Chapter 1

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1.1 Introduction
In the context of economic stagnation in the developed countries and the grim struggle for economic growth and social change in the developing world there has been growing interest in modes of vigorous, innovative entrepreneurial management (Khandwalla, 1987). This has resulted in organizations increasingly looking to create practices that nurture innovation and taps creativity of their employees. The research community is also increasingly focusing on the various aspects of innovation resulting in a sustained increase in the literature on innovation and its related aspects. Innovation, more now than ever, clearly tops the value chain in product and service lifecycles (Katragadda, 2009).

The relationship between innovation and excellence has been noticed by scholars and management practitioners since long. It has been found that the innovative leadership or entrepreneurship stimulates economic growth (Schumpeter, 1934) as it leads to effective combination of various factors of production (Schumpeter 1950). Peters and Waterman (1982) has identified 8 key features of excellence in the U.S. companies one of which is the commitment to innovation and dynamic growth. Innovative organizations are more profitable, grow faster, create more jobs and are more productive than their non-innovative competitors, even in mature industries (Franco, 1989; Capone et al., 1992; Baldwin & DaPont, 1993).

1.1.1 The changing paradigms in business
The nature of business has been witnessing a major shift world over brought by various changes at the global level (Friedman, 2005), and India seems to have been one of the most affected beneficiary of these global forces which are shaping the world in a new way. Some fundamental changes in the nature of business brought out by the such forces, which have been relevant in shaping the core ideas of the present study, are listed below:
The new age corporation are moving from a fundamental business role of meeting the needs of their customers to creating a need for their products in their customers. This may involve sometime guessing what kind of product a customer may need in future, but companies cannot just afford to bank upon their customers to have this realization because of the intense completion. In the words of great innovator and entrepreneur Steve Jobs, as cited in Issackson (2011), "Some people say, 'Give the customers what they want.' But that's not my approach. Our job is to figure out what they're going to want before they do. I think Henry Ford once said, 'If I'd asked customers what they wanted, they would have told me, "A faster horse!"' People don’t know what they want until you show it to them. That’s why I never rely on market research. Our task is to read things that are not yet on the page” (p. 806). The best companies know how to figure out what their customers would want in future before even they know that they may want it (Kahney, 2008). Akio Morita, co-founder of Sony Corp., once said that “we don’t ask consumers what they want. They don’t know. Instead, we apply our brain power to [figure out] what they need, and will want, and make sure we’re there, ready”1. So, the role of the modern corporations aspiring for excellence is not limited

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to fulfilling the need of their customers and satisfying. It also involves identify they possible needs in future and fulfil them or sometimes developing a product that will create its own need in customers.

The second major event in the domain of business world, especially in the software and technology sector, has been the startling success of nerds. David Brooks (2008) considers the mid to late 1970s as ‘The Decade of The Rise of Nerdism’ in modern America. According to him 1980s marked the period of geek empowerment with the rise of Microsoft™ and the digital economy. Nerds began making large amounts of money and acquired economic credibility, which brought them tremendous social prestige as well. The information revolution produced a parade of highly confident nerd moguls — Bill Gates and Paul Allen, Larry Page and Sergey Brin, Marks Zuckerberg, Michael Dell, and so on. In India nerd culture seems to rise to ascendency in the first decade of new millennium. Angela Saini (2011) has termed India a geek nation with immense hunger and passion for science, technology and innovation, especially among its newly educated youths. Also, India finds a place in the Geek Atlas of the World (Graham-Cumming, 2009) as a place where science and technology come alive. So, with the rise of nerdism in India we can say that the individual initiative for innovation in India has begun. According to Schumpeter (as cited in McCraw, 2007) individual entrepreneurship holds the key to economic growth of any country.

Another remarkable event that has important implication for current research is the rise and popularity of bounded rationality approach (Simon, 1956; Conlisk, 1996; Gigerenzer, 2000; Kahneman, 2002) to cognition and its popularity in managerial decision studies (Gladwell, 2005; Ellison, 2006). There is a large amount of literature available on this issue so rather than repeating it only its relevant aspects for the current research will be briefly presented in the forthcoming paragraphs. The vision on human rationality can be classified into two broad parts: one, we are demons having unlimited rational capacity or, second, we are humans with a bounded rationality (Gigerenzer, Todd, & the ABC Research Group, 1999). Demons have unbounded rationality and try to optimize under constraints while humans are satisficers who make use of fast and frugal heuristics. A definition of related terminology is summarized in Exhibit 1.1. on the following page. According to Gigerenzer & Brighton (2009) we are Homo-Heuristicus making use of fast and frugal heuristics as an adaptive mechanism of mind
to satisfy our adaptive needs. The use of simple heuristics in our day to day behaviours can make us smart leading to intelligent choices and outcomes (Gigerenzer & Todd, 1999).

The root of heuristics can be traced back to dual process theories which have been developed since 1970s by researchers on various aspects of human psychology, including deductive reasoning, decision making, and social judgment (Evans, 2008; Frankish & Evans, 2009). According to dual process theories of cognition there are two contrasting type of thinking processes called system 1 thinking and system 2 thinking processes. System 1 thinking processes which are intuitive, nonconscious, fast, process information in parallel manner, and are automatic, effortless, and associative, while system 2 thinking processes which are based on reasoning, are slow, serial, controlled, effortful, rule-governed (Myers, 2002; Taleb, 2007; Frankish & Evans, 2009).

Exhibit 1.1 Definitions

Unbounded Rationality: Unbounded rationality encompasses decision-making strategies that have little or no regard for the constraints of time, knowledge, and computational capacities that real humans face.

Optimizers Under Constraints: While making decisions under constraints of time, money and other resources we try to optimize the value of resources. We decide upon something that gives the best value of our resources spent. We stop as soon as the cost outweighs the benefit (The Stopping Rule). However, in real world situations optimal strategies are unknown or unknowable (Simon, 1987).

Satisficing: In real world situations we adjust our aspiration level and end the search for alternatives as soon we encounter with an alternative that exceeds our aspiration level (Simon, 1956, 1990).

Fast & Frugal Heuristics: Fast and frugal heuristics are those simple heuristics that employ a minimum of time, knowledge, and computation to make adaptive choices in real environments (Gigerenzer, Todd, & the ABC Research Group, 1999). Fast and frugal heuristics are simple to execute because they limit information search (because of their satisficing property) and do not involve much computation. A heuristic is good to the extent it is adapted to meet the structure of its environment, an attribute called ‘ecological rationality’
Research evidences suggest that system 1 thinking is more powerful in comparison to system 2 thinking (Thaler, Sunstein & Balz, 2010; Stroop, 1935) and many a times it leads to equally better outcomes as compared to system 2 thinking processes (Gigerenzer, 2000; Gladwell, 2005). The current research also studies the use and implications of system 1 thinking processes for the managerial and organizational innovation and excellence.

Apart from these, the two other noticeable shifts have been on a growing emphasis on innovation in all aspects of the organizational practice including leadership, and an increasing emphasis on entrepreneurial style of management (Khandwalla, 1987). Recently, a more success approach to leadership views exercising leadership through innovation or innovative means and styles (Menino & Maloney, 2003; Barsh, Capozzi, & Davidson, 2008). According to Steve Jobs, as cited in Issackson (2011), innovation is what distinguishes between a leader and a follower. Karakas (2007) has also reported that the new paradigm on leadership emphasizes a shift from pure rationality to positive intuition, from certainty to uncertainty, from command and control to flexibility and empowerment, etc., see the Exhibit 1.2 below:

Exhibit 1.2 Changing Paradigm of Leadership (Karakas, 2007)

<table>
<thead>
<tr>
<th>Old Paradigm</th>
<th>New Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure Rationality</td>
<td>Positive Intuition</td>
</tr>
<tr>
<td>(Actuality, Intellectual Stimulation, Problems, Conservative)</td>
<td>(Potentiality, Emotional Arousal, Opportunities, Creative)</td>
</tr>
<tr>
<td>Certainty</td>
<td>Uncertainty</td>
</tr>
<tr>
<td>(Clarity, Order, Determinate, Stability)</td>
<td>(Ambiguity, Chaos, Indeterminate Change)</td>
</tr>
<tr>
<td>Command &amp; Control</td>
<td>Flexibility &amp; Empowerment</td>
</tr>
<tr>
<td>(Top down, Controlling, Doubtful, Domination)</td>
<td>Egalitarian, Inspiring, Trusting, Collaboration</td>
</tr>
<tr>
<td>Uniformity</td>
<td>Diversity</td>
</tr>
<tr>
<td>(Hierarchical, Absolute, Selective Simplicity)</td>
<td>(Lateral, Contextualism, Inclusive Complexity)</td>
</tr>
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</table>
These shifts underscore the importance of innovative and entrepreneurial style of leadership over the traditional approaches to leadership.

1.1.1.1 Innovation and the traditional paradigms on leadership

Traditional theories of leadership have not made any explicit or detailed reference to innovation and its role in achieving organizational excellence. The early scientific-reductionist or structural-bureaucratic fascinations about leadership only led to a distorted perception of leadership. The development of leadership theories are heavily influenced by the three historically important studies in the area of organizational behaviour: the Iowa, Ohio State & Michigan studies- and “unfortunately, they are still heavily depended upon these studies, leadership research has not surged ahead from this relatively auspicious beginning” (Luthans, 1998, p. 383).
The Great Man Theorists focus on individual traits of leadership that may lead to person emerging as a leader irrespective of temporal or spatial considerations. This theory leaves the scope for a creative or innovative person emerging as a leader but examples of great man theory are heavily tilted toward public (especially political) personalities with little reference to creative profiles in other areas like science, arts, technology or business organizations. It’s difficult to trace a single leadership example whose leadership is dominantly attributed to creativity or innovativeness. In contrast to this, some other leadership approaches show a group approach where leadership is viewed more in terms of leader’s behaviour toward a group/collectivity and how such behaviour affects and is affected by the group of followers (Luthans, 1998). The acknowledgement of group as an important leadership factor seems to be the beginning of ‘shared leadership approach’- an approach to leadership in which leadership is supposed to be co-created through joint and continuous interaction between leader and followers. This approach widens the scope for creativity and innovation as generation of new ideas through brainstorming or such other techniques had a better scope here, especially under a democratic and participative leadership.

Another theoretical development was the situational approach which added temporal and spatial dimensions to leadership. This approach posited that a person with particular qualities or traits that a situation or time warrants will emerge as a leader, for example Fiedler’s Contingency Model. According to Fiedler’s model in moderate situations (i.e., situations that are neither very favourable nor very unfavourable) the performance will be higher if the leader is relationship oriented (Robbins, 2003). This also may be a right time for leaders and his group to encourage innovation and experimentation in organization coupled with strong people orientation and care for customers.

We can see that the task consideration which earlier formed one important aspect of leadership in Behavioural Theories (for example, Ohio State Studies, University of Michigan studies, The Managerial Grid of Blake & Moutan) is gradually loosing its reference in modern theoretical constructions of leadership, and is partly being subsumed into strong people or customer orientation (e.g., Peter & Austin, 2003), and partly being replaced by a newer dimension which significantly make references to creativity,
innovation, experimentation and such other attributes. One of the striking feature of the 1990s was the remarkable surge of innovation (Lester & Piore, 2004) which now has become biggest buzzword not only in industry but also increasingly finding strong resonance in all walks of social and organizational life. This may warrant a search for ‘the third dimension of leadership: the concern for creativity/innovation.

An important development in this respect have been the Scandinavian Studies which propose a three dimensional model of leadership with ‘development-oriented behaviour’ being the third dimension of leadership. It proposes that earlier studies fail to capture the more dynamic realities of today’s fast changing world, in which to achieve excellence a leader has to show development-oriented behaviour like seeking new ideas, valuing experimentations, originating new approaches to problems, encouraging members to start new activities, generating and implementing change, etc. (Robbins, 2003). So, creativity and innovation are gradually being acknowledged by researchers & management practitioners as an independent leadership dimension and is being considered a critical factor in achieving corporate excellence. The present research work tries to quantify and measure the extent of criticality of innovation in achieving organizational excellence.

**1.2 Rationale of the study**

The present study is set in business organization context and aims to examine the role of innovation in bringing business excellence. A large amount of research literature is available on nature of innovation in relation to organizational excellence but studies on ‘innovation as a heuristic’ is lacking. A growing body of researches (e.g., Kahneman, 2002; Gladwell, 2005; Gigerenzer & Gaismaier, 2011) suggest the dominance system 1 (intuitive-heuristic) thinking processes in decision making, on the other hand, innovation has become an imperative for business success and adaptation (Altshuller, 1999; Khandwalla, 2006). So, it is important to study the exact nature of innovation as a part of system 1 thinking process. The present research pursues this idea and tries to find the answer. Further, the old paradigm on system 1 thinking processes have received heuristics with negative connotations which, according to it, lead to faulty or biased conclusions in decision making (Kahneman, 2002), but the current research takes the alternative view that heuristics are mind’s adaptive mechanism.
(Gigerenzer, 2000; Gigerenzer & Brighton, 2009) can be helpful in attaining and sustaining business excellence. Considering innovation as a heuristic to excellence the current research throws light on adaptive value of innovation for entrepreneurs and managers working under resource constrained and increasingly uncertain environment.

Further, factorial study of ‘innovation as a heuristic’ are lacking (Johannessen, Olsen, Lumpkin, 2001; Aranda & Molina-Fernández, 2002), and the present study tries to identify the major factors underlying innovation-heuristic through factor analytic method. Further, a need was felt to explore the business model through which innovation heuristic and excellence interact with each other. The present study tries to explore this model by using structural equation modelling (SEM) technique.

1.3 Objectives of the study:

The current research has three major objectives:

1) To study whether innovation heuristic has a significant correlation with business excellence;

The first basic objective of the present research was to see whether there is any significant correlation between innovation heuristics and organizational excellence. The propositions made regarding this objective are as follows:

Proposition 1: ‘Innovation heuristic’ is positively correlated to organizational excellence.

More precisely, this proposition can be formulated in terms of following two hypotheses:\

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2 ‘Innovation as a heuristic to excellence’ has been measured by developing a scale based on Manimala (1992). The scale is termed as ‘Innovation as a Heuristic Questionnaire’. It has been taken as an independent variable and also referred as ‘innovation as a heuristic’ variable or simply ‘innovation heuristic’. These phrases have been used synonymously and interchangeably in the thesis.

3 After developing the ‘Innovation as a Heuristic Questionnaire’ a factor analysis was carried out which gave two factors called ‘search & adapt heuristic’, and ‘fast & frugal heuristic’. Later on based on the feedback of experts an alternative name for ‘search and adapt heuristic’ was also considered: ‘adapt and shape heuristic’. The name ‘search and adapt heuristic’ has been retained in the thesis and the explanation for its alternative name has been given while doing factor naming. Further, ‘Heuristic Intelligence’ is a
Hypothesis 1a: There is a significant positive correlation between innovation as a ‘Search & Adapt Heuristic’ and Business Excellence.

Hypothesis 1b: There is a significant positive correlation between innovation as a ‘Fast & Frugal Heuristic’ and Business Excellence.

Hypothesis 1c: There is a significant positive correlation between ‘Heuristic Intelligence’ and ‘Business Excellence’.

2) To explore the factors underlying innovation heuristic through factor analysis method;
   The second major objective of the current research was to identify factors underlying Innovation Heuristic through factor analytic method.

3) To explore the structural business model through which Innovation Heuristic and excellence interact with each other by using structural equation modelling (SEM) technique.

The third, and final objective of the research was to identify the structural model through which the two innovation heuristics and business excellence interact with each other.

1.4 Definition of key terms

Innovation is simply defined as an act of creating something new or finding new ways to create value (Katragadda, 2009). It refers to an idea, practice or object that is perceived new by an individual or other unit of adoption (Rogers, 1983). Innovation includes the total set of activities leading to the introduction of something new, resulting in strengthening the defendable competitive advantage of a company (Van der Meer, 1996). The two important psychological attributes of innovation are its emphasis on behavioural dimension (i.e., action) and the perceived newness of the idea. Its emphasis on behavioural part or action part differentiates it from its closest counterpart i.e. creativity. Creativity consists of thinking new ideas and innovation
consists of doing new ideas. Also, perception is very important for innovation. An innovative idea may not be perceived innovative unless it proves its innovativeness by significantly altering a domain function, and in fact, unless it does so it may remain marginalized; for example the refusal of Yahoo!™ CEO to buy Google’s search technology for US $1 million when he was approached by Google™ Guys (Larry Page & Sergei Brin) at the beginning of Google™, a story well described by David A. Vise and Mark Malseed (2005) in their best seller The Google™ story. It was because Yahoo!™ failed to perceive the innovativeness of Google™ search technology, and the potential of search emerging as the biggest business on the internet in future. Now Google™ is the biggest internet company in the world and has emerged as the biggest threat to Yahoo!™ and its closest rival Microsoft™ corporation.

Heuristic, on the other hand, are closely studied under the psychology of intuition as intuitions are considered as the source of heuristics (Hogarth, 2001; Myers, 2002). Intuition can be defined as a non-sequential and non-conscious mode of information processing resulting into direct form of knowing with any conscious reasoning (Sinclair, 2005, Epstein et al.,1996; Shapiro and Spence, 1997; Simon, 1987). Next, The term ‘heuristic’ is of Greek origin meaning ‘to find out’ or ‘to discover’. This notion of heuristics differs from approaches that define heuristics as rules of thumb or as irrational shortcuts that result in decisional biases. Fast and frugal heuristics yield decisions that are ecologically rational rather than logically consistent (Reimer and Rieskamp, 2007). Some scholars consider heuristics as the mental strategies of problem solving that are faster, more frugal and more accurate at the same time as compared to standard benchmark strategies(Gigerenzer, & Todd, 1999). According to Katsikopoulos (2010) heuristics refer to the models for making decisions, that rely heavily on core human capacities, do not necessarily use all available information, and process the information they use by simple computations, are easy to understand, apply, and explain.

1.5 Characteristics of Innovation

Rogers (1983) has offered a social analysis of innovation according to which the rate at which different innovations get adopted by a member of social system vary strongly,
and depends, among other things, a number of characteristics of innovation itself. The main features of innovation, according to Roger (1983) are *relative advantage*, which refers to the extent to which an innovation is considered better than the idea, practice or object that it is supposed to replace; *compatibility*, which refers to the extent to which an innovation is consistent with existing values, previous experiences and the need of potential users; *complexity*, which refers to the extent to which innovation is perceived as difficult to understand and complex to use; *trialability*, which refers to the extent to which an innovation can be tested and experimented on a limited scale; and, *observability*, which refers to the extent to which the use and effect of an innovation are visible to other members of the unit (for e.g., social system).

1.6 The process of Innovation

Tom Peters along with Nancy Austin (2003), in their book A Passion for Excellence, has offered a model of the process of innovation according to which “It’s a messy world…[and] in a messy world the only way to proceed is by constant experimentation. If the constant experimentation is the only antidote to a messy world then we need experimenters-or champions (skunks)…. [and] if the messy-world-experiment-champion-skunkwork paradigm makes sense, then we need to create a climate that induces all the above to occur- a climate that nurtures and makes heroes of experimenters and champions.” (p. 116).

Again, the authors (Peters & Austin, 2003) are of the view that the actual innovation occurs in a zone where producers and consumers (or users) of a product or idea interact with each other. According to them “analysis after analysis shows, in fact, that the great majority of ideas for new products come from the users. Our own research confirms it, not just in high technology but in the banking, health care and hamburger business as well” (p. 156). After-the-fact-analysis for every industry, from blue jeans and hamburger to mainframe computers and aircraft engines, shows that the products of 1995 will be invented and prototyped ca. 1985 as some sort of trial involving a lead producer (more often than not a small company) and a lead user (also often small), someone who thought he could really take advantage of the new, untested technology” (p.158).
For example, in sophisticated industries (as most of them really are!) Peters & Austin (2003) found that users, like a lot of other phenomena, are normally distributed. At the front tip of the curve are those who are often as much as 10 to 15 years ahead of their average peers (GM and Boeing for example, were far ahead in CAD use). They are willing to take a risk in return for a new invention. Similarly, the lead producer (particularly if he’s small) welcomes the lead users. So, innovation occurs in a small zone where lead producers and lead consumers meet.

1.7 Types of Innovation

Innovation can classified in various ways depending upon the domain, context, and purpose with which it is being studied. In the Exhibit 1.3 are summarized the two major typological classification of innovation given by Torrance (1979), and Schumpeter (1934).

Exhibit 1.3 Types of innovation

<table>
<thead>
<tr>
<th>Torrance (1979)</th>
<th>Schumpeter (1934)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fluency</td>
<td>1. Product Innovation</td>
</tr>
<tr>
<td>It refers to the ability to produce a large number of ideas or alternative solutions to a problem</td>
<td>It refers to the introduction of new product</td>
</tr>
<tr>
<td>2. Flexibility</td>
<td>2. Process Innovation</td>
</tr>
<tr>
<td>It refers to the ability to see things from different points of view; the ability to use many different approaches or strategies while solving a problem</td>
<td>It refers to the introduction of a new method of production</td>
</tr>
<tr>
<td>It refers to the ability to enhance ideas or products by providing more details or elaboration</td>
<td>It involves finding a new market</td>
</tr>
</tbody>
</table>

4 These typologies have been presented only in a tabulated manner and not elaborated in detail as they have no direct bearing on the methodological aspects and the variables studied in the current research.

5 These typologies are essentially the types of creativity, and for practical purpose they have been considered as the corresponding innovative typologies.
4. Originality
It refers to the ability to produce ideas that are unique or unusual. Origination leads to inventions.

4. Input Innovation
It includes finding a new source of supply

5. Organizational Innovation
It refers to the internal & external changes in organizations, including mergers and acquisitions

1.8 Conclusion
Innovation is increasingly gaining saliency in the research and practice in the area of management and organizational behaviour as it is being considered an important tool of achieving leadership and excellence in a desired domain of corporate activity. The innovation process emerges from a social instinct to excel and organize a messy world championed by generally a small group of avant-garde people called skunks. Initially innovation starts in a small zone where lead producers and lead customers interact, and in some time (generally within a decade) it changes the way perceived interactions occur in a domain or system for which it was originally intended. Thus, it may act like a heuristic for achieving excellence as compared to other alternatives. Traditional theories of leadership do not make explicit references to innovation as a dimension of leadership and performance but the highly dynamic environment of 21st century business has necessitated not only the acknowledgement but also the operationalization of innovation as a basic ingredient of new age leadership, entrepreneurship and business excellence.