ESSAY 3

Title: Causal recipes for high performance: an exploratory comparative study of young high-technology firms from India and UK
Causal recipes for high performance: an exploratory comparative study of young high-technology firms from India and UK

1. Abstract

This paper explores and compares causal recipes (configurations) as determinant of young firms’ high performance in Indian and UK high-tech industries. Firms’ performance depends upon interaction of firm-level and external factors. Traditional configuration approach suggests use of leadership, strategy, structure, and environment domains for identifying configurations. Responding to calls within configuration literature for improving causal linkages, and drawing on work on start-ups' configurations, entrepreneurial orientation is used with extant domains. Fuzzy-set qualitative comparative analysis is used to analyze data collected from 70 Indian and 21 UK young firms. In all five configurations in UK context, firms adopt high external integration, do not operate in highly competitive industry, nor employ inorganic development strategies, and nor exhibit high internal integration. These firms carve out super-specialized niches, enjoy strong linkages with supply-chain partners, and have such reputation that they don’t find themselves in highly competitive environment. Although employees are told what to do, laissez-faire is adopted on how to do it. Among nine Indian configurations, large numbers of managers with high-growth experience is absent in eight, high internal integration in six, and high external integration in five. These firms employ alternative recipes to success. Plausible causal mechanisms and implications are discussed.

Keywords: organizational configurations, young firms, qualitative comparative analysis, entrepreneurial orientation.
2. Introduction

Young high-technology firms display large variations in performance as they face dynamic, fuzzy, and complex industry structure where the boundaries and scope are not clearly demarcated (Song et al., 2008). For example, 50 fastest growing companies on the annual Deloitte Technology Fast 50 UK report achieved an average revenue growth of 1505 percent, 2820 percent, and 2321 percent over the last three years in 2012, 2011, and 2010 respectively (Deloitte-Technology Fast-50, UK report, 2011; 2012). Similarly for India report, fastest growing 50 companies achieved an average revenue growth of 432 percent, 236 percent, and 296 percent over the last three years in 2012, 2011, and 2010 respectively (Deloitte-Technology Fast-50, India report, 2010; 2011; 2012). Some reports, however, suggest that only about 60% of start-ups survive to age three, and more than 90% of start-ups fail to achieve projected rate of return on investment (Gage, 2012). This makes high-technology firms especially young ones an intriguing phenomenon to study. As performance depends upon many firm-level and external factors, and their mutual interaction, configuration approach is best suited for studying the multiple causal recipes that lead to firms’ high performance (Harms et al., 2009).

What causal recipes (configurations of determinants) determine success of firms across contexts? Are they same or different are natural questions. According to Dess et al., (1993) “a configuration contains relationships among elements or items representing multiple domains.” Taking a holistic view, configuration approach regards firms as a complex entity and attributes variation in dependent variable, firm performance, to fit among multiple domains of predictors, viz., leadership, strategy, structure and environment (Harms et al., 2007; Miller, 1987; Short et al., 2008; Van de Ven and Drazin, 1985). Researchers argue that configurations of multivariate
domains may- 1) offer better explanations of firms than those provided by simple bivariate analysis; and 2) facilitate insights into equifinality (Dess et al., 1993; Fiss, 2007; Miller, 1986). However, recent conversation in configuration literature points to inadequacies in theoretical specification of configuration models and highlights lack of causal explanations among predictor domains (Snow et al 2005; Van de Ven et al, 2013). Entrepreneurial orientation (EO) literature, which suggests that EO is a key decision making proclivity of vital importance to young firms, is used to fill this gap in this paper.

Although, high technology sectors in India and UK are similar in some manners like both are heavily driven by knowledge intensive services, they are different in a lot of ways for e.g., level of support available from a concentrated and well developed entrepreneurial ecosystem (Koster and Rai, 2008; Valliere and Peterson, 2009). It might be interesting to explore what types of configurations are beneficial in each economy leading to finer insights about inter-linkages among various determinant domains across contexts. Accordingly, the research questions are- what configurations can be identified among Indian and UK young firms, and how do they compare? Fuzzy set qualitative comparative analysis (QCA) is employed on primary data collected from 70 Indian, and 21 UK firms through questionnaire to answer these questions. Resultant configurations are identified, and compared along with key contextual parameters.

3. Literature review

3.1. Configuration approach

Configuration scholars argue that better understanding of firms’ performance can be achieved by identifying internally consistent, broader sets of variables, termed
configurations that glue together rather than looking for universal or contingent relationships among two/three variables (Fiss et al., 2013; Hofer, 1975; Ketchen et al., 1997; Short et al., 2008). Possibilities of revealing insights about: multiple conjunctural causation—many causes (variables) combine to produce several causal recipes each of which could lead to outcome; causal asymmetry—if presence of certain conditions lead to outcome, it does not mean that absence of those conditions will also lead to absence of outcome; and equifinality—firms can achieve same outcome level starting from different starting points and adopting different paths—makes the configuration approach attractive choice for strategy research (Fiss, 2007; Fiss et al., 2013; Greckhamer et al., 2008).

3.1.1. Determinant domains: leadership, environment, strategy, and structure.
Following Miller and Friesen (1977; 1978), and Mintzberg (1979) there was an advent of new configuration approach that attempted at simultaneous use of various environmental and organizational elements, especially environment, strategy, structure and leadership for studying firm performance (Dess et al., 1993; Doty et al., 1993; Meyer et al., 1993; Miller, 1986, 1987, 1988). Subsequent empirical research on medium and large firms mainly focussed on factors related to these imperatives to create configurations and termed each group of factors as a domain (Ketchen et al., 1997; Short et al., 2008).

Fiss, (2011), Harms et al. (2007), Ketchen et al. (1997), and Snow et al. (2005) highlighted that past configuration research on well-established firms has mostly used environment-structure-strategy relationships, and neglected the use of indicators of managerial philosophy about decision making simultaneously with these four domains. On the other hand, for exploring configurations in entrepreneurial start up
ventures, entrepreneur’s personality, resource, start up processes, and environment have been employed (Frank et al., 2007; Korunka et al., 2003; Snuif and Zwart, 1994). In their detailed study, Frank et al. (2007) highlighted that personality factors are most important in start-ups’ configurations, however, processual factors and not personality factors dominate as the focus of study shifts to the growth phase. The following paragraphs highlight the utility of including EO as indicator of decision making processes for studying configurations of young firms that lie between well established and start ups.

3.2. Configuration approach and entrepreneurial orientation

Configuration approach rests on the premise that causal attributes are interdependent and only those firms that are able to achieve internal coherence across domains (Meyer et al., 1993; Snow et al., 2005) and achieve fit with the environment outperform other firms (Ketchen et al., 1993; Van de van, & Drazin, 1995). Personality factors and cognitive processes of entrepreneurs, having their roots in prior social or professional exposures, guide how entrepreneurs make assumptions, gather and process information to make decisions (Schwenk, 1988) for achieving this coherence among internal elements- structure, processes, and capabilities- and fit with external factors (Dutton and Dukerich, 1991; Tripsas, 2009) during start up phase (Frank et al., 2007).

While discussing organizational evolution Tushman and Romanelli (1985) also argued that initial decisions of founder managers regarding core organizational values and belief-systems, structural-design philosophies, and control systems set the strategic posture-entrepreneurial decision making proclivity-for a firm. As firms grow from start up to growth stage, this key posture or orientation about making sense of the context, and “ways of decision making” evolves and organizes itself into guiding
philosophy or principles which in turn influences firm’s strategic decisions (Covin and Slevin, 1989; Hitt et al, 1997; Kogut and Zander, 1996; Lau and Bruton, 2011; Tsui, et al., 2006).

3.2.1. Entrepreneurial orientation. Building on arguments provided by Cockburn et al. (2000) and Lumpkin and Dess (1996), Wiklund and Shepherd (2003: 1308; 2005: 74) have used EO as a “firm’s strategic orientation, capturing specific entrepreneurial aspects of decision-making styles, methods, and practices”. Covin and Wales (2012: 677) also highlight that EO is “…conceived of as an organizational decision-making proclivity…” Accordingly, EO is used as determinant of configuration, to respond to call for using indicators of managerial philosophy (Frank, et al., 2007; Snow et al., 2005). Entrepreneurial orientation (EO) is defined as “the processes, practices, and decision making activities towards new entry” (Lumpkin and Dess, 1996:136). Risk-taking, innovativeness, and proactiveness are dimensions of EO (Covin and Slevin, 1989).

3.3. Nature of organizational configuration

The study does not provide any propositions concerning exact nature of configurations. It is possible to precisely specify relationships when only limited numbers of variables are considered simultaneously. Researchers adopting configuration approach face increasing constraints in establishing the specificity of the theoretical relations as the number of multidimensional constructs under considerations rises (Venkataraman, 1989). Accordingly, a number of scholarly publications in reputed management journals, viz., Academy of Management Journal, Strategic Management Journal, Entrepreneurship: Theory and Practice etc, with similar research purposes, i.e., employing large number of determinants
simultaneously contained no propositions or hypotheses about the nature of the configurations (For e.g. Desarbo et al., 2005; Fiss, 2011, Greckhamer, et al., 2008; Kim and Lim, 1988; Korunka et al., 2003).

4. Method

4.1. Context

High-tech sectors are relatively research and development intensive and span both manufacturing and services industries. A comparative picture of performance of high-tech sectors (high-tech exports as percentage of manufactured exports) for selected nations is presented in figure 1. As clear from the figure, emerging economies have a long path to tread to be able to catch up with developed nations and ensure their competitiveness in knowledge dominated economy of the future.

Figure 1: About here

The socio-economic relevance and varied performance of high-tech firms (noted in introduction section) especially young ones requires systematic efforts to study the holistically (Short et al. 2008: 1069). Apart from this, past literature suggests that in highly dynamic environments, managerial philosophies and resultant EO of firm becomes especially important, and more so for young and small firms (for e.g. Miller 1988; Covin and Slevin, 1989; Stam and Elfring, 2008). Young and small firms may be relatively asset-stock starved, but they compensate for this by exploiting managerial resourcefulness and capabilities for organizational steering (Kanungo and Misra, 1992). This makes the choice of young firms from high-technology industries most pertinent for this study. Drawing from instances of entrepreneurship research, data for present study was collected from firms engaged in high technology sectors
(computer software, information technology, high-tech consulting, and high-tech manufacturing) that are between 3 years and 12 years old (Bantel, 1998; Song et al., 2008, Yli-renko et al, 2002) and are not affiliated to any business group.

4.2. Sample

4.2.1 India. For India, sampling units are identified from sampling frame generated from companies’ directories. Before the full scale survey, the survey was pilot tested on five firms using web and telephonic interview. After initial contacts it was realized that an intensive data collection approach was needed to counter the issues of- large-sized questionnaire, reluctance to share information among privately held companies, and issue of credibility and motivation. So, a market-research agency was used to collect data from National Capital Region of India. Out of 450 surveys sent, 75 responses were received out of which background re-verification led to removal of 5 questionnaires. Out of the responses received, 28.6% belonged to the manufacturing sector and 71.4% belonged to service sector. Based on t-test for differences of mean it was found that, for the given sample, there are no statistically significant differences in the attributes of the manufacturing and services firms. This implies that they can be used as a single sample. The questionnaire was targeted at top managers of the firms. The average experience of the respondent in the firms is 6.56 years. Given that only firms below 12 years of age are included, this indicates that respondents had enough exposure with respective firms to provide the relevant information.

The data was tested for non response bias by comparing the last 10 responses with previous 60 responses. The analysis revealed no differences in terms of firm age, size, location, and respondent’s designation and demographic attributes. So it is safe to assume to that data did not suffer from serious non- response bias, if any. To avoid
common method bias to best extent possible, following Podsakoff et al. (2003) and Wood et al. (2011) the study employed- paper and pencil administered test, assured the respondents of their anonymity, collected both perceptual and objective type of data, did not disclose the research model being tested, and jumbled up the items pertaining to different constructs. Further Harman’s single factor test, commonly used for detecting common method bias in perceptual data collected from small and privately held firms especially from emerging economies where hard objective financial data may be unavailable, was employed (For e.g., Fiss, 2011; Podsakoff et al., 2003; Wood et al., 2011). The exploratory factor analysis showed 21 components had Eigen values greater than 1, and it produced not one but a nine factor model factors that explained more than 70 % of variance. Further, no single factor accounted for more than 50% of variance, the highest being 37%. This hints that common method variance is not a serious problem, if any.

4.2.2 UK. For collecting UK data, first author visited Cambridge, a hub for young high-tech in UK, and contacted the founders or top managers of firms that met the criteria. Sampling units were identified from the directories available from websites of Cambridge Network, St John Innovation Centre, High tech Cambridge, Cambridge Science Park, and Hauser Forum. Before the full scale survey, the survey was pilot tested on six firms using personal visits. Of the 80 invitations sent, 21 agreed to cooperate. Their responses were collected by personal visit. The average experience of the respondent in the firms is 4.88 years. The smaller average experience of respondents in UK firms can be attributed to having more non-founders as top managers. As the data was collected in a short span serious non-response bias is not
suspected, if any. All the steps mentioned for Indian data collection were followed, to check the extent of common method bias, if any.

4.3. Technique- Fuzzy set qualitative comparative analysis

In his paper, Fiss (2011) compared the prevalent techniques of identifying organizational configuration and argued for use of set theoretic methods. Set theoretic method of QCA as propounded by Charles Ragin is a comparative case oriented research techniques which uses the concepts of Boolean Algebra for the analysis of social science statements in terms of set relations (Marx et al, 2013). Researchers looking at comparative configurations look at how different determinants (termed as causes in QCA parlance) of a case fit together and combine to create the output (termed as outcomes in QCA parlance) (Fiss et al, 2013). Thus they treat each case (or firm in our paper) a constellation of variable to be viewed together rather than discerning marginal increments of individual variables assuming ceteris paribus (or correlation based approaches).

Qualitative Comparative Analysis lays half-way between the qualitative and quantitative approach and allows for analysis of small samples using set theory principles (Ragin, 1987; 2000). Ragin (2000) argues that the logic of comparative case study is configurational whereby cases (or firms) are considered as the configuration (or constellations) of attributes, and can only be analyzed holistically as packages. Other benefits of QCA include – systematic comparison, acknowledgement of multiple conjunctural causation and equifinality, identifying necessary and sufficient conditions, and ascertaining core and peripheral conditions leading to the desired outcomes (for e.g., Cheng et at., 2012, Fiss, 2011).
In QCA the basic unit of analysis is set (defined as certain condition or outcome of interest). After defining sets, researchers then code cases for having membership in set of causal conditions and outcome. This information is then summarized as a truth table using fsQCA software and logical algorithms are used to reduce configurations found in truth table to a few causal recipes (specifying which causes must be combined) to produce outcome (Ragin, 2008; Ragin and Sean, 2009; Schneider and Wagemann, 2012). QCA also allows to check relative importance of a causal recipe and overall solution by measuring “coverage,” i.e. the relative importance of different paths to an outcome, and “consistency,” i.e. what proportion of observed cases are consistent with the pattern (Fiss, 2011; Ragin, 2000; Schneider and Wagemann, 2012). For a quick overview of features of QCA and its application in organizational research following papers can be referred- Fiss (2011), Greckhamer, et al., (2008), Schneider et al., (2010), Schneider and Wagemann (2012), and Woodside (2013).

4.4. Measures (or sets of interest, in QCA parlance)

4.4.1 Outcome (Dependent variable). Following traditions of QCA, outcome is defined as set of high performing organizations. To identify firms which belong to this set, following Stam and Elfring (2008) subjective measures (7-point Likert scale, reported in table 1), a common practice when dealing with small and young firms, of performance are used.

4.4.2 Causes (Independent variables). Overall eight causal attributes are conceptualized to study the configurations of high performing organizations. Of these, two conditions- highly dynamic technological environment, and highly dynamic competitive environment related to environment domain. These are measured by adapting technological dynamism, and competitive intensity dimensions from Jaworski and Kohli’s (1993) business environment scale respectively. Two conditions
related to strategy domain are used, viz., *strategic growth focus through corporate development*, and *through new product development*. These are measured using *corporate development*; and *new product development* scales of Lau and Bruton (2011), and Miller (1988) respectively. Two conditions related to *structure-design* domain are used, viz., *external integration mechanism*, and *internal integration mechanism*. These are measured using scale adapted from Braunschiedel and Suresh (2009). Two conditions *high managerial high-growth experience (HGE)*, and *high EO* related to *leadership*, and *EO* domains respectively are used. These are measured using *top managers’ HGE*, and *EO* scale adapted from Keeley and Roure (1990), and Covin and Slevin (1989) respectively. Table 1 lists the items used in the questionnaire. Explanation of assessment of a firm’s membership to these causal conditions is provided in analysis section.

5. Analysis

5.1. Raw scores: reliability and descriptive

Before performing any further analysis, the measures were checked for reliability. At first stage, the reliability was tested at pre-test stage for both Indian and UK subsamples. In both of these cases the individual reliability of each construct was greater than minimum acceptable Cronbach’s alpha of 0.6 (Janz and Prasarnphanich, 2003; Nunnally, 1967). For the combined Indian and UK sample (91 firms), the individual reliability of each construct was greater the commonly acceptable
minimum Cronbach alpha, viz., 0.7. For Indian and UK subsamples the reliability scores are noted in table 2. Following Janz and Prasamphanich (2003: 365) a lower reliability score of 0.6 is chosen as the study involved smaller subsamples and the nature of study is more exploration than generalization. Table 2 also report basic descriptive details of the measures.

Table 2: About here

5.2. Fuzzy set analysis
The first step in fuzzy set analysis is to assess the membership score for each firm (case) in the sets of outcome and conditions. Four levels of membership of fuzzy sets are defined for all construct except for top managers’ HGE which is dichotomized (with raw values equal to or below 3 being assigned 0, i.e., full non membership and 1 i.e., full membership, otherwise). Four levels of memberships in a set means, a firm is assigned the membership level ‘fully in’ (= a fuzzy score of 1) in a set if the raw score on that construct is 7 for that firm, likewise a firm is assigned the membership level ‘more in than out’ (= a fuzzy score of .67) if the raw score on that construct is 5, a firm is assigned the membership level ‘more out than in’ (= a fuzzy score of .33) if the raw score on that construct is 3, and a firm is assigned the membership level ‘fully out’ (= a fuzzy score of 0) if the raw score on that construct is 1. For other raw scores, the fsQCA software does the calculation based on above criteria and produces fuzzy set membership score. To have uniformity and comparable analysis, this is kept same for Indian and UK firms. After this, following standard procedure, each of the condition and its absence is tested separately for being necessary or sufficient for the
outcome using XY plot method (Schneider and Wagemann, 2012). No condition or its negation (absence) met the criteria specified.

5.3. Configurations

Then, truth tables are constructed for Indian and UK data separately by choosing the consistency cut off score for membership in a configuration (set of conditions) to be greater than or equal to 0.8 (Fiss, 2011) and fsQCA software is used for Boolean minimization (Ragin and Sean, 2009). The truth tables for Indian and UK configurations are reported in figures 2 and 3 respectively.

Figure 2: About here

The truth tables can be read as follows. First/ title row lists titles: input conditions (first eight columns), number of firms in each configuration (ninth column), and performance (tenth column). A cell value of ‘1’ means presence of a condition/outcome and ‘0’ means its absence. Each row represents a configuration that is observed under the consistency constraints (> 0.8). For e.g., in the first configuration (first row) five conditions- high levels of technological dynamism, competitive intensity, focus on new product development, external integration, and HGE managers- are present along with absence of three conditions- high focus on corporate development, internal integration, and entrepreneurial orientation. This configuration led to presence of outcome (high performance).
5.3.1 Indian firms’ configurations. For Indian firms, Boolean minimization of truth table (figure 1), led to nine types of causal recipes (or configurations) in intermediate solution. Following, Fiss’s (2011) suggestion, the result is presented with core and peripheral conditions in figure 4.

High number of top managers with HGE, high internal integration, and high external integration are absent in eight, six and five configurations respectively. Highly dynamic technological environment and highly intense competitive environment is present in seven and five configurations only. Strategic focus on corporate development and high EO are present in five configurations each.

5.3.2 UK firms’ configurations. Likewise, five types of causal recipes in intermediate solution are found for UK firms. The result with core and peripheral conditions is presented in figure 5.
High internal integration, strategic focus on corporate development, and high competitive intensity environment are absent in all the five configurations. High external integration with their suppliers and customers, however, is present in all the configurations. High strategic focus on new product development and highly dynamic technological environment is present in four and three configurations respectively. Large number of top managers with HGE, and EO are present in two configurations each.

5.4. Salient features, similarities, and differences

The key objective of the paper is to explore and compare key features of organizational configurations of young firms in India and UK. It is observed that, Indian firms’ (figure 4) show absence of large number of top managers with HGE in almost all but one configuration. This is a bit surprising, as the received wisdom suggests that presence of this condition should contribute to high performance. However, this can rather be seen as a reflection of trend of very little, virtually non-existent, movement of managers across young start-ups and even rarely so from fast growing medium and large business to younger firms in India (Koster and Rai, 2008; Valliere and Peterson, 2009).

Likewise, the configurations of UK’s young firms (figure 5) exhibit a presence of high external integration (with supply chain partners) coupled with concurrent absence of three conditions, viz., highly competitive environment, strategic focus on corporate development including domestic and foreign mergers, and high internal integration. This may also seem surprising, but is not so, once sample attributes are accounted for. Firms in Cambridge, UK enjoy close process integration with their buyer and suppliers due to the nature of technical sophistication of products, narrow scope of operations, specialization of level of professional service being offered, and
connectivity infrastructure. On the other hand, firms do not favour too much internal integration within firms which is different from culture of open communication and flat organizational design. Given the highly technical talent employed, firms allow a lot of flexibility (almost laissez-faire) to individuals and functions (on not what to do but on how to do) and hence internal integration is absent. In UK, firms do not face highly competitive environment. This can be explained by the fact the firms operate in such a small niche, offer such highly individualized and customized offerings, and have such high integration with value-chain partners that they don’t feel threatened by competitors. Also, despite ample opportunity of joint ventures or acquisition, driven by growth ambitions, technological prowess, and capability of financial bootstrapping of founding teams, firms prefer to venture out solo and hence the absence of focus on corporate development.

Comparison of configuration of Indian and UK leading to high performance reveal that they are similar in terms of presence of (not counting configurations where these conditions do not matter): highly dynamic technological environment (77.7% of Indian firms’ configurations as compared to 100% UK firms’ configuration), strategic focus on new product development (62.5% in India v/s 80% in UK), and high EO (55.5% in India v/s 50% in UK); and absence of high internal integration (75% in India v/s 100% in UK). Belongingness to highly dynamic technological environment, in relatively large proportions, can be seen as reflection of same underlying industrial sectors with almost similar liberalization and globalization allowing for inflow and outflow of technology. High strategic focus on new product development arises from the need to keep modifying ones offering to incorporate latest in technologies and to suit more complex and varied demand of customers. Predominant absence of high internal integration points to the favour shown to internal flexibility and
responsiveness as against bureaucratic efficiency. Almost half the configuration exhibit presence of high EO which is hardly surprising as it is an acknowledged key attribute required for firms’ success. What is surprising is rather that proportion of these configurations is not as high.

Indian and UK firms’ configuration are quite different in terms of presence of high external integration (37.5% in Indian v/s 100% in UK context). This is partially attributable to the fact of location of sample firms. Being located in National capital region of India, firms do not enjoy a close geographical proximity to its value chain partners unlike Cambridge where most of the time these partners are closely located. Further, different requirements from supply chain partners (for e.g., specification of inputs etc) imply different emphasis on need of, and methods of connecting and integrating the supply chain.

6. Discussion

To provide plausible causal mechanisms, this paper adopts the view that founders/entrepreneurs enact their operating environment (for e.g., Schwenk, 1988), assess the resources (for e.g., Jaworski and Kohli, 1993), make strategic choices (for e.g., Lau and Bruton, 2011) and choose structural design attributes (for e.g., Braunscheidel and Suresh, 2009). Accordingly the solution terms in figures four and five are sorted and clubbed in these order. There may be different clubbing and grouping criteria, if one were to take alternative theoretical perspectives, leading to insights about interaction among various causes of firms’ performance.

From the fuzzy set QCA of Indian firms, nine configurations (figure 4) are found to be leading to high performance. In four of five configurations, where environment has high technological dynamism, and is ridden with fierce competitive moves, industry is probably well defined and established. The solutions terms can be written as:
TD*CI*~TMX*EO*[~CD*PD*~EI*~II] + CD*PD*{EI + II} + CD*EI*~II

In set theoretical statements, ‘∗’ means ‘and’, and ‘+’ means ‘or’. If HGE top managers are not available, and founders adopt high innovativeness, proactiveness, and risk taking while focusing on both inorganic growth perspective and new product development. They may emphasize either integration with supply chain partners or across functional departments. High formal and routinized interactions either within firm or across value chain partners facilitate the flow of information, and resources coordination, and may help spot the opportunities. Founders lead the way, promote entrepreneurial decision making and look outside for opportunities and capability upgradation, and market access through joint ventures and alliance, or focus on new product development through tight internal integration, and steer organization towards success. If founders focus only on inorganic growth perspective they emphasize high integration with supply chain partners and avoid high internal integration. This is a more focussed and tightly knit growth plan with narrow set of options. Founders may yet to develop enough faith in either market for product or firms capabilities or seek a significant leap by choosing external, inorganic growth path. If founders favour growth through product development and avoid corporate development, they also do not integrate tightly with partners or internally. Internal laissez-faire allows flexibility and responsiveness and low external integration frees up precious resources to be devoted to new products development.

In the fifth case the solution term can be written as:

TD*CI*TMX*EO*~CD*PD*EI*~II

So, if HGE top managers are available, and founders do not adopt high innovativeness, proactiveness and risk taking, they succeed by translating managerial inputs into new product offerings coupled with avoiding inorganic growth and lower
internal integration to draw upon individuals/ managers’ and functional flexibility and responsiveness, and tighter external integration to facilitate the flow of required resources. Need to focus the efforts, not sending confusing signals to the channel partners, and faith in technology and product-market match may be reason to avoid inorganic growth strategy.

For two of the configurations, the solution term can be written as:

\[ \sim TD \sim CI \sim TMX [\{ EO \sim CD \sim PD \sim EI \sim II \} + \{ \sim EO \sim CD \sim PD \sim EI \sim II \} ] \]

If the operating environment is neither technologically dynamic nor highly competitive, probably the industry did not grow as expected or is maturing. If firms lack managers with HGE, neither have very close interaction with its external partners nor engage in formal, routinized internal collaboration systems, and also do not focus on offering newer products, such firms if want to be innovative, proactive, and risk takers they must focus on organic aspect rather than looking for inorganic options. Alternatively, if they choose to take inorganic route it should be as closely related to existing line of business as possible to minimize the levels of proactiveness, innovativeness, and risk.

For remaining two Indian configurations solution terms are:

\[ TD \sim CI \sim TMX \sim EO [\{ \sim CD \sim PD \sim EI \sim II \} + \{ CD \sim PD \sim EI \sim II \} ] \]

If firms operate in an environment where technological changes are fast but competition is not that harsh, industry has just begun and probably its boundaries and scope are not clear. If firms lack HGE managers, do not have high collaboration externally nor close integration internally, and lack innovativeness, proactiveness and risk taking, they must either focus on both inorganic growth option to upgrade their resources and capabilities, venture into newer markets, and offer newer products or avoid all of these, and take wait and watch approach to avoid rocking the boat.
For UK firms, five configurations (figure 5) are found to be leading to high performance. Of these three can be written as:

$$TD^*\sim CI^*\{\{TMX^*\sim EO^*\sim CD^*\sim PD^*EI^*\sim II\} + \{\sim TMX^*\sim CD^*PD^*EI^*\sim II\} +$$

$$\{EO^*\sim CD^*PD^*EI^*\sim II\}$$

If technological changes in the environment are fast but competition is not that harsh, industry has just begun and probably its boundaries and scope are not clear. Firms promote individual freedom, responsiveness, and flexibility over bureaucratic efficiency. The focus is on close collaboration with supply chain partners while avoiding inorganic growth options. If firm has HGE managers, but constrains innovativeness, proactiveness, and risk taking, it’s best to avoid developing newer products. Firms should focus on new product development only if either there are not large numbers of HGE managers or the firm as a whole practices innovativeness, proactiveness, and risk taking. As the technology is still evolving and market is yet undefined, the cautiousness with HGE managers and new product development could seen as a measure to check the ‘run’ on firms’ limited resources especially when there is no competitive rush.

Remaining two configurations can be written as:

$$\sim CI^*\{\{\sim TMX^*\sim EO^*\sim CD^*PD^*EI^*\sim II\} + \{TMX^*EO^*\sim CD^*PD^*EI^*\sim II\}$$

If firms are very highly integrated with their supplier-partners they may enjoy leverage and favourable terms, then the environment is not that competitive anymore. Firms focus on newer product development basing its effort on high internal collaboration sacrificing efficiency enhancing mechanisms and avoiding inorganic options. Such firms will benefit by either having a large number of HGE managers coupled with highly innovative, proactive and risk taking firm-level decision making proclivity or should avoid both. If firms only have HGE managers without EO, as
firms are highly integrated, managers may not have much scope of creative and unique contributions and get frustrated. If firms have only EO and no HGE managers, firm might fail to put words into action and may not capitalize on the opportunities.

6.1. Comparison of Indian and UK configurations

Configuration 6 (Con6I) of Indian solution terms and configuration 3 (Con3U) of UK solution terms came closest with six of eight conditions having similar status (TD*~CI*~EO*~CD*~PD*~II), and differing only on two conditions, viz., large number of managers with HGE and high external integration. In both of these configurations, firms succeed (not absolutely, but as defined in this paper) by operating differently in a similar environment characterized by high dynamism in technological environment and absence of fierce competition, providing an example of equifinality. In the configurations Con6I and Con3U, firms favour individualist freedom and responsiveness as against bureaucratic efficiency, do not exhibit high levels of innovativeness, proactiveness and risk taking, and avoid both inorganic growth options and newer product developments. Con6I displays simultaneous absence of large number of highly HGE managers and external integration with partners, on the contrary, Con3U displays their simultaneous presence. A look back at the functioning and scope of operations of sample firms helps understand the differences. Only one firm belong to each of these configurations. Con6I is double the age of Con3U both with limited range of offerings. As, Con3U is relatively new it is much focussed avoiding any grand moves, Con6I on the other hand enjoys good reputation which coupled with limited managerial growth ambition results in strategic choices and product offerings being limited. Despite being new, Con3U is able to achieve this fit owing to it managerial HGE and high partner interaction and integration. Its focus on lower internal constraints has allowed Con6I to compensate
for lower HGE managers and partner feedback. It seems its employees know what they are up to and deliver results in case of Con6I.

Configuration 7 (Con7I) of Indian solution terms and configuration 4 (Con4U) of UK solution terms also share five of seven conditions (TD*-CI*-TMX *PD*-II), and differ only on two conditions, viz., strategic focus on corporate development, and high external integration. Con7I and Con4U both share lack of HGE managers and internal integration, and have high strategic focus on new product development. In both of these configurations, firms operate in a similar environment characterized by high dynamism in technological environment and absence of fierce competition and succeed by choosing opposite methods. Only one firm belong to each of these configurations also. Con7I which is a high-tech manufacturing firm neither promote innovativeness, risk taking, and proactiveness, nor integrates highly with its partners. However, it actively seeks inorganic growth options. Con4U which is a technology development firm displays high external integration for its work mainly involves providing solutions to its partners. Due to founder philosophy, firm in Con4U is not looking for inorganic growth option and is indifferent with respect to EO. The above comparisons tell us that depending upon broader macro-economic, entrepreneurial tendencies (Koster and Rai, 2008; Valliere and Peterson 2009), and more peculiar firms level contexts, interplay of various causes (causal recipes) may give rise to several configurations.

7. Conclusion

Drawing on extant configuration approach and advances in start ups configuration research, this paper employed leadership, EO, strategy, structure, and environment to explore the configurations of Indian and UK based young firms. The logic to use EO is driven by its characterization as an indicator of decision making proclivity, and an
indicator of founders’ philosophy in young entrepreneurial firms. Realizing the scope of learning by exploring and comparing high performing configurations of Indian and UK firms, a QCA is performed. Given the exploratory nature of the study, consistency between configuration approach and set theoretical methods of QCA, sample size constraints, and scope of discovering causal complexities, fuzzy set QCA is used. Drawing on the particular strength of QCA to travel back and forth between data and theory, the plausible causal mechanism are elaborated for configurations. There is some consistency of relationship of causes to outcomes across all configurations. In all five types of UK’s successful firms’ configurations, firms adopt high external integration, do not operate in highly competitive industry, nor employ corporate development strategies, and nor exhibit high internal integration. Among nine configurations of successful firms in Indian context, large numbers of managers with high HGE is absent in eight configurations, high internal integration in six, and high external integration mechanisms in five configurations.

As the study aims at exploring and comparing the configurations, the limited generalizability of the resultant configurations as representative configurations of all Indian and UK firms, arising from unbalanced, small, and geographically limited samples is acknowledged. As the firms under study are mainly privately held, they preferred not to disclose the hard data especially financial despite being asked in the questionnaire, this is also a limitation. Future studies can draw on a larger and balanced sample, and employ multiple data triangulation techniques to capture finer and more generalizable configurations.

Following Ragin’s (2000; 2008) claims that fsQCA is better suited for comparative configurational research with small variable to case ratio, fsQCA is used as analytical technique. Set-theoretic methods of QCA allow systematic comparison involving
several different combinations of conditions and identify elements that are causes for
the outcome. There is no consistency in the combinations of conditions with respect to
mutual correspondence, giving strength to the underlying premise that configuration
research best uncovers the ever changing interaction among variables while
determining outcome. This paper studies the causal recipes or configurations that
determine success of young firms in high tech industry, and compare the
configurations found in firms in emerging economy represented by India to that of
firms from developed economy represented by UK. The results indicate that founder
can choose among multiple combinations. Internal integration and corporate
development strategy is avoided in the UK context, and Indian companies perform
better despite lack of managers with HGE. In both the contexts, for requirements of
decision making, founders can compensate for lack of EO by favouring internal
flexibility of individual and functions and accessing information and relevant inputs
from either external network or strategic focus on corporate development through
inorganic route in almost all cases.

References

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205-230.

firm’s supply chain agility for risk mitigation and response.” *Journal of Operations

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strategic types, capabilities, environmental uncertainty, and firm performance.”


combinations of industry, corporate, and business-unit effects.” *Organizational Research Methods*, 11: 695–726


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<th>Dimension, and definition</th>
<th>Items (measured using 7-point Likert scale, unless specified otherwise)</th>
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</thead>
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<tr>
<td>Holistic Performance (Holiperf).</td>
<td>Performance (as compared to next best competitor) in the past three years in Sales growth, employment growth, gross profits, innovation in product and services and speed in developing new products and services</td>
</tr>
<tr>
<td>Competitive Intensity (CI) = the nature of competition.</td>
<td>1. Competition in our industry is cutthroat; 2. There are many &quot;promotion wars&quot; in our industry; 3. Anything that one competitor can offer, others can match readily; 4. Price competition is a hallmark of our industry; 5. One hears of a new competitive move almost every day.</td>
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<tr>
<td>Technological Dynamism (TD) = rate of technological change.</td>
<td>1. The technology in our industry is changing rapidly; 2. Technological changes provide big opportunities in our industry; 3. A large number of new product ideas have been made possible through technological breakthroughs in our industry.</td>
</tr>
<tr>
<td>Corporate Development (CD) = strategic focus on alliances, and acquisition.</td>
<td>1. Form joint ventures with domestic business; 2. Form joint ventures with foreign businesses; 3. Merge and acquire other businesses; 4. Contemplated that the company should go public.</td>
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<td>New Product Development (PD)</td>
<td>1. Placed emphasis on developing new products through allocation of substantial financial resources; 2. Developed a</td>
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<td>Metric</td>
<td>Description</td>
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<td>--------------------------------------------</td>
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<td>= degree to the firm develops and introduces new products/services.</td>
<td>large variety of new product lines; 3. Increased it overall commitment to develop and market new products; 4. Increased overall commitment to develop and market new products.</td>
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<td>Top Managers’ prior high growth experience (TMX)</td>
<td>Number of top managers with at least one year experience in rapidly growing companies (&gt;25 % annual growth in sales)</td>
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<tr>
<td>Entrepreneurial Orientation (EO)</td>
<td>9 item, 7-point, Covin and Slevin scale (1989)</td>
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<tr>
<td>External Integration (EI) = “level of integration/ alignment with key customers and key suppliers”</td>
<td>1. Our customers give us feedback on quality and delivery performance; 2. Customers are actively involved in our new product development process; 3. Customers frequently share demand information with our firm; 4. Our production/activity plans are shared with our customers; 5. We give our suppliers feedback on quality and delivery performance; 6. We strive to establish long term relationships with our suppliers; 7. We have high corporate level communication on important issues with key suppliers; 8. We jointly develop new products/services with our suppliers.</td>
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<tr>
<td>Internal Integration (II) = “level of inter-functional and interdepartmental”</td>
<td>1. All departments within our firm are connected by a single central information system; 2. We use cross functional teams to solve problems; 3. Communications from one department to another are expected to be routed through proper channels; 4. Formal meetings are routinely scheduled among various departments.</td>
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</table>
integration/alignment. | departments; 5. Our firm does not encourage openness and teamwork; 6. When problems or opportunities arise, informal, face-to-face meetings never occur.
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<tr>
<th>Dimensions</th>
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<th>UK data</th>
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Figure 1: High-tech exports as percentage of manufactured exports

(Source: World Bank data)
Figure 2: Truth table based on calibration of Indian data

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[Legend: ftd= high technological dynamism, fcin= high competitive intensity, fcd= focus on corporate development, fpd= focus on new product development, fea=high external integration, fiin= high internal integration, feo= high entrepreneurial orientation, crtmx= large number of managers with HGE, number = number of cases belonging to a particular row or configuration, and fperf=performance of the firm]
Figure 3: Truth table based on calibration of UK data

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Figure 4: Indian firms’ configurations (intermediate solution with core and peripheral conditions)

[Legend: circle means presence of a condition, Θ circle means absence of a condition; smaller circle sizes indicate peripheral conditions, and large sizes indicate core conditions]
Figure 5: UK firms’ configurations (intermediate solution, and core and peripheral conditions)

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