

**Refining the Actualization Approach for Exploring the Sense-making Process of
Entrepreneurs for Opportunity Recognition**

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ABSTRACT

In this study, we explore the sense-making process of entrepreneurs for opportunity recognition, address limitations of the previously contested discovery and creation approaches to refine the more recent actualization approach. In search of the middle ground and despite efforts to resolve the challenges by offering the actualization approach supposedly addresses an apparent inconsistency with the discovery and creation approaches, many assumptions have either been ignored or overlooked without a systematic explanation. This is not assisting the entrepreneurship field to move forward leading to an ongoing lack of theoretical explanations that improve our understanding. By proposing the dichotomous nature of opportunities as dependent on profit or loss the actualization approach undervalues the possible role of entrepreneurs' non-economic objectives. Additionally, the actualization approach asserts that entrepreneurs are able to recognise opportunities only in the future after making profit. In this way, the actualization approach ignores entrepreneurs' efforts and suggests that entrepreneurs always develop a conjecture for opportunities or entrepreneurs should keep investing their efforts for a probably non-opportunity venture. Therefore, by employing the Chater and Lowenstein's sense-making model and by discussing the shortcomings and strength of the actualization approach, we explore, how and when entrepreneurs can evaluate and 'make sense' of opportunities.

Keywords: Sense-making; Opportuntiy recognition; Mind simplification; Behavioural deliberation; Actualization approach.

INTRODUCTION

The notion of ‘opportunity recognition’ in entrepreneurial decision making, despite featuring prominently in a number of studies (Dimov, 2007; Ramoglou & Tsang, 2018; Ramoglou & Tsang, 2016; Sarasvathy, 2001; Shepherd & Griffin, 2006; Westhead, Ucbasaran, & Wright, 2005; Zacharakis & Shepherd, 2001) has not yet been understood in its entirety (Echardt & Shane, 2013; Vogel, 2017). In their seminal review of the literature on opportunity recognition within the context of entrepreneurial decision making Shepherd, Williams, and Patzelt (2015) suggested that this may be largely due to the challenging and heterogeneous (i.e. difference among entrepreneurs) nature of opportunities. Decision making for opportunity recognition is a challenging task as opportunities are rarely self-evident and information and context-dependent (Korsgaard & Sean Patrick, 2017; Ramoglou & Tsang, 2018; Ramoglou & Tsang, 2016).

The challenging and heterogeneous nature of opportunity recognition has resulted in the majority of studies focusing on several approaches such as the equilibrium approach (Arrow, 1974; Kihlstrom & Laffont, 1979), the competing approaches i.e. discovery and creation approach (Alvarez & Barney, 2007) and more recently the actualization approach (Ramoglou & Tsang, 2018; Ramoglou & Tsang, 2016). The equilibrium approach conditions opportunities on price variation of goods and services depending upon the capabilities of entrepreneurs and the stock of their knowledge (Kihlstrom & Laffont, 1979). The discovery approach acknowledges opportunities as objectively existing and conceptualising how entrepreneurs are capable of discovering them (Shane & Venkataraman, 2000). The creation approach, however, assumes that entrepreneurs are opportunity creators (Alvarez & Barney, 2007; Korsgaard, 2011; Sarasvathy, 2001; Wood & McKinley, 2010). Finally, the actualization approach (Ramoglou & Tsang, 2018; Ramoglou & Tsang, 2016) claims to combine the subjectivity (subjective imagination and believability) and objectivity (existence of opportunities

independent of entrepreneurs) of the discovery and creation approaches and treats opportunities as unactualized propensities. However, what the actualization approach offers is not clear? In an effort to resolve the apparent overlap and inconsistencies of the actualization approach with the discovery and creation approaches, many assumptions have either been ignored or retained without a systematic explanation leading to an ongoing lack of theoretical explanation that improves our understanding (Braver & Danneels, 2018; Davidsson, 2017a). By proposing a pre-deterministic nature of opportunities as merely dependent on financial objectives the actualization approach undervalues the possible role of entrepreneurs' non-economic objectives (Braver & Danneels, 2018; Davidsson, 2017a, 2017b; Galloway, Kapasi, & Wimalasena, 2019). Additionally, the actualization approach is contradictory in some of its assumptions. For example, on one hand it posits that entrepreneurs should withdraw pursuing a perceived non-opportunity. However, on the other hand, entrepreneurs should remain determined even in the state of failure. Thus, without offering an explanation, as to how and when entrepreneurs can evaluate and 'make sense' of opportunities the potential theoretical contribution of the actualization approach to take the field of entrepreneurship forward – is open to criticism and in need of refinement (Alvarez, Barney, McBride, & Wuebker, 2017; Berglund & Korsgaard, 2017; Foss & Klein, 2017).

Therefore, by discussing the shortcomings (See Table 1) and strength of these previous approaches we will identify the tensions of previous conceptual discussions, articulate research gaps and refine the actualization approach to propose a holistically integrated conceptual framework to support future research.

Please Insert Table 1

To identify the factors that constrain the sense-making process of entrepreneurs, this study subscribes to the Chater and Loewenstein's (2016) sense-making model. According to this model, the human brain works in an autonomous way to "maximally simplifying information" (p.138). As an illustration, when we see Idesawa's sphere (Idesawa, 1991), our brain autonomously creates a bright white sphere that does not actually exist, and we also see this white sphere radiating black spines in multi-directions (See Figure 1). Our mind autonomously creates the non-existing white sphere to simplify the precise location and outlines of the black spines (Chater, 1996; Chater & Loewenstein, 2016).

Please Insert Figure 1

Additionally, for the sense-making process, individuals make deliberate (non-autonomous) efforts of collecting, avoiding or choosing some information (Chater & Loewenstein, 2016). Such deliberation assures only a desired state that one seeks and looks for that might distant oneself from reality. Building on entrepreneurs' deliberation and their mind simplification for sense-making of opportunities, our study elaborates on: (1) How entrepreneurs' expectations and preference for solving curiosity or avoiding trepidation develop their psychological loss aversion, and how it effects the way they acquire market knowledge; (2) How the nature of acquiring market knowledge yields contradictory or confirmatory information; and (3) How in the presence of confirmation bias, entrepreneurs prefer supportive information in favour of their pre-held hypothesis, and how it effects the relationship of information 'pain' or 'pleasure' and opportunity believability?

Our paper is structured as follows. In the following section, our study elaborates on the theoretical foundations of the study. In the next section, we briefly discuss our proposed integrated conceptual framework and theoretical lenses that our framework is built upon. Next, we will elaborate on each of the theoretically grounded factors to develop and present our

propositions. In the final section, we conclude our study and present directions for future research.

THEORETICAL FOUNDATIONS

Incorporating and building upon the discovery and creation approaches, the actualization approach attempts to incorporate both objective and subjective views of entrepreneurial opportunities. The actualization approach accepts the objective existence of opportunities as un-actualized propensities and acknowledges the objective presence of opportunities but unlike the discovery approach, does not expect to exploit entrepreneurial opportunities at the moment of their emergence (Ramoglou & Tsang, 2018; Ramoglou & Tsang, 2017, 2016). Unlike the creation approach, the actualization approach does not believe in entrepreneurs' capabilities to subjectively create any opportunity. However, it accepts the subjective imagination and believability of entrepreneurs about an entrepreneurial opportunity, with the possibility that it could sidetrack entrepreneurs from an objectively existing reality (Ramoglou & Tsang, 2016; Ramoglou & Zyglidopoulos, 2015).

The actualization approach assumes, even if we think we have recognized an opportunity, that for some entrepreneurs it might just remain a belief and true knowledge about actual opportunities can only be determined retrospectively (Ramoglou & Tsang, 2018). Therefore, it suggests replacing the long-held notion of entrepreneurial alertness (Yu, 2001) with an opportunity recognition process based on imagining, believing and then knowing. According to the actualization approach until entrepreneurs have made a profit they cannot determine the existence of an opportunity (Ramoglou & Tsang, 2016). Therefore, before the realization of profit, the actualization approach treats entrepreneurial opportunities as propensities with profits yet to be discovered. The approach defines entrepreneurial opportunities as:

“Imagining the state of the world in which one makes *profit* after engaging in an entrepreneurial course of action, believing this state of the world as ontologically possible and after the realization of *profit*, knowing retrospectively that an opportunity was truly there” (Ramoglou & Tsang, 2016, p. 425)

We believe that the actualization approach could be a promising addition to take the field of entrepreneurship forward, but it is not free of limitations. *First*, defining entrepreneurial opportunities as “Imagining the state of the world in which one makes *profit* after engaging in an entrepreneurial action, believing this state of the world as ontologically possible and after the realization of *profit*, knowing retrospectively that an opportunity was truly there” (Ramoglou & Tsang, 2016, p. 425)– is problematic and retains the limitations of previous studies. For example, Shane and Venkataraman (2000), defined opportunities as a situation “in which new goods, services, raw materials, and organizing processes can be introduced and sold at greater than their cost of production” (220). This definition is pre-deterministic in its nature with a dichotomized outcome for profit (Davidsson, 2015) and with no room to accommodate the possibility of failure or a possible preference for non-economic objectives. According to Lee and Venkataraman (2006), “opportunities contain the possibility for economic gains as well as possibility for financial loss for the entrepreneur(s) pursuing the idea” (110). In their definition, Lee and Venkataraman also relate opportunities to financial gain or loss and ignore the significance of non-economic objectives. Contrarily, in pursuit of non-economic objectives such as autonomy, passion (Chen, Xin, & Kotha, 2009), improved quality of life (Hessels, Gelderen, & Thurik, 2008), social status (Carsrud & Brannback, 2011), or hope for future gains, entrepreneurs tend to carry on even with an economically failing venture (Khelil, 2016). According to Gelder, De Vries, Frese, and Goutbeek (2007) entrepreneurs do not always focus on the quest for money and they tend to create a balance between economic and non- economic objectives. Similarly, Shane, Locke, and Collins (2003) identify factors such as a desire for

independence, work and family life balance as primal motivators of entrepreneurs to engage and pursue an entrepreneurial opportunity.

Thus, the recent attempt to define opportunities and their recognition, actualization approach has also limited the scope of opportunities to mere profit seeking. “The biggest mistakes we are making in “opportunity” research are to *start* with a conceptualization of a *complete* entity that is subjectively and/or objectively *favourable by definition* with respect to the *dichotomized* outcome of profit (or net benefit) versus its opposite” (Davidsson, 2017b, p. 124)

Therefore, partially building on the actualization approach and to define an entrepreneurial opportunity as not merely dependent on economic objectives, we propose entrepreneurial opportunity recognition process as *a cognitive and context driven process of imagining and believing the state of the world through which one can meet a combination of economic and non-economic objectives after engaging in an entrepreneurial activity*.

Second, the actualization approach asserts, entrepreneurs do not always make perfect sense of the world, even if they believe they have, their claim might be meagre, and entrepreneurs might keep investing their time and effort into a non-opportunity venture (Bhaskar, 2008; Ramoglou & Tsang, 2016). “We can neither foresee where opportunities exist nor know retrospectively whether opportunities remained unexploited or were simply absent” (Ramoglou & Tsang, 2016, p. 426). This assumption of the actualization approach is paradoxical in its nature and suggests that entrepreneurs can only develop a conjecture about opportunities. Similarly, such an assumption of the actualization approach undermines any efforts of entrepreneurs in making sense of their imagined opportunities and undermines the development of the field.

Without offering any explanation for understanding entrepreneurs’ advancement from their initial opportunity imagination to firm belief, justification of this claim (i.e. entrepreneurs see

opportunities only after realization of profit) of the actualization approach is subject to increasing criticism. Studies to date have largely focused on entrepreneurs' cognition as an antecedent or as an explanation for entrepreneurial action (De Carolis & Saporito, 2006; De Carolis, Litzky, & Eddleston, 2009; Hayward, Forster, Sarasvathy, & Fredrickson, 2010; Keh, Der Foo, & Lim, 2002; McCarthy, Schoorman, & Cooper, 1993; Simon, Houghton, & Aquino, 2000) (See Table 2 for details on these studies), however the cognitive mechanism generating such inclination capability is overlooked (Barbosa, Fayolle, & Smith, 2019; Golman & Loewenstein, 2018; Nicolaou, Lockett, Ucbasaran, & Rees, 2019). With this background, we will discuss what restrains entrepreneurs from making true sense of the existing opportunities?

Please Insert Table 2

Lack of such justification is also reminiscent of the long-existing question, why few and why others cannot recognize opportunities? According to Braver and Danneels (2018), lack of explanation by Ramoglou and Tsang is less informative and is like justifying that the glass shattered because it was brittle and prone to shatter without any explanation. Additionally, the lack of explanation around agents' (entrepreneurs') subjectivity makes the concept of opportunity strictly dichotomized like a single *aha* experience and outrightly rejects any possibility of agents' efforts and differences before the realization of profit (Davidsson, 2017a).

Third, on the one hand, the actualization approach dissuades entrepreneurs from the “*escalation of resource commitment toward a probably hopeless venture*”(Ramoglou & Tsang, 2016, p. 427). On the other hand, it teaches entrepreneurs to preserve their commitment even in the state of failure and “*the danger of premature opportunity abandonment*”(Ramoglou & Tsang, 2016, p. 427). This contradictory view of the actualization approach, however, is unable to answer, when should entrepreneurs quit or keep pursuing their imagined opportunities?

With an objective to address these limitations, we explore a cognitively constrained and behaviourally deliberated sense-making mechanism around entrepreneurs' advancement from their initial opportunity imagination to belief. While doing so, we will highlight the factors obstructing entrepreneurs' sense-making process in correctly corresponding to the real-world state, where opportunities actually exist. In order to do so, our study is grounded on the following sense-making principles offered by Chater and Loewenstein (2016) model on sense-making: (1) Entrepreneurs' tendency to gain adequate market knowledge for their imagined opportunity either formally or informally is contingent on their perception of how much they know and how much more knowledge they need (i.e. first proposition of the study); (2) Devaluation of expectation deviating information saves an individual from contradictory information 'pain' (even if it is corresponding to the true state of an opportunity) and assures confirmatory information 'pleasure' (i.e. second proposition of the study); and (3) By valuing only welcomed information over un-welcomed information (even if un-welcomed information is valid), entrepreneurs' build and retain their confidence on possibly wrong pre-held assumptions (i.e. third proposition of the study).

PROPOSED CONCEPTUAL FRAMEWORK

Based on mind simplification and behavioural deliberation from the field of behavioural economics (Chater & Loewenstein, 2016) and opportunity imagination and believability from entrepreneurship scholarship (Ramoglou & Tsang, 2016), we develop a framework which specifies the sense-making mechanism from initial imagination of an opportunity to opportunity believability (Davidsson, 2015; Keating & McLoughlin, 2010; Mitchell & Shepherd, 2010; Ramoglou & Tsang, 2016). This framework is composed of previously disparate concepts including psychological loss aversion- a perceived gap between how much sense-making one has achieved and how much more could be achieved (Baumeister,

Bratslavsky, Finkenauer, & Vohs, 2001; Chater & Loewenstein, 2016; Oster, Shoulson, & Dorsey, 2013; Wiggin, Reimann, & Jain, 2019), acquiring market knowledge- an attempt to know the market and competitors for opportunities (Hulbert, Gilmore, & Carson, 2015), contradictory information pain and confirmatory information pleasure- preference for pleasure of information validation over the pain of information correction (Berns, Laibson, & Loewenstein, 2007; Chater & Loewenstein, 2016; Ploghaus et al., 2000; Porro et al., 2002) and, conformation bias-misinterpretation of new information to support pre-held hypothesis (Rabin & Schrag, 1999). By combining these aforementioned otherwise disparate concepts we offer a holistic sense-making mechanism to explore how, when and why entrepreneurs do not make the right sense of opportunities even if they believe they have (Please see figure 2). In this framework the initial imagination of an opportunity drives entrepreneurs to acquire market knowledge and presence of psychological loss aversion affects the way entrepreneurs tend to acquire such market knowledge formally or informally. Information gathered through formal market knowledge could yield contradictory information pain and contrastingly, informal knowledge acquisition could generate a pleasure of information confirmation. Consequently, by choosing only confirmatory information, entrepreneurs are able to display greater confidence in an opportunity than they might otherwise feel, thereby enabling them to exploit an opportunity.

Please Insert Figure 2

In the following, the proposed conceptual framework is discussed, and propositions are offered.

IMAGINING AN ENTREPRENEURIAL OPPORTUNITY

It is important to understand the process that leads to action and the absence of certain knowledge about future paves the ground for imagination (Loasby, 2011). As an illustration “by the sheer force of their imagination, Van Gogh and Steve Jobs created groundbreaking

innovations in art and consumer technology...episodes of their creative breakthroughs illustrate that rather than having a single all defining thought or flash of insight, their imagination rested on a combination of inferences and on a culmination of ideas and insights they had built up over time (Trank & Cornelissen, 2013, p. 707).

In their recent paper Miller and Le Breton–Miller (2017) posit that entrepreneurs imagine an idea from ‘scratch’, which they improve step by step - thus begins an entrepreneurial venture almost on a blank slate. When entrepreneurs think about a new venture creation, it is significant to consider the role of their imagination, required resources and capabilities and the activities required to exploit perceived entrepreneurial opportunities (Keating & McLoughlin, 2010).

Imagining an entrepreneurial opportunity is a cognitive process and carries an initial imagination of meeting entrepreneurial objectives after engaging in entrepreneurial activity (Korsgaard, Berglund, Thrane, & Blenker, 2016). As an illustration, in his own words, Elon Musk (CEO of Tesla, PayPal, and SpaceX) never expected to revolutionize the world and it was not his long –fulfilled expectation rather it was an abstract of an area that would possibly influence the future of humanity (Khan, 2013, April 22).

ACQUIRING MARKET KNOWLEDGE

Entrepreneurs display differences in their market knowledge and sense-making for opportunities (Kirzner, 1997). Acquiring market knowledge is a “behavioural intention and attempt to understand the market and competitors’ ability to differentiate and seek new opportunities” (Hulbert et al., 2015, p. 619). Strong market knowledge is invaluable for a quick response to market needs and preferences and reflects an orientation towards customers and competitors.

Through the interaction with demand-side participants of a product, such as customers, entrepreneurs tend to make sense of entrepreneurial opportunities. Our knowledge on what

basis entrepreneurs decide on a mechanism to understand market demand to conceive entrepreneurial opportunities remains limited (Nambisan & Zahra, 2016).

With this objective, we attempt to explicate, that there could be certain heuristics (intuitive) or analytical efforts (cognitive) involved in the decision to acquire market knowledge. These analytical efforts or reliance on intuition effect the decision making process and its outcomes (Soane, Schubert, Lunn, & Pollard, 2015). Earlier researchers acknowledge that individuals incline to more analytical processes for information seeking if decisions are complex and they capitalize on their heuristics for simple decisions (Bargh, Chen, & Burrows, 1996; Dane & Pratt, 2007).

On the other hand, we can observe that entrepreneurs rely on their intuition even for complex business decisions. For example, Compaq USA, in the presence of huge financial assets and superior human resources, thought they could equally do better by acquiring Digital Equipment Corporation (DEC). However, Compaq later realized it invested in a non-opportunity venture and had very little knowledge about DEC business, thus it became the victim of bankruptcy (Chancellor, 2015). According to Chater and Loewenstein (2016), belief about how much required knowledge someone has helps in determining the required effort for the sense-making of a situation. They define this type of belief of an individual as psychological loss aversion.

PSYCHOLOGICAL LOSS AVERSION

Psychological loss aversion is defined as “people will be strongly motivated to engage in sense-making when they perceive a gap between how much sense-making they have achieved and how much they believe could be achieved” (Chater & Loewenstein, 2016, p. 145). To reduce psychological loss aversion by avoiding additional information, individuals may deliberately decide to quit attaining more information. This deliberate attempt to avoiding any additional information saves an individual from a perception of losing an opportunity or adverse

deviations from an opportunity (Baumeister et al., 2001). Building on Chater and Loewenstein's (2016) model of the sense-making process, we offer two impetus to explain the psychological loss aversion of entrepreneurs. *First*, it is the function of expectation (Chater & Loewenstein, 2016; Oster et al., 2013) that triggers the psychological loss aversion. In a perfect sense, entrepreneurs should indifferently gather new information and assess the probability of losses vs gains. However, in an uncertain world of entrepreneurship losses loom greater than gains and venture failures are more consistently likely (Liu, Li, Hao, & Zhang, 2019). Fraught with the anxiety of higher negative expectations, entrepreneurs might deliberately avoid gathering additional information.

A study by Karlsson, Loewenstein, and Seppi (2009) on Scandinavian and American investors revealed that these investors have a tendency to avoid any unpleasant information about the stock market. Additionally, they found that this tendency is especially present among investors when the stock market is running flat or against their expectations. Because of their information avoidance tendency, these investors not only stop themselves from getting additional information but also avoid the adjustment of their positive imagination for the weak stock market outlook. More so they posit that investors more frequently gather information and keep updated only when the stock market is rising and behaving according to their optimistic expectations. A study by Sicherman, Loewenstein, Seppi, and Utkus (2016) of 11,68,309 investors' panel data found similar results that investors are reluctant to even login to their investment portfolios on the days when the market is behaving adversely and they might observe more losses than gains.

Second, choosing an information source depends on the resolution of the dilemma between solving curiosity or avoiding trepidation (Chater & Loewenstein, 2016). Curiosity tempts indulgence and trepidation triggers lack of action (Wiggin et al., 2019). For example, the study by Kőszegi (2003), on patients' attitude to gaining the necessary information revealed that they

tend to avoid negative surprises, and that patients tend to draw more utility from their imagined (rather than actual) state of health. To maintain their utility, to avoid any anxiety and to maintain a pleasant state of mind, patients may choose not to know more from their doctors. In another study Kőszegi (2010) asserts that individuals not only draw satisfaction from physical outcomes but also from a positive imagination of a physical outcome and to maintain their imagined state they tend to avoid additional information.

The study by Oster et al. (2013), offers another plausible explanation around information avoidance. In their study on individuals at risk of Huntington's disease (a genetically transferable disease with limited life expectancy) they found individuals had a very high tendency for avoiding presymptomatic testing. Despite a negligible economic cost and variety of benefits such as planning for education, investment and retirement planning, individuals deliberately avoid information about Huntington's disease. Therefore, regardless of the actual state of an individual's health, they do not want to experience the loss of an unrealistic expectation that they are healthy.

This behavioural deliberation in acquiring information to protect their imagination could serve the process of gaining the market knowledge. According to Wood, McKelvie, and Haynie (2014), entrepreneurs pay more attention and recognise those opportunities that are consonant with their knowledge. On the other hand, when entrepreneurs tend to think that they possess all the relevant knowledge, they stop recognising the existence of a possible gap between what they know and how much more they need to know. The dependence of entrepreneurs on merely relating their possessed knowledge to characterise something as opportunity or non-opportunity (Grégoire, Barr, & Shepherd, 2010) can restraint the efforts of entrepreneurs' in getting more information and forgoes the role of possible curiosity among entrepreneurs.

Under the influence of such thinking entrepreneurs tend to seek information in a more convenient and informal way. According to Parker (2009), such an informal and more convenient way of seeking information can promote homophily with the outcome that entrepreneurs might contact only likeminded individuals with similar beliefs and knowledge. Based on this we propose the following propositions:

P1: Entrepreneurs tendency to gain market knowledge for their imagined state of an entrepreneurial opportunity is contingent on their perception of how much they know and how much more they need to know.

P1a: Presence of a higher negative expectation triggers information avoidance among entrepreneurs.

P1b: Preference for solving curiosity amplifies entrepreneurs' dependence on an information source and preference for avoiding information and trepidation minimizes such dependence.

According to Chater and Loewenstein (2016), individuals shape their sense-making to view the world and their lives as positive as possible. In other words, the analytical controllability of the sense-making process tends towards a simpler explanation for a pleasurable outcome (Jehiel, 2018). Other than analytical controllability, a more attractive response to pleasure than pain is a natural stimulus. In their influential article published in Nature in 2015, Namburi et al. (2015) identified that in mice, their neural connections are more reinforced to a reward circuitry in their brain when they hear the sound of a potential reward (i.e. sugar) than a threat (i.e. currents). Similarly, entrepreneurs deliberate rely on the simpler informal knowledge acquisition process that leads to more pleasure of validation than to pain of non-confirming formal market knowledge.

CONTRADICTORY INFORMATION PAIN OR CONFIRMATORY INFORMATION PLEASURE

*“It is difficult to conceive what life would be if pleasure and pain were stricken out.....
Pleasure and pain are not the whole of life; but leave them out, and life and the universe no
longer have meaning” (Nichols, 1892, p. 403).*

Individuals’ anticipation of joy or dread effects individuals’ appraisal of an event and their decision-making process (Berns et al., 2007) and, especially when humans detect the mismatching between anticipation and actualization of an event (Ploghaus et al., 2000). During an experiment, Ploghaus et al. (2000), exposed twelve individuals to painful heat and nonpainful warmth stimuli. They manipulated individuals’ anticipation of joy and dread by informed and un-informed exposure to painful or non-painful heat. Individuals displayed a more painful neural response when there was a non-painful anticipation and the intensity of such pain was very low during an anticipated painful treatment (Porro et al., 2002). In terms of making sense of an opportunity, believing that an entrepreneur has made perfect sense of the opportunity but then later finding out that he has not, after receiving deviating information from his/her anticipation, leads him/her to ‘pain’. Similarly, receiving such information that contradicts the sense an individual has made, but then having such information devalued might minimize the pain but could also leave one worse off (Chater & Loewenstein, 2016).

The seeing and seeking out of only positive information is generally called a confirmatory information search or in other words a selective exposure to desired information (Hart et al., 2009). Therefore, seeking information through the lens of one’s own wishful thinking and neglecting non-conforming information can be termed as selective exposure (Golman, Hagmann, & Loewenstein, 2017). For example, very few of us, rarely go through the detailed terms and conditions of the banks’ borrowing contracts that we strongly wish or desire to enter.

Even when information is gathered and attended to, and its findings are adverse, there is still a possibility that an individual will avoid drawing the most logical conclusions (Golman et al., 2017). As an illustration, management executives who eschew the critical criticism of their teams, deprive themselves of necessary changes and improvements in their decision making. According to Chater and Loewenstein (2016), while making decisions, it is the inherent drive of individuals that could lead them to avoid nonconfirmatory information. Moreover, research acknowledges a preference of confirmatory information as the arbitrary decision-making process of individuals.

In his book, “Dear investor, what the hell are You Doing? Smart and easy ways to fix the mistakes you make with your money”, Weber (2015) postulates that individuals carry a natural tendency of change aversion, but to be successful investors they need to adapt accordingly. As an investment advisor for more than 30 years, Weber observed the same tendency among both small and big investors. We have a myriad of examples in history of such attitudes among entrepreneurs. For example, the American investment bank, Lehman Brothers, and their bankruptcy in 2008, left many doubts about the rationality of investors. According to Bains (2016), despite the continuous warnings and clear information from financial experts, Lehman Brothers investors welcomed only that information that was promising profitability, while systematically ignoring the information about potential risks. In summary, individuals, including entrepreneurs prefer the feeling of being validated over being correct. Therefore, we propose the following proposition:

P2: Formal market knowledge leads entrepreneurs to the ‘pain’ of being incorrect while informal market knowledge leads them to the ‘pleasure’ of being valid.

To meet the objective of being valid, entrepreneurs seek the support of their confirmation bias. Confirmation bias is a way of searching, interpreting and recalling the information to validate one's beliefs (Oswald & Grosjean, 2004; Zhang & Cueto, 2017).

CONFIRMATION BIAS

“Confirmatory bias leads to overconfidence, in the sense that people on average believe more strongly than they should in their favoured hypotheses.....an agent who suffers from confirmatory bias may come to believe in a hypothesis that is probably wrong” (Rabin & Schrag, 1999, p. 38).

While making sense of an opportunity, entrepreneurs may hold false beliefs, or they may give more weight to only that information that validates their held beliefs. This insight is quite significant in order to understand how individuals consider selected information while discarding other pieces, in an uncertain decision-making situation. Please see Figure 3, for an illustration of confirmation bias.

In an influential paper Rabin and Schrag (1999) proposed a model for confirmation bias. They characterised confirmation bias as a cognitive state where individuals misinterpret new information to support their pre-held hypothesis. As we discussed earlier, the tendency of avoiding and misinterpreting new information is natural to humans and even experienced investors are prone to it. According to dissonance theory (Festinger, 1964, 1957, 1962), after individuals commit to a belief, or decision, they seek out supportive information and eschew unsupportive information to eliminate or avoid an unpleasant state. Continuous prevalence of such an attitude becomes more detrimental at a point where an individual starts considering ‘wrong’ signals as right, or even supportive of his/her conviction. Even after accepting ‘new’ signals, if an individual adapts his/her initial belief, but due to a long-time commitment and excessive efforts toward his/her wrong belief, he/she might lack confidence toward his/her

adapted hypothesis (Rabin & Schrag, 1999). Surprisingly, in the field of entrepreneurship and more specifically to understand the opportunity recognition process, confirmation bias has rarely been studied (Zhang & Cueto, 2017). Avoidance of confirmation bias suggests, we are perhaps treating entrepreneurs as super humans, possessing all the information to ex-ante discover any or all opportunities.

Please Insert Figure 3

OPPORTUNITY CONFIDENCE

Entrepreneurs' decide on the basis of their confidence either to take action or not to exploit an entrepreneurial opportunity. Opportunity Confidence (OC) states a "particular actor's subjective evaluation of the attractiveness—or lack thereof—of a stimulus as the basis for entrepreneurial activity" (Davidsson, 2015, p. 675). The concept of OC is about assigning the degree of favourability and an entrepreneur's tendency to subjectively estimate the possibility of an entrepreneurial venture. Here we mention that the estimation of the possibility of a venture is strictly subjective to an actor.

This notion of OC presented by Davidson (2015), resonates with the proposed paradigm for our study i.e. critical realism. A critical realist supports the notion that opportunities exist objectively and entrepreneurs subjectively make sense of such opportunities (Ramoglou & Tsang, 2016). The separation of subjectivity from the objectivity helps us to understand that individuals extract different meanings from the same reality due to their lived experiences (Davidsson, 2015).

In a similar vein, we can recall an interesting story of "The Blind Men and the Elephant". In this story, blind men never came across an elephant and by touching it wanted to learn what it was. These blind men then described the elephant based on the limited feel of the body parts

of an elephant that they had touched. The person who was holding the tail of the elephant described it as a rope, the one holding its leg perceived it as a tree, and the one who touched its tusk called it a spear and the person who held its trunk related it to a snake. Despite the fact that blind men knew that every one of them experienced a different body part, and were therefore, telling the truth, they deliberately rejected each other's claim. While concluding the moral of the "Elephant and Blind Men" story, Popple (2010) posits that to justify their own subjective experience individuals tend to ignore and devalue the subjective experience of others even if that is telling a different story.

We propose that other than extracting an automatic subjective lesson through lived experiences, individuals deliberately give value to welcome over unwelcome information. We can track the acknowledgment of this claim in behavioural and brain sciences. For example, in their evolutionary analysis, William and Trivers (2011) posit that to enhance their confidence, people will deceive themselves by unwelcoming the unwanted information, even if such information is needed in the first place. As an example, while recently answering the questions of analysts on the performance of Tesla, Elon Musk stated, "I am feeling quite confident" about achieving positive cash flows and income, "we are going to go as long as there are good questions to answer"(Melloy, 2018, p. 1). In searching for only welcomed questions and to maintain his confidence, Elon even criticised the logical questions of analysts' e.g. where specifically will you be in terms of capital requirements, or question on model 3 delays? In reply to these logical questions, Elon called them 'boneheaded,' and 'boring' –"I am really upset by this, and they are killing me" (Melloy, 2018, p. 2). Based on this discussion we propose:

P3: By choosing only confirmatory information, entrepreneurs are able to display greater confidence in an opportunity than they might otherwise feel, thereby enabling them to exploit an opportunity.

DISCUSSION AND CONCLUSION

We have discussed how entrepreneurs rely on their cognition and behaviour deliberation to facilitate and hinder the process of their sense-making. While exploring their sense-making process we have not treated entrepreneurs as ‘super humans’ who can discover any opportunity ex-ante or create any opportunity from nowhere. By building our study on the actualization approach (Ramoglou & Tsang, 2016) and by integrating the sense-making model of Chater and Loewenstein (2016) we proposed an integrated conceptual framework and offered refinement of the actualization approach.

We addressed the gaps in previous studies such as overdependence on economic objectives, opportunities as dichotomised entity, that treated entrepreneurs as alert superhumans to discover any opportunity like hidden artefacts and treating agents as able to create any opportunity on a blank slate. Based on this reasoning, we decline to define entrepreneurial opportunities as merely limited to economic objectives and offered a cognitive mechanisms in elaborating the sense-making process. The primary theoretical contribution of our study is to refine the actualization approach and exploring a cognitively constrained sense-making process of entrepreneurs’ opportunity recognition process. In the actualization approach, we addressed the lack of explanation around agents’ subjective action or inaction, while making sense of entrepreneurial opportunities. Lack of agents’ subjectivity convolutes the actualization approach and fails to retain the hallmarks of the creation approach. Therefore, to address this limitation, building on Chater and Loewenstein (2016) model of the sense-making, we highlighted the following subjective factors among entrepreneurs. First, we believe that how much an entrepreneur knows and how much more he needs to know about an opportunity, directs him/her to the choice of market knowledge (i.e. either formal or informal). Second, entrepreneurs prefer confirmation over the validation of their ideas to maintain the belief in a pre-held hypothesis. Third, the expectation of only welcomed information leads entrepreneurs

to information ‘pleasure,’ therefore, restoring their confidence in an opportunity for its exploitation. Additionally, we have discussed that actualization approach overemphasizes profit as a core objective of an entrepreneurial opportunity. Contrarily, entrepreneurs tend to stay committed even with an economically failing and non-economically successful venture. Non-economic objectives such as, independence, and work and family life balance are significant reasons to persist with an economically failing venture (Khelil, 2016). Therefore, we proposed a more holistic definition of an opportunity recognition process: *a cognitive and context driven process of imagining and believing the state of the world through which one can meet a combination of economic and non-economic objectives only after engaging in an entrepreneurial activity.*

Our study has multiple implications for practitioners. First, for entrepreneurs, our study is imperative to highlight the unrealistic presupposition such as only looking for favourable information while making sense of an entrepreneurial opportunity. For example, if one is rigid in his/her initial plausibility of an opportunity and rigidly committed to a subjective view of the world then he/she might be trapped into non-realistic opportunity beliefs. This situation might lead to an escalation of resource commitment and continuous efforts in the ‘wrong’ direction (Ramoglou & Tsang, 2016). Second, by proposing a refined definition of an entrepreneurial opportunity which is not merely limited to sole economic returns, our study acknowledges the significance of entrepreneurs’ persistence despite non-profitability. Therefore, the non-presence of profit does not necessarily mean the absence of an opportunity for all entrepreneurs. This implication of our study is significant to highlight the early or continuous commitment of entrepreneurs toward an opportunity. This is equally significant to unfold the reasons for persistence / non-persistence among entrepreneurs and alternative explanation of entrepreneurs’ commitment (lack of commitment) despite the absence (presence) of economic or non-economic returns. Additionally, this standpoint would address

when faced with the same opportunities why do individuals have vastly different views regarding their plausibility (Ramoglou & Tsang, 2016, p. 428). By recognizing the mind simplification and behavioural deliberation of entrepreneurs' sense-making, our propositions relax the assumptions of entrepreneurs as 'superhumans' and opportunities as strictly dichotomous.

The notion of psychological loss aversion has a profound effect on entrepreneurs' sense-making (Chater & Loewenstein, 2016). As in several situations, information is costly to obtain at least to continue to carry an opportunity cost, of losing the pleasure of pre-obtained information (Golman et al., 2017). Additionally, the behavioural deliberation of missing or obtaining information puts weights on one's desire of resolving decision making uncertainty (Golman & Loewenstein, 2018). Future studies (please see table 3) might explore, as compared to experienced entrepreneurs are nascent entrepreneurs more attentive to resolve uncertainties or do they seek information pleasure instead? Such studies would further our understanding around the role of experience in determining behavioural deliberation.

Please Insert Table 3

In our discussion, we have elaborated on adverse effects of information avoidance. However, this could be a counterproductive in the impact of information avoidance on decision makers (Sicherman et al., 2016). As an illustration, what role could information avoidance play, for those entrepreneurs who have a preference for an early abandonment of a venture?

Moreover, studies might investigate, do failed entrepreneurs tend to repeat the deliberation of information avoidance or do they instead regret and change their behaviour? In the similar vein further studies can compare the persistence or adjustment of information avoidance attitude among failed vs successful entrepreneurs.

Individuals carry a natural tendency of disliking unpleasant information (Berns et al., 2006; Loewenstein, 2006). They are inclined in gathering more information, if such information induces a pleasure instead of pain (Golman & Loewenstein, 2018). This liking or disliking of information is significant in exploring intertemporal (what and how much to do) choices of entrepreneurs' while making sense for opportunities. Considering this assumption of the sense-making model (Chater & Loewenstein, 2016), it would be interesting to study, do entrepreneurs trap in the escalation of resource commitment and miss window of an opportunity? Even within itself, waiting for a positive outcome entails joyous anticipation, which could limit our rational thinking (Berns et al., 2006). From this standpoint, future studies can investigate, how presence of joyous anticipation among nascent/experienced entrepreneurs effects resource commitment? Berns et al. (2006) further postulate, past experience of an individual drives the magnitude of joyous anticipation among individuals. Past entrepreneurial experience teaches different lessons to different entrepreneurs e.g. failure due to external conditions, failure of venture in meeting non-economic (economic) objectives, psychological failure of an entrepreneur (Khelil, 2016). In this spirit, future studies can investigate, how various trajectories of entrepreneurial failure provoke the presence/absence of anticipatory joy among entrepreneurs for subsequent ventures?

A priority for belief consonance is a common tendency among individuals and they even try to change others' belief, if others' belief comes in conflict with their belief (Golman, Loewenstein, Moene, & Zarri, 2016). People better relate their past behaviour, if it coincides with their own motives and prefer to ignore any conflicting recalls (Benabou & Tirole, 2011). Upon encountering a person with discrepant beliefs, entrepreneurs might experience a diminishing utility of their potential venture, therefore they might value a confirmation of their ideas over validation. In absence of an objective information about an opportunity, expression of such a lopsided behaviour maintains the protection of entrepreneurs' pre- held beliefs and

self-identity (Golman et al., 2016; Jehiel, 2018). Building on these assumptions, researchers can explore the following: How various levels of confidence among entrepreneurs distaste them for writing off a venture that is laden by a self-protected belief? This line of research would help us to understand timely exit decision from a non-opportunity venture, where entrepreneurs might be escalating their commitment in a wrong direction. How under the influence of protected belief perspective, successful entrepreneurs could be trapped in the fallacy of being always valid while making sense for their subsequent ventures?

Table 1: Limitations of Previous Opportunity Recognition Approaches

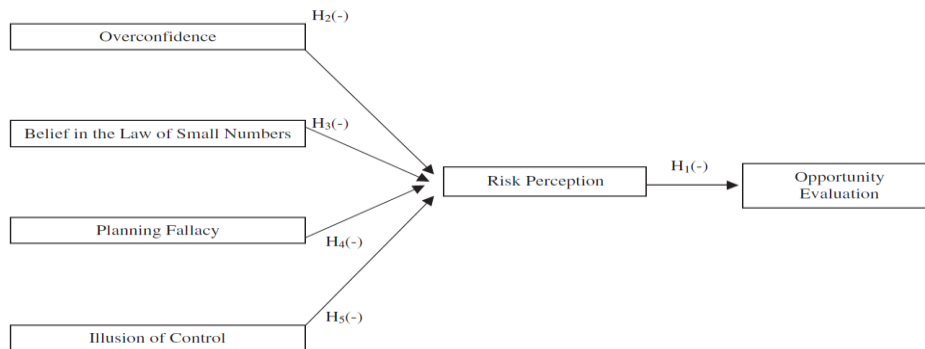
Approaches for Opportunity Recognition	Potential Limitations
<u>Price centric (equilibrium) approach</u> Identification of price variation Resource allocation Development of new products and services	<ul style="list-style-type: none"> • A mere variation of prices of raw material, goods, and services do not carry all the information necessary for opportunity recognition. • Information regarding competitors, customers, and future trends are noteworthy. • Role of the agent i.e. entrepreneurs' efforts are ignored.
<u>Discovery Approach</u> Alert entrepreneurs Identification of opportunities (objectivity) Evaluation of opportunities Exploitation of opportunities	<ul style="list-style-type: none"> • Unable to answer: why only a few entrepreneurs can and others cannot see entrepreneurial opportunities? • Ignores the role of entrepreneurs in shaping and continuous development of opportunities. • Considers entrepreneurs as superhumans who ex-ante can discover any opportunities.
<u>Creation Approach</u> Entrepreneurial effort Creation of opportunities (subjectivity) Exploitation of an opportunity	<ul style="list-style-type: none"> • Ignores the objective existence of opportunities. • Overlies on agency efforts to create any opportunity.
<u>Actualization Approach</u> Imagination of an opportunity (subjectivity) Believability of an opportunity (subjectivity) Identification of an opportunity (objectivity) Opportunity exploitation by profit making	<ul style="list-style-type: none"> • Overlies on profitability as a mere objective of an opportunity recognition. • Does not address: why entrepreneurs do not always make a perfect sense of an opportunity, even if they think they have. • Contradictory propositions either to keep or quit pursuing an opportunity is less informative in its implications.

Figure 1: Mind Creates a Non-existing Bright White Sphere to Simplify the Presence of Black Spikes (Adopted from Idesawa, 1991)

Table 2: Previous Studies on Entrepreneurs' Cognition and their Limitations

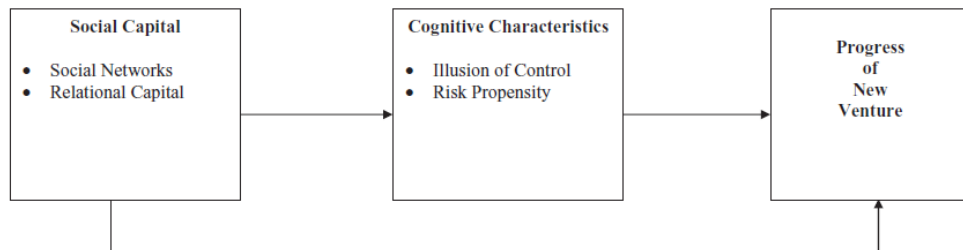
Past Studies on Entrepreneurial Cognition	
<p>The diagram shows two main categories: Social capital and Cognitive biases. Social capital includes Structural holes, Trust, Strong ties, and Shared codes and language. Cognitive biases include Overconfidence, Illusion of control, and Representativeness. Arrows indicate positive (+) and negative (-) relationships. Structural holes (1a) and Trust (2a) have positive effects on Overconfidence. Strong ties (3) and Shared codes and language (4a) have positive effects on Illusion of control. Shared codes and language (4b) also has a positive effect on Representativeness. Overconfidence (5a) has a negative effect on Risk perception. Illusion of control (5b) and Representativeness (5c) have positive effects on Risk perception. Risk perception (6) has a negative effect on the Exploitation of entrepreneurial opportunities.</p>	<p>(De Carolis & Saporito, 2006; De Carolis et al., 2009)</p> <p>No discussion on how entrepreneurs scan the collected information e.g. How despite the presence of optimal resources and information, entrepreneurs like Elon Musk, still hear and accept only what they want to hear and accept.</p>
<p>The diagram shows four escalation variables: Responsible for Start Decision, Has Partners, Use of Skills, and Expressed Overconfidence. All four variables have arrows pointing to a box labeled 'Additional Capital Invested'. A box labeled 'Financial Feedback' also has an arrow pointing to 'Additional Capital Invested'.</p>	<p>(McCarthy et al., 1993)</p> <p>Limited to re-investment decisions, and financial outcomes and does not elaborate on antecedents e.g. why and how entrepreneurs experience an overconfidence</p>
<p>The diagram is organized into three columns: Cognitive Biases, Perception, and Decision. Under Cognitive Biases are Overconfidence, Illusion of Control, and Belief in the Law of Small Numbers. Under Perception is Risk Perception. Under Decision is Decision to Start a Venture. Arrows show: Overconfidence (H2-) to Risk Perception; Illusion of Control (H3-) to Risk Perception; Belief in the Law of Small Numbers (H4-) to Risk Perception; and Risk Perception (H1-) to Decision to Start a Venture.</p>	<p>(Simon et al., 2000)</p> <p>Causal reasoning around cognitive biases is missing, similar to De Carolis and Saporito (2006) e.g. on what bases do some entrepreneurs and not others believe in the law of small numbers? Similarly, from where and how does overconfidence stem?</p>

Opportunity Evaluation Model



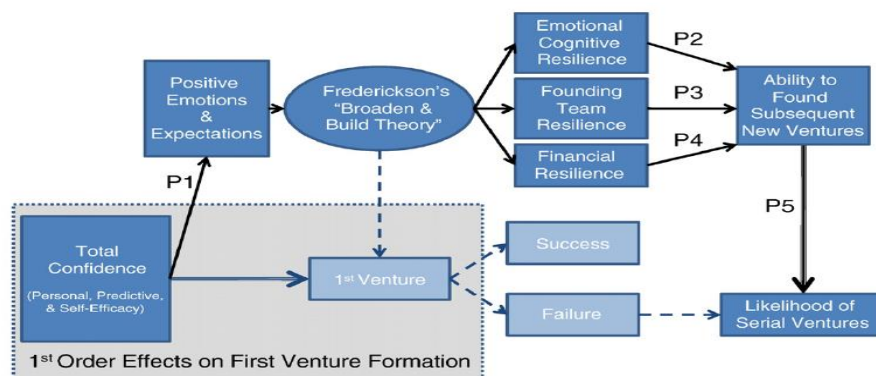
(Keh et al., 2002)

Like McCarthy et al. (1993) it does not provide a causal explanation around decision making biases e.g. what amplifies entrepreneurs' confidence or what influences them to believe in the law of small numbers. Thus, focus of the study is on cognitive effects and not on causes.



(De Carolis et al., 2009)

No explanation on how entrepreneurs assign value or devalue the collected information. Social capital facilitates the access to information, but it is entrepreneurs' mind simplification and behavioural deliberation that values (or devalues) the available information. Absence of such explanation undermines the role of entrepreneurs, presents the process as dichotomized and dependent only discovery of information (without any role of recipient).



(Hayward et al., 2010)

How information from social resources is valued/devalued is missing. A cursory discussion around information preference by confident entrepreneurs is provided but no elaboration around mechanisms of such information processing is offered.

Figure 2: An integrated conceptual framework for the entrepreneurial opportunity recognition process

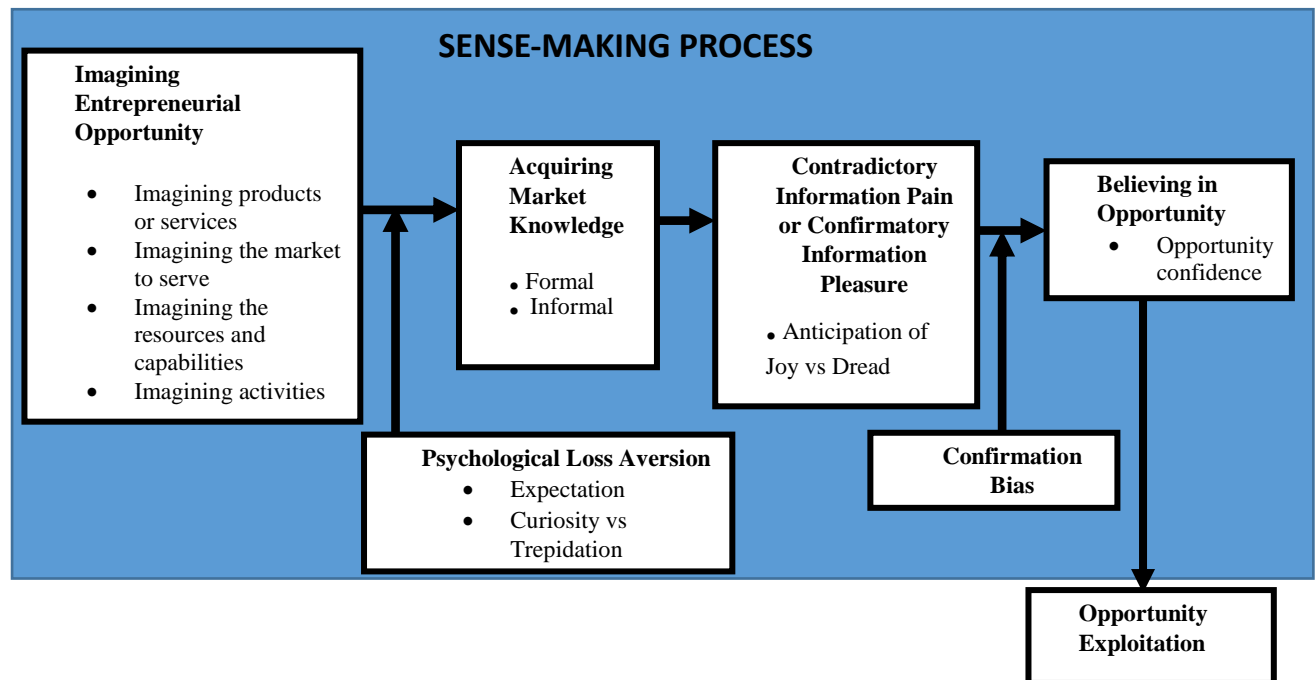


Table 3: Agenda for future research on entrepreneurs' sense-making perspective

Psychological Loss Aversion

- How do entrepreneur's experience obstruct the process of obtaining additional information for the sense-making of opportunities?
- Compare to experienced entrepreneurs are nascent entrepreneurs more attentive to resolve uncertainties or do they seek information pleasure instead?
- What role could information avoidance play, for those entrepreneurs who has a predilection for an early abandonment of a venture?

Information Pain and Pleasure

- While waiting for only pleasurable information, how do entrepreneurs tap in the escalation of resource commitment and miss the window of an opportunity?
- How does the presence of joyous anticipation among nascent/experienced entrepreneurs leads them to non-opportunity venture and irrational resource commitment?
- How do various trajectories of entrepreneurial failure provoke the presence/absence of anticipatory joy among entrepreneurs for subsequent ventures?

Confirmation Bias

- How do various levels of confidence among entrepreneurs drive them to 'write off' a venture that is laden with self-protected belief?
- How under the influence of a protected belief perspective, do successful entrepreneurs become trapped in the fallacy of always being valid while making sense for their subsequent ventures?

REFERENCES

- Alvarez, S. A., Barney, J., McBride, R., & Wuebker, R. 2017. On opportunities: philosophical and empirical implications. *Academy of Management Review*, 42(4): 726-30.
- Alvarez, S. A. & Barney, J. B. 2007. Discovery and creation: alternative theories of entrepreneurial action. *Strategic Entrepreneurship Journal*, 1(1-2): 11-26.
- Arrow, K. J. 1974. Limited knowledge and economic analysis. *The American Economic Review*, 64(1): 1-10.
- Bains, G. 2016. Are threats to markets being overestimated because of human psychology?, *Investment Week*. London.
- Barbosa, D. S., Fayolle, A., & Smith, B. R. 2019. Biased and overconfident, unbiased but going for it: How framing and anchoring affect the decision to start a new venture. *Journal of Business Venturing*, 34(3): 528-57.
- Bargh, J. A., Chen, M., & Burrows, L. 1996. Automaticity of social behavior: direct effects of trait construct and stereotype activation on action.(Attitudes and Social Cognition). *Journal of Personality and Social Psychology*, 71(2): 230.
- Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. 2001. Bad is stronger than good. *Review of General Psychology*, 5: 323-70.
- Benabou, R. & Tirole, J. 2011. Identity, morals, and taboos: beliefs as assets. *Quarterly Journal of Economics*, 126(2): 805-55.
- Berglund, H. & Korsgaard, S. 2017. Opportunities, time, and mechanisms in entrepreneurship: On the practical irrelevance of propensities. *Academy Of Management Review*, 42(4): 731-34.
- Berns, G. S., Chappelow, J., Cekic, M., Zink, C. F., Pagnoni, G., & Martin-Skurski, M. E. 2006. Neurobiological substrates of dread.(REPORTS). *Science*, 312(5774): 754.
- Berns, G. S., Laibson, D., & Loewenstein, G. 2007. Intertemporal choice--toward an integrative framework. *Trends in Cognitive Science* 11: 482-88.
- Bhaskar, R. 2008. *A realist theory of science*. London, New York: Verso.
- Braver, L. & Danneels, E. 2018. Propensities return us to the discovery-creation debate about entrepreneurial opportunities.("A Realist Perspective of Entrepreneurship: Opportunities as Propensities" by Stratos Ramoglou and Eric W.K. Tsang). *Academy of Management Review*, 43(4): 812-15.
- Carsrud, A. & Brannback, M. 2011. Entrepreneurial motivations: what do we still need to know? *Journal of Small Business Management*, 49(1): 9-26.
- Chancellor, D. 2015. Four companies that failed spectacularly, and the lessons of their premature demise.
- Chater, N. 1996. Reconciling simplicity and likelihood principles in perceptual organization. *Psychological Review*, 103(3): 566-81.
- Chater, N. & Loewenstein, G. 2016. The under-appreciated drive for sense-making. *Journal of Economic Behavior and Organization*, 126: 137-54.
- Chen, X.-P., Xin, Y., & Kotha, S. 2009. Entrepreneur passion and preparedness in business plan presentations: a persuasion analysis of venture capitalists' funding decisions. *Academy of Management Journal*, 52(1): 199.
- Dane, E. & Pratt, M. 2007. Exploring intuition its role in managerial decision making. *The Academy of Management Review*, 32(1): 33-54.
- Davidsson, P. 2015. Entrepreneurial opportunities and the entrepreneurship nexus: A re-conceptualization. *Journal of Business Venturing*, 30(5): 674-95.
- Davidsson, P. 2017a. Entrepreneurial opportunities as propensities: Do Ramoglou & Tsang move the field forward? *Journal of Business Venturing Insights*, 7: 82-85.
- Davidsson, P. 2017b. Opportunities, propensities, and misgivings: Some closing comments. *Journal of Business Venturing Insights*, 8: 123-24.
- De Carolis, D. & Saparito, P. 2006. Social capital, cognition, and entrepreneurial opportunities: a theoretical framework. *Entrepreneurship Theory and Practice*, 30(1): 41-56.

- De Carolis, D. M., Litzky, B. E., & Eddleston, K. A. 2009. Why networks enhance the progress of new venture creation: The influence of social capital and cognition. *Entrepreneurship Theory and Practice*, 33(2): 527-45.
- Dimov, D. 2007. From opportunity insight to opportunity intention: The importance of person–situation learning match. *Entrepreneurship Theory and Practice*, 31(4): 561-83.
- Echardt, J. & Shane, S. 2013. Response to the commentaries: the individual opportunities nexus integrates objective and subjective aspect of opportunities *Academy of Management Review*, 38: 160-63.
- Festinger, L. 1964. *Conflict, decision, and dissonance*. Stanford, Calif. : Stanford University Press.
- Festinger, L. 1957. *A theory of cognitive dissonance*. Stanford, Calif. : Stanford University Press.
- Festinger, L. 1962. *A theory of cognitive dissonance*. Stanford, Calif.: Stanford University Press.
- Foss, N. & Klein, P. G. 2017. Entrepreneurial discovery or creation? In search of the middle ground. *Academy of Management Review*, 42(4): 735-37.
- Galloway, L., Kapasi, I., & Wimalasena, L. 2019. A theory of venturing: A critical realist explanation of why my father is not like Richard Branson. *International Small Business Journal*.
- Gelder, J. L. V., De Vries, R. E., Frese, M., & Goutbeek, J. P. 2007. Differences in psychological strategies of failed and operational business owners in the Fiji Islands*. *Journal of Small Business Management*, 45(3): 388-400.
- Golman, R., Hagmann, D., & Loewenstein, G. 2017. Information avoidance *Journal of Economic Literature*, 55(1): 96-135.
- Golman, R. & Loewenstein, G. 2018. Information gaps: A theory of preferences regarding the presence and absence of information. *Decision*, 5(3): 143-64.
- Golman, R., Loewenstein, G., Moene, K. O., & Zarri, L. 2016. The preference for belief consonance †. *Journal of Economic Perspectives*, 30(3): 165-88.
- Grégoire, D., Barr, P., & Shepherd, D. 2010. Cognitive processes of opportunity recognition: The role of structural alignment. *Organization Science*, 21(2): 413-31.
- Hart, W., Albarracín, D., Eagly, A. H., Brechan, I., Lindberg, M. J., & Merrill, L. 2009. Feeling validated versus being correct: A meta-analysis of selective exposure to information. *Psychological Bulletin*, 135(4): 555-88.
- Hayward, M. L. A., Forster, W. R., Sarasvathy, S. D., & Fredrickson, B. L. 2010. Beyond hubris: How highly confident entrepreneurs rebound to venture again. *Journal of Business Venturing*, 25(6): 569-78.
- Hessels, J., Gelderen, M., & Thurik, R. 2008. Entrepreneurial aspirations, motivations, and their drivers. *Small Business Economics*, 31(3): 323-39.
- Hulbert, B., Gilmore, A., & Carson, D. 2015. Opportunity recognition by growing SMEs: a managerial or entrepreneurial function? *Journal of Strategic Marketing*, 23(7): 1-27.
- Idesawa, M. 1991. Perception of 3-d illusory surface with binocular viewing. *Japanese Journal of Applied Physics*, 30(4B): 751-54.
- Jehiel, P. 2018. Investment strategy and selection bias: An equilibrium perspective on overoptimism †. *American Economic Review*, 108(6): 1582-97.
- Karlsson, N., Loewenstein, G., & Seppi, D. 2009. The ostrich effect: Selective attention to information. *Journal of Risk Uncertainty*, 38(2): 95-115.
- Keating, A. & McLoughlin, D. 2010. The entrepreneurial imagination and the impact of context on the development of a new venture. *Industrial Marketing Management*, 39(6): 996-1009.
- Keh, H. T., Der Foo, M., & Lim, B. C. 2002. Opportunity evaluation under risky conditions: The cognitive processes of entrepreneurs. *Entrepreneurship Theory and Practice*, 27(2): 125-48.
- Khan, S. 2013, April 22. Elon Musk - CEO of Tesla Motors and SpaceX [Video File].
- Khelil, N. 2016. The many faces of entrepreneurial failure: Insights from an empirical taxonomy. *Journal of Business Venturing*, 31(1): 72-94.
- Kihlstrom, R. E. & Laffont, J.-J. 1979. A general equilibrium entrepreneurial theory of firm formation based on risk aversion. *Journal of Political Economy*, 87(4): 719-48.

- Kirzner, I. 1997. Entrepreneurial discovery and the competitive market process: An Austrian approach. *Journal of Economic Literature*, 35(1): 60-85.
- Korsgaard, S. 2011. Opportunity formation in social entrepreneurship. *Journal of Enterprising Communities: People and Places in the Global Economy*, 5(4): 265-85.
- Korsgaard, S., Berglund, H., Thrane, C., & Blenker, P. 2016. A tale of two kirznerns: Time, uncertainty, and the “nature” of opportunities. *Entrepreneurship Theory and Practice*, 40(4): 867-89.
- Korsgaard, S. & Sean Patrick, S. 2017. Beyond discovery: exploring the field of entrepreneurship without a discovery view. In Catherine, LJ & T. Silke, (Eds.): Edward Elgar Publishing.
- Kőszegi, B. 2003. Health anxiety and patient behavior. *Journal of Health Economics*, 22(6): 1073-84.
- Kőszegi, B. 2010. Utility from anticipation and personal equilibrium. *Economic Theory*, 44(3): 415-44.
- Lee, J.-H. & Venkataraman, S. 2006. Aspirations, market offerings, and the pursuit of entrepreneurial opportunities. *Journal of Business Venturing*, 21(1): 107-23.
- Liu, Y., Li, Y., Hao, X., & Zhang, Y. 2019. Narcissism and learning from entrepreneurial failure. *Journal of Business Venturing*, 34(3): 496-512.
- Loasby, B. J. 2011. Uncertainty and imagination, illusion and order: Shackleian connections. *Cambridge Journal of Economics*, 35(4): 771-83.
- Loewenstein, G. 2006. Social science. The pleasures and pains of information. *Science (New York, N.Y.)*, 312(5774): 704-06.
- McCarthy, A. M., Schoorman, F. D., & Cooper, A. C. 1993. Reinvestment decisions by entrepreneurs: Rational decision-making or escalation of commitment? *Journal of Business Venturing*, 8(1): 9-24.
- Melloy, J. 2018. Here are highlights of Elon Musk’s strange Tesla earnings call: ‘They’re killing me’: CNBC.
- Miller, D. & Le Breton–Miller, I. 2017. Sources of entrepreneurial courage and Imagination: Three perspectives, three contexts. *Entrepreneurship Theory and Practice*, 41(5): 667-75.
- Mitchell, J. R. & Shepherd, D. A. 2010. To thine own self be true: Images of self, images of opportunity, and entrepreneurial action. *Journal of Business Venturing*, 25(1): 138-54.
- Nambisan, S. & Zahra, S. A. 2016. The role of demand-side narratives in opportunity formation and enactment. *Journal of Business Venturing Insights*, 5: 70-75.
- Namburi, P., Anna, B., Suzuko, Y., Gwendolyn, G. C., Sarah, A. H., Romy, W., Stephanie, S. H., Kim, L. M., Melodi, A., Ada, C. F.-O., Ian, R. W., Jesse, M. G., & Kay, M. T. 2015. A circuit mechanism for differentiating positive and negative associations. *Nature*, 520: 675-78.
- Nichols, H. 1892. The Origin of Pleasure and Pain, I. *The Philosophical Review*, 1(4): 403-32.
- Nicolaou, N., Lockett, A., Ucbasaran, D., & Rees, G. 2019. Exploring the potential and limits of a neuroscientific approach to entrepreneurship. *International Small Business Journal*, In press.
- Oster, E., Shoulson, I., & Dorsey, E. R. 2013. Optimal expectations and limited medical testing: Evidence from Huntington Disease. *American Economic Review*, 103(2): 804-30.
- Oswald, M. E. & Grosjean, S. 2004. Confirmation bias. In Pohl, R F, (Ed.), *Cognitive illusions. A handbook on fallacies and biases in thinking, judgement and memory*. : Hove and N.Y: Psychology Press.
- Parker, S. C. 2009. Can cognitive biases explain venture team homophily? *Strategic Entrepreneurship Journal*, 3(1): 67-83.
- Ploghaus, A., Tracey, I., Clare, S., Gati, J., Rawlins, J., & Matthews, P. 2000. Learning about pain: The neural substrate of the prediction error for aversive events. *Proceedings of the National Academy of Sciences, USA*, 97(16): 9281-86.
- Popple, A. 2010. Individual Differences in Perception. In Goldstein, E B. , (Ed.), *Encyclopedia of perception*: Sage Publications, Inc.
- Porro, C. A., Baraldi, P., Pagnoni, G., Serafini, M., Facchin, P., Maieron, M., & Nichelli, P. 2002. Does anticipation of pain affect cortical nociceptive systems? *The Journal of Neuroscience*. , 22(8): 3206-14.
- Rabin, M. & Schrag, J. 1999. First impressions matter: a model of confirmatory bias. *Quarterly journal of economics*, 114(1): 37-82.

- Ramoglou, S. & Tsang, E. 2018. Opportunities Lie in the Demand Side: Transcending the Discovery-Creation Debate. *The Academy of Management Review*, 43(4): 815.
- Ramoglou, S. & Tsang, E. W. K. 2017. Accepting the unknowables of entrepreneurship and overcoming philosophical obstacles to scientific progress. *Journal of Business Venturing Insights*, 8: 71-77.
- Ramoglou, S. & Tsang, E. W. K. 2016. A realist perspective of entrepreneurship: opportunities as propensities. *The Academy of Management Review*, 41(3): 410-34.
- Ramoglou, S. & Zyglidopoulos, S. 2015. The constructivist view of entrepreneurial opportunities: a critical analysis. *Small Business Economics*, 44(1): 71-78.
- Sarasvathy, S. 2001. Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management review*, 26(2): 243-63.
- Shane, S., Locke, E. A., & Collins, C. J. 2003. Entrepreneurial motivation. *Human Resource Management Review*, 13(2): 257-79.
- Shane, S. & Venkataraman, S. 2000. The promise of entrepreneurship as a field of research. *Academy of Management. The Academy of Management Review*, 25(1): 217-26.
- Shepherd, D. & Griffin, D. 2006. A Hubris Theory of Entrepreneurship. *Management Science*, 52(2): 160-72.
- Shepherd, D. A., Williams, T. A., & Patzelt, H. 2015. Thinking About Entrepreneurial Decision Making: Review and Research Agenda. *Journal of Management*, 41(1): 11-46.
- Sicherman, N., Loewenstein, G., Seppi, D. J., & Utkus, S. P. 2016. Financial attention. *The Review of Financial Studies*, 29(4): 863-97.
- Simon, M., Houghton, S. M., & Aquino, K. 2000. Cognitive biases, risk perception, and venture formation: How individuals decide to start companies. *Journal of Business Venturing*, 15(2): 113-34.
- Soane, E., Schubert, I., Lunn, R., & Pollard, S. 2015. The relationship between information processing style and information seeking, and its moderation by affect and perceived usefulness: Analysis vs. procrastination. *Personality and Individual Differences*, 72(C): 72-78.
- Trank, C. Q. & Cornelissen, J. P. 2013. Portrait of an Entrepreneur: Vincent van Gogh, Steve Jobs, and the entrepreneurial imagination.(Van Gogh: The Life)(Steve Jobs)(Book review).
- Vogel, P. 2017. From Venture Idea to Venture Opportunity. *Entrepreneurship Theory and Practice*, 41(6): 943-71.
- Weber, M. 2015. *Dear investor, what the hell are You Doing? Smart and easy ways to fix the mistakes you make with your money.*: Green Leaf Book Group Press.
- Westhead, P., Ucbasaran, D., & Wright, M. 2005. Decisions, actions, and performance: Do novice, serial, and portfolio entrepreneurs differ? *Journal of Small Business Management.*, 43(4): 393-417.
- Wiggin, K. L., Reimann, M., & Jain, S. P. 2019. Curiosity tempts indulgence. *Journal of Consumer Research*, 45(6): 1194-212.
- William, V. H. & Trivers, R. 2011. The evolution and psychology of self-deception. *Behavioral and Brain Sciences*, 34(1): 1-16.
- Wood, M. S., McKelvie, A., & Haynie, J. M. 2014. Making it personal: Opportunity individuation and the shaping of opportunity beliefs. *Journal of Business Venturing*, 29(2): 252-72.
- Wood, M. S. & McKinley, W. 2010. The production of entrepreneurial opportunity: a constructivist perspective. *Strategic Entrepreneurship Journal*, 4(1): 66-84.
- Yu, T. 2001. The role of entrepreneurship in the economic development of Hong Kong. *The Asia Pacific Journal of Economics & Business*, 5(2): 24-43.
- Zacharakis, A. L. & Shepherd, D. A. 2001. The nature of information and overconfidence on venture capitalists' decision making. *Journal of Business Venturing*, 16(4): 311-32.
- Zhang, S. X. & Cueto, J. 2017. The study of bias in entrepreneurship. *Entrepreneurship Theory and Practice*, 41(3): 419-54.

