had been computed using the top-down approach. A realistic market sizing calculation is usually bottoming up. However, that would mean that the entrepreneur has to know the customer persona. It can be inferred that the market size comprehended by these entrepreneurs was actually the size of the problem identified.

4. Along similar lines, entrepreneurs were asked to cite references to possible failures in their identified solutions. Not surprisingly, enough information had not been collected by them on these lines. It can be understood that the approach taken by these entrepreneurs has been biased. Collecting evidence that only supports their point of view is the very definition of confirmation bias [34].

5. Entrepreneurs were asked about the time spent perfecting their first idea. The average time spent was in the range of 2 - 3 months. This time period was utilized only for brainstorming with co-founders and developing a pitch deck. Given the general observation that the initial idea in its original seldom gets executed as the startup, this behavior of spending up to 90 days of time with the initial idea suggests the presence of planning fallacy bias [30].

6. Less than 10 % of the interviewed entrepreneurs indulged in periodic retrospection of their decisions. This indicates a severe gap in the learning mechanism of entrepreneurs. The same inference can be drawn from the observed data that only less than 10 % of these entrepreneurs had any kind of documentation about their progress. The rest had to depend on their memory to articulate their responses. Such articulation often is subjected to hindsight bias [36].

7. Although every interviewed entrepreneur was motivated, 65 % of them acknowledged higher stress levels which resulted in frequent fights with co-founders, anger, and irritation in general.

8. The major reason for stress was identified as the need to become financially viable. The present focus of these entrepreneurs was on fund-raising. This was true for every venture interviewed despite their stage. There was also no consensus on defining product-market fit, a term that helps in identifying the right time to scale.

9. Predominant stories of fund-raising and seriousness in entrepreneurship considered by being full-time working on one's idea has only added stress to the entrepreneur. In this study, at least 10 ventures had co-founders who had left a well-paying job at the ideation stage as a mark of commitment toward their idea. From a handsome monthly salary to no salary has added considerable stress on these folks.

10. The most important and significant aspect that was extracted from the interviews was that the decision-learning feedback loop for an entrepreneur was either missing or faulty. In simple terms, once a decision is made and an action is taken, a consequence results either instantly or through a delayed response. Post the consequence, there has to be conscious learning in order to better the decision process in the future. Only 1 out of 30 ventures had a periodic feedback mechanism.

11. When triggered on this feedback process, it came to light that there is no temporal tracking of these decisions. Learning from the feedback sessions was not interconnected. This has been understood as a significant gap in the entire entrepreneurial process.

12. When asked about the ambition of the entrepreneur, the predominant response has been to quickly become a unicorn or create an organization that will be acquired by a bigger player.

13. Only less than 2 % of the interviewed ventures had put efforts to gather their own data and not rely on only secondary data to justify the business opportunity. The entrepreneurs mentioned that gathering their own data meant facing rejections upfront.

6. Inference – Decision-Making and Learning Framework

The present entrepreneurial struggle creates emotional turmoil and jeopardizes personal well-being. The root cause of this struggle (from our understanding) stems from spending considerable amounts of time with an idea oneself and investing considerable skin in the game without actually analyzing the market readiness for the idea or adequately preparing the market for the idea. This romanticizing of the idea makes it difficult to face rejections from the market. Whether it is a particular inclination or a result of years of education, most entrepreneurs are product-centric. The other factor is the human nature of trying to predict the future. It gives an illusion of control. This makes it difficult to accept uncertainty and causes significant mental stress. With the added stress and uncertainty, entrepreneurial decision-making often is clouded and dependent on biases and mental heuristics. Present-age entrepreneurs apply all their creativity in designing the product and invariably believe that their well-designed product will be received by the market positively. Once the product is created only then most think of "product-market fit". Lack of product-market fit leads to venture failure. Unfortunately, venture failure is considered as the failure of the entrepreneur which further deteriorates well-being. Faulty decision-making and decision-learning processes have been identified as the root cause of this problem as seen from the above section. Faulty decision-making stems from the lack of preparation to handle uncertainty coupled with the nature to predict while faulty decision learning erupts from the biases that deceive the entrepreneur from reality. As far as learning is concerned, the two biases that affect the learning process are confirmation bias and self-serving bias [34,37]. While both biases have been observed in the qualitative study made in this research, in the learning feedback loop too they play a dominant role. For instance, imagine if a person attending a party has been down with a couple of drinks and knows he is not in a condition to drive back home. Despite this, he decides to take that risk and fortunately reaches back home safely. What feedback does he give to himself? Does he say to himself that he was extremely lucky to be alive or does he consider himself skillful to have driven back home safely? While confirmation bias tries to gather all evidence from your memory around the so-called "risky" driving with instances the person was safe despite the risky behavior, self-serving bias limits the person from accepting that he can be wrong. Classifying an outcome of a decision into luck or skill is an important skill that every entrepreneur needs to learn. Taking into light the discussions around this research, a framework for grooming entrepreneurs has been developed which has been explained in the next section (Figure 3).
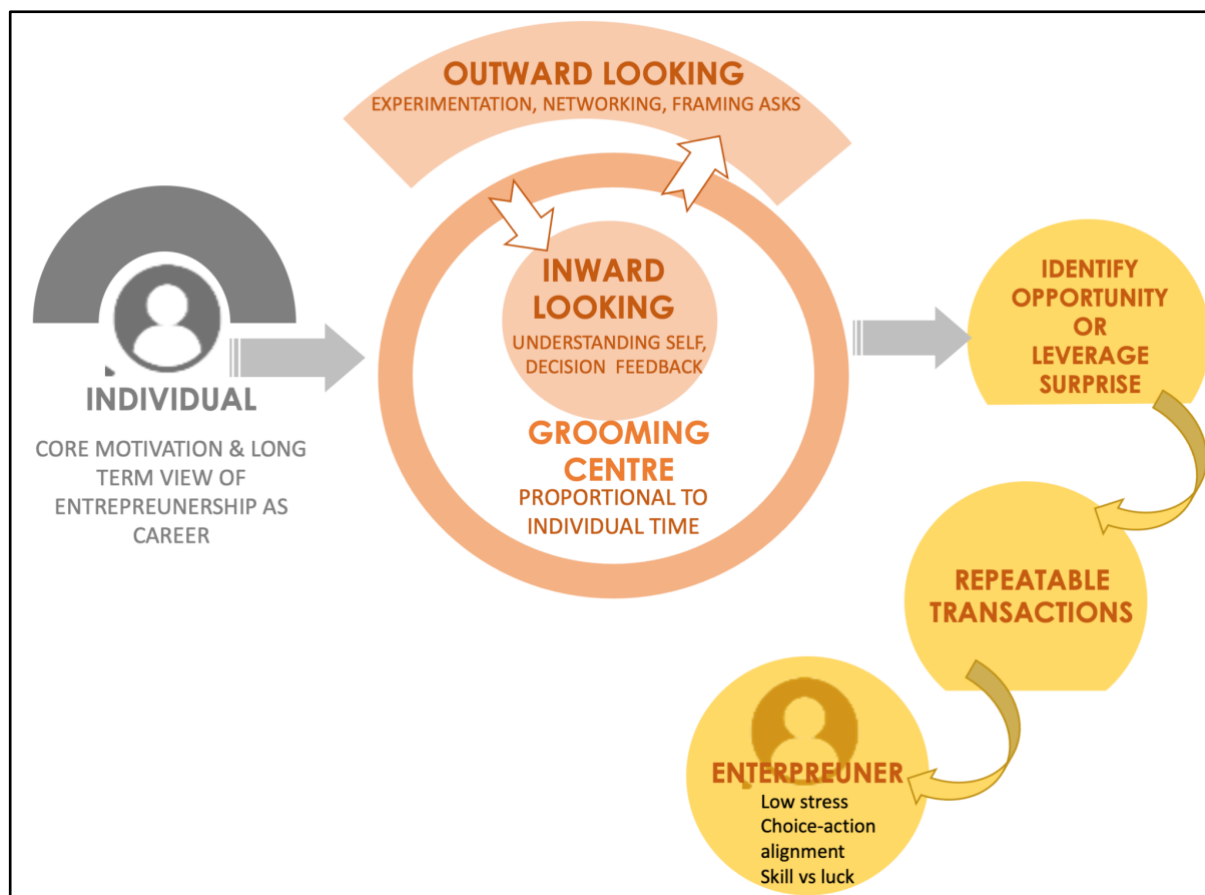

Figure 3: Proposed Framework

The proposed framework considers that the entrepreneurial journey is not about one idea becoming successful but it is about trying and testing out many ideas, handling uncertainty, managing risks, and ingraining "failures". Having an idea is therefore less crucial in the proposed framework than adopting the proper perspective and entrepreneurial mindset. In all the conventional grooming approaches, usually, the idea precedes action. The approach presented here looks into a synergy of idea and action with a focus on developing entrepreneurial skills. That means the framework is useful for transforming an individual into an entrepreneur. In such a situation, it would be useful to look at entrepreneurship as a long-term career choice irrespective of the initial idea. Analogous to having a career with the Armed Forces, entrepreneurship could be a career choice and not a one-off thing. This perspective may reduce the obsession with the initial idea (thinking) and focus can be highlighted on continuous progress (doing). In order to develop any skill, considering an understanding of Kahneman's system 1 and 2 thinking systems, it has been proposed that certain habits be identified which can be nurtured that will help transform an individual into an entrepreneur [38]. A total of five habits have been identified through the above qualitative analysis and literature review. These habits have their roots in the entrepreneurship pedagogies like the lean startup approach and effectuation; and fields like decision-making and psychology. Considering the need to handle long-term uncertainties and risks, the five identified habits include knowing yourself, experimentation, networking, framing of asks, and feedback on luck and skill. The rationale of choosing these habits emanates from the fact that by knowing oneself, the individual can align himself/herself for entrepreneurship as a long-term game and not a short-term one, by experimenting the individual learns to gather one's own data, networking helps the individual to build connects and find serendipity while learning to frame an ask helps in leveraging one's strength to gather resources necessary for moving forward. Finally, the habit of reflecting and classifying one's decision outcomes as part of skill or luck completes the feedback loop such that future decision-making is improvised [39]. Note that the two habits (knowing oneself and decision-learning classification) are inward-looking in the sense that it is a journey within the entrepreneur while the remaining three habits are outwards as in interacting with the environment. Habit formation is necessary in order to develop these aspects as skills [38]. Note that nowhere has a prediction-based approach been utilized. Thus, the model is based on acceptance. The model as depicted in Figure 3 envisages the journey of transformation of an individual into an entrepreneur. The individual should have intrinsic motivation and a long-term perception of entrepreneurship. At the grooming centre, the individual can enrol wherein these five habits are cultivated and nurtured in him/her. This process depends on the time commitment of the individual. The person need not quit his sure financial footing to enrol into this grooming centre. Through grooming, the individual may identify an opportunity or leverage serendipity and try to figure out if repeatable transactions of that nature are feasible or not. In this stage, the individual has transformed into an entrepreneur ready to do business where he/she can now be full-time. The model is based on accepting the present scenario and making the best out of it. Therefore, it helps handle uncertainty without mental stress, and the stronger these habits, the better the individual in handling risk and uncertainty. Thus, as far as the third jar is considered; when a snake is picked up, instead of being intimidated by the scenario, the individual can look into possibilities (sell to a snake charmer or to a zoo or extract venom or leave it safely) depending on the skills and network of the entrepreneur. The utility of this framework needs to be tested.

7. Conclusion

Entrepreneurship is often characterized as an exciting, uncertain, roller-coaster ride, and complex. The process seems chaotic. A significant influence for that inference could be our very own nature of predicting the future. Analyzing historical trends to ascertain the future. Predicting the future provides a belief of being in control. As seen from the data above, these predictions seldom hold good. Quick-fix solutions or rules of the thumb and lack of a scientific process emphasized with the "how" of entrepreneurship have only added confusion and struggle levels of an entrepreneur. Modeling entrepreneurship as a decision-making process with risk and uncertainty is possible. As a result, the decision-making process is naturally biased as has been observed in the research conducted. Confirmation and self-serving bias cause a detrimental effect on the decision-learning loop. Entrepreneurs today are more desperate for fund-raising as a goal. Despite various pedagogies in grooming entrepreneurs, they still struggle to handle uncertainty. A novel entrepreneur grooming framework based on the current study has been proposed. It needs to be further investigated with rigour [34-46].

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