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**Type of Entrepreneur and Growth of New Ventures:
Testing and Validation of A Typology of Software Entrepreneurs in India**

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TYPE OF ENTREPRENEUR AND GROWTH OF NEW VENTURES:

TESTING AND VALIDATION OF A TYPOLOGY OF SOFTWARE ENTREPRENEURS IN INDIA

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Abstract

We propose in this paper that the weak link between entrepreneurial characteristics and New Venture Performance (NVP) in entrepreneurship research is partly due to inconsistencies in operationalization of the entrepreneur as an empirical construct. Strong theoretical linkages suggest that a combination of skills and motivations of the entrepreneur may yield a typology that is robust and has high explanatory power. Operationalization of the entrepreneur as a combination of skills and motivations has not been attempted in earlier studies. A study of 107 founders of new venture in the software services industry in India resulted in the identification of a typology that is found to be stable and valid, with strong links to previous research. The 5-cluster solution was demonstrated to have high internal and external validity. Moreover, the type of entrepreneur was also found to be significantly associated with employment creation and growth in employment size. It is suggested that the skill-motivation-set may be used as a more robust operationalization of the entrepreneur as an empirical construct. The identification of a typology of entrepreneurs that is strongly correlated to performance of the new venture can form a basis for the evaluation of the entrepreneurial human capital of the venture.

Keywords

entrepreneur, entrepreneurship, typology, India, skill, motivation, software, new venture performance

Word count: 7133 words

Introduction

While academics and practitioners agree that young and small firms suffer from a “liability of newness” (Stinchcombe, 1965), there are yet few satisfactory answers to the question of why some young firms become outstanding successes while the majority of startup companies sputter and die along the way. This, then, is the fundamental question that gives rise to further related questions: If the role of the founder entrepreneur in the performance of startups is acknowledged to be important, what are those distinguishing factors that separate successful from unsuccessful founder-entrepreneurs? Moreover, entrepreneurs cannot be distinguished from each other on the basis of single traits. An individual is a complex combination of various traits, abilities and knowledge, and it would be simplistic to represent individual entrepreneurs by any one of them alone. Is it then possible to have a combinatorial basis for distinguishing between entrepreneurs? Are there, therefore, different “types” of entrepreneurs out there, who can be distinguished from each other on the basis of some representative combinations that are also related to the performance of the venture? These were the ideas and questions that led to this exciting research.

Research in the area of entrepreneurship has emphasized the critical role played by the entrepreneur in the performance of the new venture (Kets de Vries, 1977; Brockhaus, 1980; Mintzberg and Waters, 1982; Timmons, 1990). Early researchers in the area of entrepreneurship tried to study direct relationships between entrepreneurial characteristics and new venture performance. This yielded very few significant findings (Herron and Robinson, 1993). Recognizing that (i) trait theories can make conclusions restricted only to the trait under study, and not the entrepreneur, and (ii) a search for averages tends to ignore differences within the set of entrepreneurs that may be significant (Gartner, 1985), many researchers have tried to study the differences between entrepreneurs in a systematic way. This led to the stream of “typology research”, which tries to differentiate between types of entrepreneurs on the basis of some

common, meaningful characteristics. Although policy makers and researchers agree on the importance of identifying different entrepreneurial “types”, no meaningful typology of entrepreneurs has emerged that has demonstrated a strong and consistent association with performance.

One of the classifications most commonly studied is the craftsman-managerial-opportunistic typology. Smith (1967) identified two types of entrepreneurs through detailed interviews with manufacturing entrepreneurs. Craftsman entrepreneurs were found to have a narrow education and training, and were less socially aware than opportunistic entrepreneurs, who exhibited greater breadth in education and training, and more confidence in their ability to deal with their immediate environment. Opportunistic entrepreneurs tended to be more flexible and better adapted to their environment and consequently, had higher growth orientation. Moreover, firms founded and headed by craftsman entrepreneurs tended to be more rigid than those founded by opportunistic entrepreneurs. Although it is implicit in this categorisation that the craftsman entrepreneur was technically skilled but relatively poor at administrative skills, the concept of skills did not explicitly enter Smith's framework.

Smith's (1967) original typology has been developed to include an “administrative” type of entrepreneur, (Filley and Aldag, 1978), who are professional, rational builders, associated with skills and motivations that are normally referred to as “managerial”. Thus a three-way classification of craftsman-managerial-opportunistic entrepreneurs emerges from earlier literature, and later studies assume a priori a similar distinction (Lafuente and Salas, 1989; Cooper and Dunkelberg, 1986).

However, these studies have operationalized the construct in different ways. It is suggested here that, inconsistencies in operationalizing the basis for differences between entrepreneurs has been at least partly responsible for the inconsistent empirical findings in this area. For instance, Smith (1967) categorized entrepreneurs on the basis of their education, background and work experience, however, Lafuente and Salas (1989) operationalized the same construct of craftsman-managerial entrepreneurs using work

motivations. Predictably, this has led to weakening of the construct, and has also slowed down the process of theory building because of low generalizability across these studies.

This research follows a taxonomic approach to explore differences between entrepreneurs, while also trying to establish a more consistent categorization of these differences. Moreover, this paper suggests that an operationalization of the entrepreneur, based on a combination of entrepreneurial skills and motivations, may be a more robust and theoretically justified way of capturing differences between individual entrepreneurs. This is expected to contribute to the process of theory building in the area of entrepreneurship by formulating a standardized operationalization of the entrepreneur as an empirical construct. The objective of this research is an attempt to find the basis for a “midrange theory” (Pinder and Moore, 1979) in the study of entrepreneurs through the identification of a typology. In the following section we present the argument justifying a combination of skills and motivations to as a basis for differentiation between different entrepreneurial “types”. We will then move on to the actual details of the research, including derivation, testing and validation of the typology. Finally, the results of the research and its implications will be discussed.

Conceptual Framework

The entrepreneur as a combination of skills and motivations

Entrepreneurs create new ventures for a variety of reasons, and satisfying a number of personal objectives. Motivational structures will be very different for the entrepreneur who wants challenging work, and for one who chooses self-employment as "a more desirable form of earning a living" (Chell, Haworth, and Brearley, 1991). Reasons for starting a business have been found to be related to the behaviour of the entrepreneur, and hence, growth orientation, and performance of ventures created by them (Kolvereid, 1996; Amit, and Muller, 1996). Hence we expect entrepreneurial motivations to be a major factor in distinguishing between different types of entrepreneurs.

Moreover, literature on psychological job testing suggests that the relationship between traits and performance is not a direct one, but is moderated and mediated by other variables (Herron and Robinson, 1990). Herron and Robinson (1993) suggest that personality traits do not have a strong direct effect on behaviour and performance, but are mediated by motivations and moderated by abilities, or skills of the entrepreneur. Thus, personality, background, or experience of the entrepreneur, which are used more often in entrepreneurship research, may not have a direct impact on organizational outcomes, but may be mediated by the entrepreneurial skills developed as a result of these characteristics. Entrepreneurs come from different social backgrounds, have varied education, training and work experience, all of which result in the development of different skill sets. The entrepreneur employs her own skills to "shape a new organization out of complexity and chaos" (Herron, 1990, quoted in Herron and Sapienza, 1992: 50). These differences impact their decisions and can be expected to be associated with the performance of firms created by them. Hence, the entrepreneur's knowledge, and abilities acquired by them through their education, training and work experience, will be manifested in their individual skill sets, and this is expected to be another source of variation among entrepreneurs.

Although both skills and motivations have been studied separately, the individual entrepreneur is a combination of different skill-motivation sets, and using a combination of both skills and motivations would be a more accurate representation of an individual entrepreneur. Gartner et al (1994) advocate the use of a combination of work ability and motivation to capture the effect of the entrepreneur on the performance of his venture. They suggest the use of measures of specific knowledge and skills rather than general measures like number of years of experience in industry or number of years of education.

Although Smith's (1967) early categorization of entrepreneurial types implicitly included skill dimensions, empirical studies have not explicitly incorporated the skills of individual entrepreneurs in defining a typology. Thus, it is suggested that a combination of motivations and abilities will yield a more robust basis for differentiating between types of entrepreneurs.

Methodology

Sample Characteristics

The sample for this study was defined as young, independently founded firms. In addition, keeping in mind the importance of employment creation as a vital function of entrepreneurship, self-employed professionals were not considered part of the sample. In order to qualify, the firms in the sample had to have at least one employee. Using VanderWerf and Brush's (1989) recommendation on complete sample specification, the variables controlled for in sample selection are: (1) Age: one to seven years old (Eisenhardt and Schoonoven, 1990; Carter et al., 1994; McDougall and Robinson, 1990), (2) Ownership and relationship to parent company: subsidiaries or joint ventures set up by large companies were excluded from the sample, (3) Industry: one with a high rate of entrepreneurial opportunity (Shane and Venkataraman, 2000), and (4) Context: Industry Structure and Environment have been controlled by selecting a single-industry sample in one country so that political and business environment remained constant. Other context variables like organization structure were not considered in this study as organization structure is not expected to be an important contingency variable in the early stages of the organization where structures and processes are expected to be simple and flexible (Mintzberg et al, 1995).

The software services industry was identified as it met most of the industry criteria. The recent boom in the industry, especially in India, translated into a high rate of startup, and the low entry barriers of the industry was expected to improve chances of finding all kinds of entrepreneurs in the industry, as more types of individuals would be able to "take the plunge", even without substantial investment in resources.

Final sample

A total of 500 companies were contacted on email and telephone in the first round, using listings of software companies from various sources. After eliminating those companies that did not meet all sample

selection criteria, 107 companies were located that met the following criteria: 1) they were between 1 and 7 years old at the time of response, 2) they were not subsidiaries of larger parent corporations, 3) they were exclusively in the software services business, and 4) they were willing to be part of this research. The primary entrepreneurs (i.e., the individual who first conceptualized the start-up) were met individually and the questionnaire administered personally to each respondent.

Instrument Design and Pretesting

The following skills were identified from literature: 1) Technical/Functional skill, 2) Industry knowledge, 3) Interpersonal skill, 4) Networking and political skill, 6) Administrative/Managerial skill, 7) Opportunity recognition, and 8) Drive (Katz, 1974; Chandler and Jansen, 1992; Pavett and Lau, 1983; Timmons, Smollen, and Dingee, 1977). Each type of skill identified was operationally defined in the form of double-ended questions, which were framed in a way that social desirability of responses was minimized. Reasons for starting new ventures were adapted from Scheinberg and MacMillan's (1988) study on motivation patterns for starting new businesses across 11 countries. This set of reasons has been extensively used by SARIE in cross-national and cross-cultural research on entrepreneurial motivations (Birley and Westhead, 1994; Shane, Kolvereid and Westhead, 1991; Kolvereid, 1996). These dimensions were discussed and judged for face and content validity by a group of professors, MBA students, and entrepreneurs. Finally, a total of 30 skill items and 31 items measuring work motivations were retained in the final questionnaire, with responses ranging from "Strongly agree" to "Strongly disagree".

Since job creation is an important economic functions of new businesses (Dyer, 1994), it was decided to include both employment size as well as employment growth measures as indicators of the performance of the new venture (Cooper, Woo and Dunkelberg, 1989; Robinson, Kunkel and Hofer, 1994). The questionnaire also collected information on personal and background information of the entrepreneur. A copy of the questionnaire used is available with the first author.

The instrument was pretested with a sample of ten founders, who met all the criteria used in sample selection. Respondents were asked to fill up the questionnaire in the presence of the researcher, so that any ambiguity or redundancy in the questionnaire might be picked up. Respondents were asked for feedback about the language, content, readability, layout and comprehensibility of the questionnaire as well as the content. Any additional inputs provided by the respondents were then incorporated into the questionnaire.

Analysis Plan

Skills and motivations were first factor analyzed separately using an R-mode Principal Components Analysis (PCA) to reduce the items into a smaller number of independent orthogonal components. The factor scores obtained from the factor analysis were used as inputs for the subsequent cluster analysis to identify entrepreneurial "types". It was expected that the cluster analysis would yield clusters similar to the craftsman-opportunistic-administrative types defined in literature.

Sample Demographics

Some of the salient sample characteristics are presented in Table 1.

[TABLE 1 GOES IN HERE]

Data Screening

Items that do not correlate with any of the factors, items that correlate with other items over and above the factors, and items that correlate with more than one factor are considered unsuitable for factor analysis. These were screened out by examining the inter-item correlation matrix and the anti-image correlation matrix of the items measuring skills and

motivations. A total of 13 skill items and 7 motivation items were dropped from further analysis after this exercise.

In addition, the following tests were carried out (Hair, Anderson, and Tatham, 1987) to test whether the data set was appropriate for factor analysis:

1. Scree Plots in both cases were found to contain two sharp breaks. The presence of at least one sharp break in the plot signifies that factoring is appropriate.
2. Bartlett's test of sphericity tests the hypothesis that the correlation matrix comes from a population of independent variables. Rejection of the hypothesis for both data sets (skill items as well as motivation items) signified that the data was appropriate for factor analysis.
3. The Kaiser-Meyer-Olkin measure of sampling adequacy measures the extent to which the variables are related, and are thus appropriate for factor analysis. The MSA (Measure of Sampling Adequacy) should be at least 0.5 or higher to lie in the acceptable region. The MSA was found to be 0.666 and 0.767 for skill and motivation items respectively.

Analysis of Skill Items

The Scree Plot showed two distinct breaks in the plot, at 3 and 6 factors. Since in this case, parsimony is of equal importance as obtaining theoretically meaningful constructs, the three-factor solution explaining 49.45% of the total variance was retained. Table 2 below shows the retained variables with factor loadings of greater than 0.4 for the three-factor solution, after VARIMAX rotation. The reliability figures for each factor and the percentage of variance explained by the four-factor solution are also mentioned.

[TABLE 2 GOES IN HERE]

The three factors identified can be described as below:

Factor 1: Team leadership skills

The skill dimensions loading on the first factor describe effective group behaviour, building cooperation, and supporting positive group dynamics. This factor reflects managing customer and employee relationships, as well as motivating employees through personal interaction. It also involves having a visionary and far reaching idea of the business direction and goals, and corresponds well with Katz's (1974) "conceptual skills"

Factor 2: Administration skills

Factor 2 describes managerial or administrative skills like operational decision-making within the organization, allocation of finances, people, and time, budgeting, forecasting, cash flows, performance reviews. Coordinating between different parts of the organization also loads on this factor. It involves ensuring smooth operations within the business through efficient coordination and resource allocation.

Factor 3: Environmental skills

The third factor is clearly a measure of external skills like market and industry information, planning for the future, spotting opportunities and responding to them. This corresponds well with Timmons, Smollen and Dingee's (1987) Opportunity Recognition, which is defined as an ability to scan the environment, spot attractive opportunities or niches previously not catered to, and convert these into actual businesses.

The factor scores of the retained factors are a parsimonious measure of three different skill dimensions.

These factor scores were subsequently used as inputs for the cluster analysis.

Analysis of Motivation Items

The 24 items that were retained after the data was screened were subjected to Principal Components analysis with VARIMAX rotation. A sharp break in the plot was observed in the region of 4 factors. Keeping in mind the importance of parsimony, the four-factor solution explaining 50% of the total variance was retained. Table 3 below gives the four factor solution after VARIMAX rotation, with items which have factor loadings > 0.4. The item descriptions and the factor loadings are given below, along with the reliability figures and the percentage of variance explained by the four-factor solution.

[TABLE 3 GOES IN HERE]

The components correspond closely with earlier studies in the area of reasons for starting new businesses (Birley and Westhead, 1994; Scheinberg and Macmillan, 1988), and are described below:

Component 1: Comfort-survival considerations

This factor included reasons leading to start-up such as wanting to work in a desirable location, flexibility in personal life, as well as difficulty in finding a good job. This corresponds well with the “push” factors leading to business creation (Amit and Muller, 1996, Cooper and Dunkelberg, 1986), described as those factors creating dissatisfaction and frustrations in the earlier place of employment, which leads individuals to underperform, thereby “pushing” them into self-employment. A desire to take advantage of tax cuts and other indirect benefits was also reflected in this factor.

Component 2: Need for autonomy

This factor corresponds with the Need for Independence factor identified by Scheinberg and MacMillan (1988), and Shane, Kolvereid, and Westhead (1991). It encompasses a need for freedom with ones own approach to work, to be able to use ones skills and training better outside the straitjacketed roles in a larger organization, and a need to own the direction the company and technology are taking. This factor was also closely linked to discomfort with authority, and a high need for freedom at the workplace.

Component 3: Perceived instrumentality of wealth

This component corresponds to Scheinberg and MacMillan’s (1988) factor in their eleven-country study of reasons leading to start-up, as well as Birley and Westhead’s (1994) “perceived instrumentality of wealth”, and hence it was decided to retain the nomenclature. Items loading on to this factor indicated a strong concern with recognition and external approval (Birley and Westhead, 1994), as well as the importance of position and status in society. These reasons are primarily concerned with the wealth

considerations associated with the act of entrepreneurship, as well as the instrumentality of wealth reflected in the high need for status and recognition, rather than a need for personal or professional development.

Component 4: Need to build on product/service idea

The last factor corresponds to Birley and Westhead's (1994) "Need for personal development" factor, and Scheinberg and Macmillan's (1988) "Learning" factor. These reasons were strongly related to a desire to develop an idea for a product or service, to be at innovative and at the forefront of technological development. There is also an association with "Welfare considerations" (Birley and Westhead, 1994), reflected in the societal welfare considerations like the desire to create something from nothing, and to return something to the society at large.

Clustering

The factor scores of the seven dimensions (three skill factors and four motivation factors) obtained from the earlier factor analyses were used as the input variables in a cluster analysis. As clustering techniques are especially sensitive to the presence of outliers, the factor scores were examined for the presence of outliers. 8 cases were dropped from subsequent analysis for having values greater than two and a half deviations from the mean.

The remaining 99 cases were cluster analyzed using a two-stage clustering process (Punj and Stewart, 1983). An agglomerative hierarchical clustering (Ward's Minimum Variance Method) was carried out to indicate the number of clusters to be retained. The resulting dendrogram indicated a 5 cluster solution. The centroids for the five cluster solution were then used as the initial seeds for an iterative partitioning method (SPSS QuickCluster) to refine the clusters.

Interpretation

Plotting the centroid scores of each factor for each cluster identified, we see the certain combinations of skills and motivations emerging, as represented in Figure 1.

[FIGURE 1 GOES IN HERE]

Cluster 1 shows a high need for financial gains and a desire to build an organization based on a product/service concept, coupled with high environmental skills. This corresponds well with the Opportunistic profile identified earlier. Cluster 2 scores are high on comfort-survival as well as need for autonomy, and extremely low on the desire to build and develop a concept. These could be the “push” type of entrepreneurs (Solymossy, 1997; Amit and Muller, 1996). Cluster 3 corresponds with the Managerial entrepreneur described earlier, with high team leadership, environmental and administration skills, coupled with a high desire for wealth creation. Cluster 4 has high scores on need for autonomy and development of a product/service idea, and fairly high scores on team leadership. Their scores are low on administrative and environmental abilities, which could be a reflection of high specialization or technical skills. In that case this profile would correspond fairly well with the Craftsman entrepreneur (Smith, 1967; Smith and Miner, 1983). The deviation is that these entrepreneurs are also found to have high scores on team leadership. Cluster 5 is found to have high administrative abilities, for creating concept driven organizations, as well as a high desire for wealth and its perceived instrumentality. This cluster could not be easily identified by correspondence to earlier literature, and may be a type explained by the sector in which the research is carried out. The item scores measuring skills and motivations were used to build a more detailed profile for each type of entrepreneur.

Profiling

Since the skills and motivations factors used for identifying the clusters explain only 49.45% and 50 % of the variance in the data respectively, the raw item scores are used to profile the clusters. The item scores

on all the skill and motivation dimensions were compared for significant difference across means for the identified clusters. In order to label the clusters appropriately, the cluster means of all the significant items were compared to the global mean for that variable. The combination of variables that contribute to the cluster were then examined and used to build a detailed “profile” or description of the clusters as below.

Cluster1: The Opportunists (28.3% of sample)

This cluster contains 28.3% of the sample and was characterized by high scores on items measuring desire for financial gains, taking advantage of a business opportunity, desire for wealth and its perceived instrumentality, and a need for recognition and external approval. These entrepreneurs appear to be good at scanning the market and recognizing opportunities. At the same time, they also have high scores on reasons involving welfare and status of family, and a high need for external approval. They have a good knowledge of the industry and market, and are quick to spot and exploit opportunities. Moreover, they also have fairly high technical skills, and are also found to have a high desire to build an organization based on a product/service concept.

Cluster 2: The “Push” Entrepreneur (13.1% of sample)

This cluster shows scores significantly lower than the global mean on almost all skill items, except for using personal connections in business and frequently checking on employees. Taken in conjunction with their high scores on comfort-survival and autonomy reasons, the description matched extremely closely with the “push” entrepreneurs described in earlier studies (Amit and Muller, 1996). Amit and Muller (1996) describe “push” entrepreneurs as those who were “pushed” out of their earlier jobs because of frustrations and dissatisfactions at the workplace, which affects their performance, leading to the decision to start their own business. This decision, therefore, has little to do with intrinsic “pull” factors which include the challenges and anticipation of higher returns associated with entrepreneurship, or the spotting

of opportunities. This cluster also corresponds somewhat with the “Security” cluster of entrepreneurs identified by Lafuente and Salas (1989).

Cluster 3: The Managerial Entrepreneur (32.3% of sample)

This cluster exhibits significantly high scores on all items measuring conceptual, interpersonal, administrative, and environmental skills. This builds a profile of a “managerial” type of entrepreneur. These entrepreneurs, moreover, are low on technical skills themselves, preferring to delegate technical tasks wherever possible. They are able to see the “big picture”, as evinced by their high conceptual skill scores, and not get bogged down by technical details. They also have the lowest scores on items measuring commitment and drive, thereby supporting the idea that entrepreneurship is just an alternative career to these founders. These respondents are not driven by product/service ideas or technological obsessions, but rather by the challenge of managing a startup, and wanting to build an organization from scratch.

Cluster 4: The New Craftsman (16.2% of sample)

This group corresponds well with the craftsman entrepreneur identified earlier in entrepreneurship literature earlier (Smith, 1967; Smith and Miner, 1983). These founders exhibit high technical skills and an extremely high commitment to the business. They also show a strong inclination towards a wanting to be innovative and develop a product/service concept. Their scores are also high on need for autonomy at work, discomfort with authority, and a need to have sufficient freedom with their own approach to work. Financial considerations do not seem to count for much. At the same time, they show significantly low scores on managerial and administrative skills, which are the lowest for this category. However, they also show fairly high team leadership skills, as well as market knowledge. This appears to be a redefined craftsman entrepreneur in the context of the knowledge based industry in which the study was carried out, as well as the current social and business scenarios in India.

Cluster 5: The Idea Driven Opportunists (10.1% of sample)

On closer inspection of the skill and motivation items, it is seen that these respondents score significantly high on “desire to develop new product/service idea”, “idea conversion”, “goal communication”. Cluster members of this group score higher than other groups on the desire to build on a product/service concept. They reflect a high idea orientation, rather than a need for autonomy or independence. The scores on need for independence are, in fact, the lowest for this group. They are driven by challenge and achievement, and also have higher interpersonal and administrative skills than other groups. At the same time, these founders are also found to have significantly high scores on “societal” or “need for approval” items like the desire for welfare of relatives, status of family and to be respected by friends.

As the above combination suggests, this cluster seems to be a “mixed” type, with some characteristics in common with Opportunistic and the Managerial types, combining the idea driven approach of the former with the administrative skills and team leadership abilities of the latter.

Cluster Validation

Significance of the Cluster Solution

Table 4 lists F-ratios and levels of significance comparing the differences between group factor means for the five clusters identified in the iterative process. The results show that the clusters are fairly well separated based on Euclidean distance from their centres on all the identified dimensions. Hence all the seven factors are seen to vary significantly between clusters.

[TABLE 4 GOES IN HERE]

Internal Validation

The appropriateness of the five-cluster solution was tested using a split sample (Speece, McKinney and Appelbaum, 1985). The second method used for validation is discriminant analysis (Birley and Westhead, 1994).

Validation using split sample: A random split of the sample data was carried out and a new data set was generated with approximately two-thirds of the sample. This sample was then reclustered following the same two-step method described above. The resultant cluster membership was then compared to the original cluster membership. The degree of agreement between the two sets of memberships was calculated using a kappa coefficient. This method demonstrated that the five-cluster solution was stable, with 76% of cases maintaining their original cluster membership. This signified the stability of the 5 factor solution. This was supported by the kappa coefficient, which measures the degree of agreement between the original classification and the reclassification clusters. In this case the kappa coefficient (.688) was found to be highly significant.

Discriminant analysis: The second technique used to cross-validate the five-cluster solution was discriminant analysis. The cluster membership obtained in the original analysis was used as the group membership in a random sample of 50% and 67% of the sample. The raw item scores for these respondents were analyzed using the SPSS Discriminant analysis. The final results of the analysis are shown in the table below. The hit rate for 50% and 67% of the sample were 82.6% and 88.9% respectively, with 8 cases being misclassified in each case. The kappa coefficient was .768 and .852 respectively.

The degree to which the assignment made by the discriminant analysis agreed with the original assignment was compared with the proportional chance criterion (C-pro) = .2476 or 24.76%, and the maximum chance criterion (C-max) = .32 or 32% (Hair, Anderson and Tatham, 1987). Hair, Anderson and Tatham (1987) suggest that to accept a solution for meaningful interpretation, classification accuracy should be at least 25% greater than that achieved by chance. As C-max is .32, the discriminant analysis should have a hit rate of $1.25 \times .32 = 40\%$.

As the classification in both cases is significantly higher than C max, this signifies the stability of a five-cluster solution. Bearing in mind that the hold-out sample method has not been followed, and that these criteria have to be revised upwards to allow for the predictive accuracy (Hair, Anderson and Tatham, 1987: 90), the high degree of classification accuracy still allows us to go ahead with the 5 cluster solution.

External validation

The ultimate test of clusters lies in its usefulness (Punj and Stewart, 1983). Thus, the cluster analysis should demonstrate that clusters are related to variables other than those used to generate the solution.

The data on personal characteristics of the sample of entrepreneurs was analysed for identifying differences between the cluster types. The results of tests of significance of difference (One-way ANOVA or chi-square tests, as appropriate), showed that the clusters vary significantly on personal characteristics like age, background, education, and experience (Table 5). Moreover, the number of employees in the organization and the founding capital were also found to differ significantly across clusters.

[TABLE 5 GOES IN HERE]

Type of Entrepreneur and NVP

The typology identified was now analyzed for association with New Venture Performance (as measured by employment creation and employment growth). This was tested by a one-way ANOVA. The results of the ANOVA are presented in Table 6. A significant difference was found in annual employment creation between clusters at a 0.05 level of significance.

[TABLE 6 GOES IN HERE]

It was found that the hypothesis that the clusters generate equal employment annually could be rejected at a 0.05 level of significance. The means plot presented in Figure 2 shows that Managerial entrepreneurs generate maximum annual employment, followed by New Craftsman entrepreneurs, and “Push” entrepreneurs have the lowest rate of employment creation. New Craftsman entrepreneurs were seen to have the highest rate of growth of employment. This trend was further tested using pair-wise t-tests.

[FIGURE 2 GOES IN HERE]

The pair-wise t-test comparisons between cluster means showed that:

- i. Managerial and New Craftsman entrepreneurs were significantly higher employment generators than “Push” and Opportunistic entrepreneurs ($p=0.001$)
- ii. “Push” entrepreneurs have an annual employment growth rate that is significantly lower than that of Managerial and Idea Driven Opportunists at a 0.05 level of significance. At a 0.1 level of significance, the annual employment growth rate of “Push” entrepreneurs is significantly lower than that of New Craftsman as well as Opportunistic types.

Therefore we concluded that that Managerial and New Craftsman types tend to be larger employers, and “Push” entrepreneurs have the lowest employment growth among the 5 entrepreneurial types.

Discussion and Implications

Type of Entrepreneur

One of the most significant findings of this study was that the operationalization of the entrepreneur as a combination of skills and motivations was found to be robust and have high explanatory power. This cluster solution was found to be internally stable, as demonstrated by the two validation methods discussed. The external validity of the clusters was also high, as shown by the significant associations

between variables not used in the cluster analysis. The entrepreneurial types were also found to be significantly associated with new venture performance differences.

Moreover, the entrepreneurial “types” that emerged from the research proved to have close linkages with earlier research, or lend themselves to some interesting explanations and interpretations.

The “Push” Entrepreneur

The “Push” type of entrepreneur identified in this study is closely associated with Amit and Muller’s (1996) definition. The finding that “Push” entrepreneurs tend to have the lowest employment growth rate also has support in Amit and Muller’s (1996) study. Examining the demographic variables associated with this type of entrepreneur, it was found that the “Push” entrepreneurs tended to be older than the other types of entrepreneurs, both in terms of starting their first business venture, as well as starting the current one. This is consistent with the fact that these entrepreneurs have been “pushed” into entrepreneurship. On the other hand, intrinsic “pull” factors towards the act of new venture creation, such as opportunity spotting, or the expectation of financial returns, probably drive the other types to become entrepreneurs at an earlier age (Cooper and Dunkelberg, 1986).

The New Craftsman Entrepreneur

The New Craftsman entrepreneur is similar in some respects to the Craftsman type defined in previous research (Smith, 1967; Smith and Miner, 1983; Filley and Aldag, 1978, Lafuente and Salas, 1989), in that they are technically skilled, have low administrative skills, and are driven by a high need for autonomy at work and the freedom to pursue an idea. However, this profile has been redefined in the context of the dynamic nature of the industry the research was conducted in. Many highly qualified professionals in the software industry assume the risk associated with starting a venture because of the low entry barriers, industry growth, and the nature of the knowledge based industry that allows personal and professional growth in a small business setting. These entrepreneurs exhibit high team leadership skills, which

distinguish this type from earlier definitions. This may be attributed to the increasing popularity of business management education in India, and widespread use of concepts like participative management and team building. The New Craftsman, therefore, is a good leader, has good market knowledge, and is not driven by comfort-survival needs as the earlier studies suggest.

These skills of New Craftsman entrepreneurs may also be linked to their professional qualifications and previous experience with large private firms. A significant relationship was found between educational qualification and type of entrepreneur, with New Craftsmen reporting highest post graduation levels and Opportunistic entrepreneurs the lowest. This may be a reflection of different orientations towards time. For the New Craftsman, entrepreneurship may be a means of achieving professional freedom and fulfillment rather than financial returns. Hence education may be seen as a long-term investment in ultimately fulfilling that goal. Opportunists, however, have financial gains of entrepreneurship as the primary motivator, and hence opt for starting a new business earlier than other types.

Another interesting finding was that although “Push” entrepreneurs have the maximum number of years of work experience, the New Craftsman type reports the maximum number of organizations worked in. Cooper and Dunkelberg (1986) have explained this behaviour as linked to “difficulty in relating to authority figures” (: 56), which drives individuals to become job-hoppers, staying for short periods at many jobs. This hypothesis is supported by the fact that the “Push” entrepreneurs also report a high number of organizations previously worked in, suggesting that Need for autonomy, as defined in this study, is strongly linked with job-hopping.

All of the above contribute to a broad definition of the New Craftsman type, which constitutes the highly qualified entrepreneur coming from a professional background and experience, but at the same time possessing a degree of “discomfort with authority” which leads him to start his own business.

The Opportunistic Entrepreneur

The Opportunist type of entrepreneur, as identified in this research, is driven by opportunity recognition and a strong desire for wealth and status. This definition has some correspondence with the “promotion” type of entrepreneur described by Filley and Aldag (1978). This type of entrepreneur, like the “promotion” type, is driven by external approval and need for personal achievement, and is likely to have a more personal than professional style of leadership. Examining linkages with demographic variables, it was found that the largest proportion of respondents who were students prior to startup come from the Opportunist category. The Opportunists also have the lowest post graduation degrees. This fits in well with the fact that the rationale behind startup in this case is spotting an opportunity and expectation of financial gain, rather than a planned move.

The Managerial Entrepreneur

The Managerial type of entrepreneur corresponds to the “administrative” type identified by Filley and Aldag (1978), as well as the “managerial” type by Lafuente and Salas (1989) in that they are professional, rational builders, who are associated with skills and motivations that are normally referred to as “managerial”. They are also highly qualified (68.8% have postgraduate degrees), and come primarily from non-business backgrounds. Given their high administrative and conceptual skills, these entrepreneurs are likely to be rational decision makers, who can build processes and systems, and run their businesses more “professionally” than other types.

The Idea Driven Opportunists proved to be the most difficult to interpret, with high administrative and leadership skills, and high need for instrumentality of wealth and pursuit of an idea. Examining the background of these entrepreneurs, it is found that they are the youngest to start a business, and have the highest prior entrepreneurial experience. Moreover, the majority of these entrepreneurs (70%) come from business backgrounds, and the highest percentage (80%) report previous experience in own or family businesses. Taking all this into account, it is possible that this category is a kind of “business family

maverick”, that is, an individual who has broken away from the traditional business mould to pursue a business opportunity in a growth industry. While the idea remains the basis for the new business, the founder would probably run it like a traditional business. The small size of the sample (n=10) prevents us from making any generalizations about this type, beyond speculating that there may be a wider typology of entrepreneurs than existing literature suggests. However, there may be some degree of correspondence to the “innovator-entrepreneur” that was tentatively identified by Smith (1967), who did not fit into either the “craftsman” or the “opportunistic” category, but could not be elaborated by Smith (1967) due to inadequate data.

Type of Entrepreneur and New Venture Performance

It was found that Managerial and New Craftsman type entrepreneurs were significantly higher employment generators than “Push” and Opportunistic types. This is an answer to the fundamental question this research started with: is it possible to identify some characteristics of successful entrepreneurs? The results of this research point to the answer, at least partly, lying in certain combinations of skills and motivations which are more successful than others. This difference in performance can also be in part attributed to higher formal and social education (Lafuente and Salas, 1989), growth rather than comfort-survival orientation (Amit and Mueller, 1996), or even managerial youth (Child, 1974).

Implications and Conclusion

Implications for Future Research

Firstly, the operationalization of the entrepreneur as a combination of his skills and motivations has not been attempted earlier. Although the choice of variables for categorization has strong theoretical antecedents, no empirical research has been carried out with this operationalization. Moreover, since a significant association was found between type of entrepreneur and new venture performance, this

operationalization could be a significant contribution in the area of research focusing on identification of entrepreneurial characteristics associated with success.

As this was a single industry study in one country (India), the results obtained may not have high generalizability across industries and nations. Replicating the study with larger cross-industry and cross-national samples will help in identifying commonalities and differences in results, and making better generalizations about a larger population of entrepreneurs. Moreover, the Idea driven Opportunist cluster emerges as a “mixed” type, exhibiting some characteristics of all other types. A larger sample would help in defining this type more completely. Studies with longitudinal design can be used to capture the entrepreneurial skills and motivations at startup and performance after a “lag” period to establish the causality of the relationship between type of entrepreneur and New Venture Performance. Qualitative analysis could also provide a richer insight into the startup process and the effect of founding teams.

Implications for Venture Capitalists and Policy Makers

Trying to determine which new ventures are likely to succeed has traditionally been a challenging problem for venture capitalists. When a venture capitalist is approached for financing a venture, he often faces the problem of adverse selection (Amit and Muller, 1996). Since venture capitalists do try to evaluate the ability of the entrepreneur by trying to assess certain traits and behavioural characteristics of the entrepreneur (Sandberg and Hofer, 1987; Amit and Muller, 1996), they are hampered in this evaluation by the absence of any clear theory which predicts which characteristics increase the chances of success.

The findings of this study support Sandberg and Hofer’s (1987) suggestion that venture capitalists should focus on behavioural aspects of the entrepreneur rather than specific traits, since these appear to have significant linkages with New Venture Performance. Moreover, it also helps to distinguish those behavioural aspects that are linked to employment creation and growth in new ventures. Specifically,

Managerial and New Craftsman type of entrepreneurs, as defined by a combination of their skills and motivations, may have better chances of survival and growth than other types.

Any government or industrial policy to encourage employment and economic growth through new venture creation has to take into account differing incubation needs of different types of entrepreneurs (Lafuente and Salas, 1989). This research can form the basis for identifying “Pull” entrepreneurs and providing them with managerial and technical support in order to ensure their viability and continued existence and growth.

Implications for entrepreneurs

Finally, based on the finding that certain types of entrepreneurs outperform others, founders and potential founders can analyze their own skills and motivations. Knowing which behavioural aspects are linked to performance can help them either to supplement their skills through training in certain areas, or balance their own shortcomings with a complementary founding team.

Conclusion

Most of us have met individual entrepreneurs who closely resemble the “types” derived empirically in this study, and it is extremely satisfying in research to have intuition borne out and substantiated by empirical findings. However, the contribution of this study is in generating more questions than it answers. Although this study has many limitations (small sample size being the most obvious one), the findings were extremely exciting, and the richness of the data gave rise to many more interesting propositions for future research.

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Average age of founder	33.84 years (range from 16 to 55 years)
Average prior work experience of founder	8.15 years (range from 0 to 29 years)
Average age of organization	3.44 years (range 1 to 7 years)
Average employment size	34.8 employees (range from 1 to 450)
Average founding capital	94 lakhs (range from 0.05 to 5500 lakhs)

Table 1: Characteristics of sample

Skill Item	Component		
	1	2	3
Communication	.681		
Encourage differences of opinion	.679		
Encouraging employees	.639		
Long term investments	.636		
Prefer working in group	.604		
Customer and employee relations	.580		
Goal communication	.456		
Idea conversion	.452		
Involving people in decisions	.407		
Technical tasks delegated		.798	
Industry reputation non technical		.750	
Coordination tasks		.652	
Administrative tasks		.601	-.414
Generalist rather than functional specialist		.537	
Understanding industry and market			.690
Opportunity spotting			.682
Planning skills			.646
Monitoring political and economic situations			.585
Number of items with factor loading > .4	9	5	4
Reliability (Cronbach's alpha)	.73	.72	.61
% of Variance Explained	19.37%	16.84%	13.24%

Table 2: Rotated Component Matrix for Skill Items

Motivation Item	Component			
	1	2	3	4
Indirect benefits	.662			
Difficulty in finding job	.660			
Keep occupied	.657			
Work in location of choice	.630			
Flexibility for personal life	.499			
Welfare of relatives	.410			
Be own boss		.741		
Lead rather than be led		.660		
Freedom for own approach to work		.651		
Avoid unreasonable boss	.400	.627		
Use training better		.606		
Work with people I choose		.582		
Frustrations in earlier job		.479		
Desire for high earnings			.729	
Respected by friends			.688	
Status of family	.433		.668	
Take advantage of business opportunity			.505	
Financial independence	.411		.494	
Recognition for achievement			.487	.441
Develop new product/service idea				.738
Return to society				.667
To be innovative				.583
Follow example of person I admire				.529
Build something from nothing				.499
Number of items with factor loading > .4	9	7	6	6
Reliability (Cronbach's alpha)	.82	.78	.77	.67
% of variance explained	14.3%	13.3%	12.0%	10.4%

Table 3: Rotated Component Matrix of Motivation Items

Factor	Cluster Mean Square	df	Error Mean Square	df	F	Sig.
Team leadership skill	4.002	4	.658	94	6.079	.000
Administration skill	10.525	4	.603	94	17.454	.000
Environmental skill	6.306	4	.650	94	9.701	.000
Comfort-survival reasons	7.443	4	.595	94	12.509	.000
Need for Autonomy	5.418	4	.593	94	9.142	.000
Perceived Instrumentality of Wealth	11.041	4	.520	94	21.238	.000
Need to build on product idea	13.718	4	.481	94	28.517	.000

Table 4: ANOVA of Factors Used in Cluster Analysis

Cluster Type	Opportunists		“Push” type		Managerial		New Craftsman		Idea Driven Opportunists		Overall	
	Mean/ %	SD	Mean/ %	SD	Mean/ %	SD	Mean/ %	SD	Mean/ %	SD	Mean/ %	SD
<i>Individual Characteristics</i>												
Age**	32.68	8.23	38.46	6.85	34.06	7.94	34.56	7.93	28.10	4.72	33.73	7.92
Age at startup of current business**	28.25	7.33	35.38	6.60	30.34	8.74	31.44	7.50	25.10	4.43	30.06	7.89
Age at startup of first business***	24.57	5.16	32.69	6.16	28.50	6.14	30.63	7.21	22.80	2.15	27.71	6.52
Parents from business background***	25.0%		38.5%		21.9%		0%		70%		26.3%	
Educational Qualification												
Postgraduation*	35.7%		61.5%		68.8%		75.0%		60.0%		58.6%	
Technical education*	64.3%		46.2%		37.5%		37.5%		20.0%		44.4%	
<i>Work experience</i>												
Number of years of work experience**	6.55	6.67	12.81	5.75	8.48	7.33	8.66	7.05	3.70	2.50	8.05	6.87
Previous work experience in private firms**	57.1%		53.8%		46.9%		81.3%		20.0%		53.5%	
Previous experience with large firms (> 1000 employees)***	59.3%		75.0%		55.2%		91.7%		20.0%		60.0%	
Number of shareholders at startup*	1.89	0.79	2.46	1.13	2.88	2.24	2.63	1.31	1.80	0.92	2.39	1.56
Number of employees at startup	4.90	4.41	5.38	3.69	11.65	17.57	8.44	8.49	4.90	4.09	7.72	11.24
Number of employees (current)**	16.71	13.90	14.46	8.79	62.59	101.90	41.25	34.18	22.70	18.45	35.81	63.08
Founding capital***	9.82	16.31	4.42	5.05	234.06	968.69	130.51	240.86	6.5350	6.2161	100.77	562.35

*p < 0.1, ** p < .05, *** p < 0.01

Table 5: Relationships with External Variables

		Sum of Squares	df	Mean Square	F	Sig.
Annual employment creation	Between Groups	728.990	4	182.248	2.575	.043
	Within Groups	6086.889	86	70.778		
	Total	6815.879	90			
% growth in employment	Between Groups	60.327	4	15.082	.770	.548
	Within Groups	1685.435	86	19.598		
	Total	1745.762	90			
Annual % growth in employment	Between Groups	12.973	4	3.243	.991	.417
	Within Groups	281.476	86	3.273		
	Total	294.449	90			

Table 6: ANOVA of New Venture Performance for Types of entrepreneur

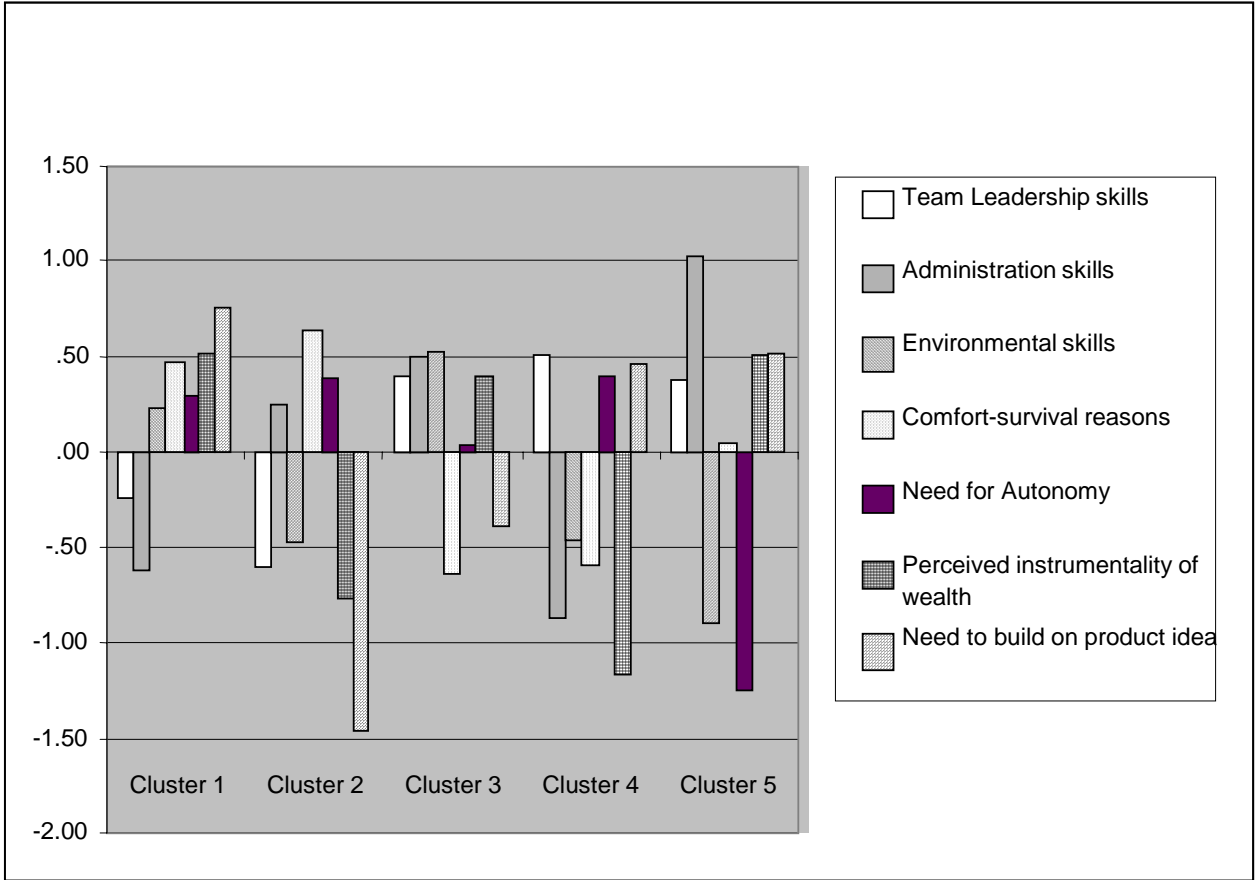


Figure 1: Entrepreneur Profiles

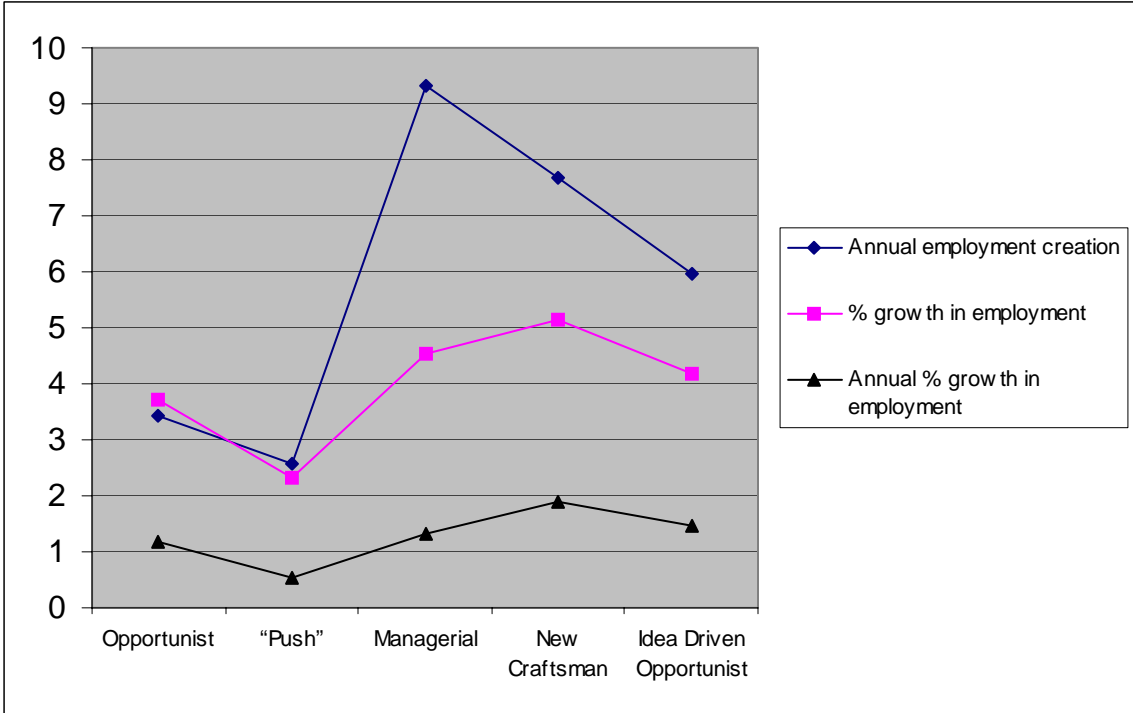


Figure 2: Type of Entrepreneur and NVP