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# **RESEARCH INTO ENTREPRENEUR IDENTIFICATION AND DEVELOPMENT**

**An In-House Review**

**And**

**Critique of Findings**

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## EXECUTIVE SUMMARY

The Research on Entrepreneur Identification and Development Project started 3 years ago as an ambitious effort to show that an individual's performance in starting and developing a business could be partially predicted from a knowledge of certain personal characteristics. The basic point of departure for the research was the assumption that certain entrepreneurial characteristics could be determined from interviews conducted with individuals who are in business and in turn that it would be possible to demonstrate which entrepreneurial characteristics were more common among the relatively successful businesspersons.

Once the characteristics of the successful businesspersons were known (a causal relationship was to be assumed) it would be possible to use them to pre-select promising business managers. Alternatively, a knowledge of the characteristics of superior business managers could be used in developing training programs designed to enhance management performance.

McBer and Company, with long experience in entrepreneur definition and development, was selected as contractor for the research phase (to determine the characteristics associated with superior business performance). McBer's work is now completed. Management Systems International was selected for the training program development and testing; their work is still on-going. This report covers only the work of McBer.

The research was undertaken in three countries to identify through personal interviews the characteristics which differentiated superior from average experienced businesspersons. The research was to be in two phases and was to ultimately involve several hundred businesspersons.

Phase I was completed, but problems were encountered in the process. Initial findings were not very encouraging. In a review after Phase I, the original scope of the project was shown to be too ambitious, given time and resources available. There were also judged to be needs for strengthening data collection and analytic processes in order to develop useful findings from Phase II.

After the mid-project review the number of countries for research in Phase II was reduced to two and recommendations were made for certain steps to improve data collection and analysis.

In April, 1987 the contractor, McBer, provided its final report on the project. In summary McBer's conclusions are:

1. "There is a moderate degree of consistency in the results of these studies [Phase I and Phase II in the several countries]. The following [personal] competencies differentiated successful and average groups of entrepreneurs in more than one study.

Sees and Acts on Opportunities  
Concern for High Quality of Work  
Commitment to Work Contract  
Systematic Planning  
Self Confidence" (p.236)

2. "Once again, caution is needed in interpreting the results because of the differences among the studies. In addition, the competencies differentiating the groups vary [underlining mine], depending on the statistical analysis used." (p.235)

3. "The first three of these [see #1, above], as well as some competencies that were significant in only one study (Initiative, Persistence, Efficiency Orientation), are clearly related to the concept of *Achievement Motivation* that has served as the basis of many entrepreneurship training programs." (p. 236)

4. "[However] Not all of the competencies differentiating the successful from average groups were clearly related to achievement or task orientation." (p. 236)

5. "Someone for whom these themes [the assumed Achievement Motivation themes] are important may be likely to develop competencies like Information Seeking, Concern for High quality of Work and Commitment to Work Contract." (p. 236)

6. "Variables based on personal background and demographic information generally failed to differentiate the successful from the average groups of entrepreneurs." (p.234)

A.I.D. Comments--The McBer conclusions infer that their analysis demonstrates general support for the initial working assumption that higher Achievement Motivation will be demonstrated by the superior businessperson. It is the view of the project office, S&T/RD in A.I.D., that this conclusion is not supported by the analysis and that no such inference should be made. The relationships cited above are not consistent, a fact that is noted by McBer. They exist in some of the studies and not in others. Within a study the relationships are shown to exist with some statistical analysis tools and not with others. Not fully explained by the contractor is the fact that although statistical significance is often obtained, the pragmatic ability to separate the superior from the average businesspersons using these findings is quite weak.

Moreover, the assumption (see #5 above) that High Quality Work and Work Contract Commitment may reflect characteristics of persons with high Achievement Motivation is precisely that, merely a statement of possibility. Thus, S&T/RD tends to feel that the work as reported on by McBer simply does not offer a firm basis for concluding that Achievement Motivation characterizes those persons who are classed as superior performers in this research.

Given the money spent on collecting the interview data and the potential importance any conclusions as to the sources of business success would have for development planning, A.I.D. concluded that a more careful and thorough analysis of the data should be made. It was decided to conduct an in-depth analysis of these data using in-house resources.

The conclusions from this in-house effort are:

a. The data are not as useful as it was hoped would be the case. There may well be a large error or noise component in these data--certain evidence supports such a conclusion. *In any case there is only a limited ability to statistically predict indicated business performance from a knowledge of the personal characteristics of the businesspersons interviewed during the course of this project.*

b. Either because there is no real relationship or because the noise/error component masks a real relationship, the data set does not support the initial working hypothesis of the project. *That is, the data do not show a consistent and meaningful relationship between the Achievement Motivation orientation of these businesspersons and their indicated business performance.*

c. The one pattern that seems to be suggested, rather consistently but not overly strongly, by these data is that *persons who know their business thoroughly and make it a conscious policy to keep that knowledge up-to-date are somewhat more likely to have good business performance*. It is probably worthwhile to consider this a subject for further research by those interested in the field of business management.

d. A second possible positive relationship is that *those businesspersons with good management information/monitoring patterns may be expected to be more successful*. The relationship found is not strong, but is nonetheless of sufficient consistency to suggest the utility of further research.

e. At this time it has not been proven that personality traits may be used as criteria in predicting a person's likelihood of success in starting and managing an enterprise. On the contrary our interpretation of the evidence generated from this study suggests that many different types of persons can be successful. Consequently, *this study offers no support for the proposition that training people so as to enhance certain personality traits will lead to improvement in their business management performance*. It has also to be said that this study offers little support for concluding that personality variables clearly have no role in determining business success.

## ACKNOWLEDGEMENT

*Peggy Pertsch of the University Wisconsin Graduate School of Business did much of the statistical work reported on in this document. Her extensive involvement in the project was extremely important in its final development.*

# **MAIN REPORT**

## BACKGROUND

The Research on Entrepreneur Identification and Development Project started 3 years ago as an ambitious effort to show that an individual's performance in starting and developing a business could be partially predicted from a knowledge of certain personal characteristics. The basic point of departure for the research was the assumption that certain entrepreneurial characteristics could be determined from interviews conducted with individuals who are in business and in turn that it would be possible to demonstrate which entrepreneurial characteristics were more common among the relatively successful businesspersons.

Once the characteristics of the successful businesspersons were determined (a causal relationship was to be assumed) it would be possible to use them to pre-select promising business managers. Alternatively, a knowledge of the characteristics of superior business managers could be used in developing training programs designed to enhance management performance.

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The research was undertaken in three countries to identify through personal interviews the characteristics which differentiated superior from average experienced businesspersons. The research was to be in two phases and was to ultimately involve several hundred businesspersons.

Phase I was completed, but problems were encountered in the process. Initial findings were not very encouraging. In a review after Phase I, the original scope of the project was shown to be too ambitious, given time and resources available. There were also judged to be needs for strengthening data collection and analytic processes in order to develop useful findings from Phase II.

After the mid-project review the number of countries for research in Phase II was reduced to two and recommendations were made for certain steps to improve data collection and analysis.

In April, 1987 the contractor, McBer, provided its final report on the project.

Results obtained from this work were rather disappointing. Questions continue to exist about the quality of the data generated. There is still the feeling that the analysis of the data was not as careful as might be. For these reasons S&T/RD/EED has undertaken a thorough in-house analysis of the best subset of the data collected during the project. This report summarizes the contractor's findings and gives the findings from the in-house analysis.

## L THE CONTRACTOR'S CONCLUSIONS <sup>1</sup>

A primary objective in the entrepreneur project was to determine if there were certain personal attributes (Personal Entrepreneurial Characteristics or PECs) that differentiated superior from average businesspersons. About 25 Personal Entrepreneurial Competencies (PECs) were developed and investigated by the contractor.<sup>2</sup> The characteristics ranged from those which can be thought of as generalized personality-related concepts, such as "high initiative," "aggressiveness" and so forth, to those of a somewhat more business-specific or acquirable nature such as concern with high quality product, systematic planning and information seeking.

The basic structure of the research was quite straightforward. It involved 1) the selection of samples of experienced businesspersons in three countries, 2) the categorization of those businesspersons into superior and not superior categories, 3) the determination of the degree to which the subjects demonstrated the Personal Entrepreneurial Characteristics (PECs) and 4) finally the determination of differences in PEC patterns between the two sets of businesspersons in order to demonstrate the competencies that characterized the superior set of businesspersons.

The project was to involve a rigorous empirical examination of a moderately large cross-national sample of businesspersons. It was to have a widespread impact for private sector development activities. The final product was to be a set of PECs which characterized superior businesspersons and which did not occur with similar frequency among the personal characteristics of those in the not-superior set of businesspersons. This information was to be the basis for development of either, or both, training programs for budding entrepreneurs or screening devices to select those with more business management potential.

A certain degree of confusion arose in the project due to the breadth and undifferentiated nature of the concepts used in developing a typology of individuals. There was arguably insufficient attention given to the rigorous definition of the initial typology. However, the contractor set about conducting this research in Ecuador, India and Malawi. The research was conducted in two phases. In Phase I a number of businesspersons were selected from each country and categorized as to "business capability." These businesspersons were interviewed. On the basis of the interviews their PECs were determined. At the end of Phase I an analysis of the relationship between the PEC scores and rated business capability was conducted across the three countries. This analysis was to

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<sup>1</sup>These conclusions are taken from McBer and Company, *The Identification and Assessment of Competencies and other Personal Characteristics of Entrepreneurs in Developing Countries*, Final Report A.L.D. project # 936-5314, April, 1987.

<sup>2</sup>The underlying theory behind the development of the characteristics assumed to be relevant in entrepreneurial or business management performance derives from the early work by David McClelland on achievement motivation and from McBer's continued development of these concepts. For a more thorough discussion see:

David C. McClelland. *Achievement Motivation can be Developed*, Harvard Business Review, Nov-Dec, 1965.

David C. McClelland and Winter, D.G. *Motivating Economic Achievement*, Free Press, New York, 1965.

be the basis for refining the theory, improving the interview process and for suggesting possible shortcomings in the research.<sup>3</sup>

The results from Phase I were not encouraging. The data from Ecuador ultimately were judged to be not usable. The Malawi data seemed more internally consistent but produced no usable evidence as to what differentiated better businesspersons. The India data appeared to be of better quality, although the relationships between measures of business capability and personal characteristics were weak and not always consistent. Nonetheless there was some promise shown in the data collected on Indian businesspersons.

Consideration was given to stopping the project at the end of Phase I. However, it was decided to go ahead with Phase II in India and Malawi. In this Phase sets of 92 experienced businesspersons were selected for observation in each country. Half of the 92 were to be persons rated as having superior business capacity and half to be from among businesspersons who were not rated as possessing superior capacity. Also, for Phase II, the set of PECs was reduced to a core fifteen. Lengthy interviews were conducted with each of the businesspersons to determine the extent to which they exhibited the fifteen characteristics judged to be critical in determining business capacity. In Phase II more attention was also given to ascertaining background characteristics. Such indicators as education, family wealth, social class and so forth were observed for each respondent involved in the sample.

An analysis (for Phase II data) of the relationships between the PECs and rated business performance completed the contractors' work on this part of the project. For the data from Malawi, this analysis showed that there were no relationships of any consequence between the PECs and indicated business performance. As a result, the Malawi data have been largely ignored in developing such final conclusions as are made from the project.

The contractor then, with the project office's concurrence, concentrated on the Phase II data from India. The contractor concluded from its analysis that there were significant and meaningful relationships between the PECs and rated or demonstrated business capacity.

1. "Variables based on personal background and demographic information generally failed to differentiate the successful from the average groups of entrepreneurs." (p.234)
2. "In contrast to the personal variables, competencies...often differentiated successful from average groups." (p.234)
3. "There is a moderate degree of consistency in the results of these studies [Phase I and Phase II in the several countries]. the following [personal] competencies differentiated successful and average groups of entrepreneurs in more than one study.

Sees and Acts on Opportunities  
Concern for High Quality of Work  
Commitment to Work Contract  
Systematic Planning  
Self Confidence" (p.236)

4. "The first three of these [see #3, above], as well as some competencies that were significant in

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<sup>3</sup>See McBer & Co. *Entrepreneur and Small Enterprise Development*, Second Annual Report, March 25, 1986.

only one study (Initiative, Persistence, Efficiency Orientation), are clearly related to the concept of Achievement Motivation that has served as the basis of many entrepreneurship training programs." (p. 236)

5. "Someone for whom these themes [the assumed Achievement Motivation themes] are important may be likely to develop competencies like Information Seeking, Concern for High Quality of Work and Commitment to Work Contract." (p. 236)

McBer does add a cautionary note.

6. "Once again, caution is needed in interpreting the results because of the differences among the studies. In addition, the competencies differentiating the groups vary [underlining mine], depending on the statistical analysis [technique] used." (p.235)

However, the contractor's final report seems ultimately to accept the conclusion that the causal relationship of Achievement Motivation related PECs to Business Performance has been demonstrated.

"Many of the competencies that discriminated successful from average groups of entrepreneurs are more like personality traits than skills. Examples of trait-like competencies include Persistence, Concern for High Quality of Work, Self Confidence, and Commitment to Work Contract. These competencies probably show considerable stability over time and may not be easy to develop or train. If these competencies are critical to entrepreneurial success, it may be easier to select people who already possess these competencies than to try to develop the competencies through training." (p.242)

On reviewing the contractor's final report, S&T/RD was not satisfied that meaningful relationships had been demonstrated, nor that the relationships which did appear to exist, as weak as they were, were not best explained as reflecting possible biases in the data.

Because of the importance of the research questions regarding characteristics of superior businesspersons and because of the amount of money invested in collecting data, it was decided to conduct a thorough in-house review of the India, Phase II data. This report documents that review and gives our in-house conclusions as to what may be said to be demonstrated by these data. A full set of McBer reports is available for those interested.

## II. S&T's ANALYSIS

### DIFFERENTIATING PECS

**Theoretical Reasoning** As noted earlier, S&T felt that the PECs were rather inhomogeneous in nature. It was decided that the selected Personal Entrepreneurial Competencies measures could be usefully thought of as falling into three basic classes--1) indicators of personal characteristics which are close to personality and therefore not readily changed; 2) business management style indicators that represent behavioral tendencies that are more readily adopted or dropped when recognized as useful, or not useful; and 3) business skill indices which are related to clearly learned attributes. These differences are important because at one end a PEC might represent a characteristic that could be learned in training programs, while at the other end a PEC could be a rather unalterable trait. Knowledge of such unalterable traits could only be of practical use in developing a screening tool. Thus, the different PECs carry significantly different operational implications, even if shown to be valid as predictors.

A number of variables exist in these classes. Because of the non-homogeneity among the competency indicators and because of the different operational implications (learnable attributes at one end versus difficult-to-change basic personality factors at the other) S&T felt it important to treat the PECs by sub-group.

Group A. This group contains the PECs seen as akin to basic personality. Such indicators used by the contractor are Aggressive type, High Initiative and so forth.

Group B. This includes PECs usefully viewed as related to business management style. These indicators are judged to be in-between basic personality and consciously learned behavior, having characteristics of both. Indicators here include the McBer competencies of "Concern with High Quality Work," "Monitoring of Business," "Orientation Toward Efficiency" and so forth. These seem to represent indices of how the respondent chooses to run his or her business. While perhaps partly related to personality these indicators may also be developed as habits of business behavior.

Group C. These are business skill indicators. One or two of the McBer indicators of competency can be usefully thought of as business-skill related; these are attributes that are predominantly acquired, either through training or from long experience. In particular Systematic Planning is thought to be skill related. This class of competency indicators is judged to be least related to personality.

To determine empirically the degree to which these clusters actually exist in the data, a correlation matrix and a factor matrix were computed using the observed values on these fifteen variables for the 92 businesspersons. It was hoped that by using the factor analysis that it would be possible to reduce the number of variables from 15 to some lesser number--hopefully one for each of the three groups discussed above.

**Empirical Results** Both the correlation matrix and factor analysis matrix (appendix A) show that one strong cluster and one weak cluster exist in these data. The strong cluster can be interpreted as representing business management style. We have called it modern management style. The PECs

contained in the cluster are:<sup>4</sup>

Primary (strongly related)

Concern with High Quality (HIQUAL)  
Sees and Acts on Opportunities (SEE/ACT)  
Problem Solving Approach (PROSOLV)  
Monitoring of Business (MONITOR)  
Efficiency Orientation (EFFIC)  
Self Confidence (CONFID)

Secondary (weakly related)

Initiative (INIT)  
Commitment to Contracts (COMMIT)

The average of the intercorrelations for the six primary competencies in the cluster is 0.61 while the minimum correlation is 0.52. This indicates a moderately strongly interdependent cluster. The titles of the competencies are not totally descriptive. But if one delves into the detailed definitions most of these competencies seem to be indicating, in the first instance, a tendency to "run a tight ship" in the modern business school sense of the phrase. It is only Self-Confidence which appears to represent a significantly different concept. Empirically, the analysis then shows there is good evidence of a cluster of learned business behavior indices which account for much of the variance in the competency observations. A single central underlying pattern of careful and thoughtful business management seems to be manifested in these conceptually similar indicators of behavior.

For this work, it is accepted that such a cluster, representing management style, exists. No one of the competencies measured seems to be more central to this cluster than does any other. Thus, it was decided to create a composite indicator of the central tendency using factor analysis. A principal component factor was extracted from the six primary members of the cluster and a composite indicator created by computing factor scores.

The factor loadings on this composite indicator are:<sup>5</sup>

	<u>Loading</u>
High Quality	0.84
Self Confidence	0.86
Sees and Acts	0.82
Problem Solving	0.83
Monitoring	0.79
Efficiency	0.78

As can be seen the factor loadings are very high indicating, if you will, the composite measure is effectively representing the tendency, if such exists. This composite will be used as one of the primary independent variables in the attempt to predict business management performance from a

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<sup>4</sup> See McBer's final report for more information on the operational and theoretical meaning of the 15 competencies.

<sup>5</sup> The factor loadings are equal to the correlations between the original variables and the created composite.

knowledge of the manager's personal characteristics.

The secondary competency cluster (factor) was much looser than the first. It also accounted for a rather small portion of the variance in the competency data matrix. Thus, it is conceptually less powerful as an index to represent basic patterns in the competency matrix. The cluster is, however, composed of competencies which seem most appropriately referred to as personality indicators. Thus, it does conform to the initial expectation (theory) that there would be such a clustering of PECs.

Because of the lower correlations between the variables in this cluster, there was a reluctance to treat only a single composite variable, as was done with modern management style. Instead from these several variables the following composite and raw measures are used as indicators of personality type:

a. Aggressive Personality--This is derived from a principal component factor fit to the four variables of Persistence, Assertiveness, Persuasiveness and Use of Influence Strategies. The fit is only moderately good empirically, but the composite is robust in a theoretical sense.

b. The two most prominent original personality indicators from this cluster, Assertiveness and Persistence, are also included as independent variables. Their inclusion reflects the centrality of these two variables in the original concept of entrepreneurial personality type and the relatively weak correlations between the members of the cluster.

The third expected cluster, that of business skills, did not show-up in the factor analysis results. This probably happened because of the limited number of measures related to skills that were included among the 15 final PECs. Therefore a limited portion of the data variance is accounted for by skills performance. Thus, there is no suitable measure of this conceptual category for use in the final analysis.

However, two other variables are included in the final set of independent variables chosen to represent the competency set. Information Seeking is included because it is an empirically robust measure, there are few zero scores, and because in McBer's analysis it was the single best predictor of their measure of business performance. Initiative is included because of our perception of its centrality to the original concepts of the entrepreneurial personality type.

Thus, the fifteen competency indicators are reduced to a set of six measures. Two of the three classes expected to be found are represented. Group A is represented by the Management Style composite and by Information Seeking. Group B by the Personality composite and the three separate personality measures.

These variables, some as original data and others as composite estimates, will form the set of trial predictors for our examination of the correlates of business management performance.

## BACKGROUND CHARACTERISTICS

As noted, the basic objective of the project was to ascertain the degree to which business management performance related to PECs. Background characteristics, however, were also believed to be potentially important in *real* and *perceived* business performance and several background indicators were thus included in the analysis:

1. to determine if there was any evidence indicating that the panels' selection of superior and average businesspersons might have been biased by their perceptions of the social and economic

backgrounds of those businesspersons.

2. to determine the extent to which, notwithstanding PECs, individuals from higher economic and social classes appeared to do better in business.

McBer obtained data on a moderately wide array of background characteristics. As with the competency data, it was decided to use correlation and factor analysis to determine the patterns of relationships among these background indicators. Ultimately, the hope was to reduce the number of background descriptors to a minimum. It was expected that perhaps two clusters of background data would exist—one representing social class/prestige and the other family wealth.

The following background indices were included in the analysis.

Overall caste (CAST)  
High caste (HICAST)  
Business caste (BUSCAST)  
Years of education (EDUC)  
Source of start-up financing for the business--self or bank (FINANCE)  
No. of relatives in professions and government (RELAT)  
No. of rooms in family's home (ROOMS)  
No. of languages spoken (LANG)  
Received technical training (TRAIN)  
Father's occupation (OCCUP)  
Stated reasons for starting a business (BUSMOTIV)  
Years in business (EXPER)

The caste variables used here require some explanation. More than 30 different castes were represented by the 92 respondents available for this analysis. Based on consultation with a colleague of Indian extraction three caste indicators were formulated from these thirty. A general indicator of caste rank was created in which Brahmins received a score of four, members of a business caste a three, landowning caste a 2 and so-called "scheduled" castes a 1. Uncertain as to how accurate this ranking was, two other indices were included. One was business caste and the other landowning or high caste, each was scored as a 0,1 measure.

The factor matrix resulting from the analyses of these data is shown in Appendix B. As seems typical of these data, the demonstrated empirical patterns were weak at best. There was in this case very little correlation between the various indicators of background. This seems at variance with common wisdom.

It is counter-intuitive to find that there is so little correlation between indicators such as father's occupation, number of rooms in the family home, years of education, family as source of business financing and so forth, all of which seemingly would relate to basic wealth and status of the family. This recurring absence of relationships which conventional wisdom indicates should be present tends to suggest that the data are of rather poor quality. They must consequently be treated with care.

Testing for Panel Bias--It was thought that the possibility for bias in the panels' selections of superior entrepreneurs was significant. The most likely bias was judged that of the panels tending to favor higher social class. It may be that the judges would find that they were more empathetic with, and knew better, persons from backgrounds similar to their own. A goal in the use of the background data was to find a generalized measure of social class and to use it to determine if there was evidence of bias in panel classification.

It was not possible, however, to generate a single satisfying indicator of social class. Instead, based on the empirical relationships found in the correlation matrices and the factor analyses, six separate indicators of social background were constructed for these individuals. These are:

- Family as Source of Initial Financing for Business
- Years of Schooling
- Number of Relatives in Professions and Government
- Business Caste
- Overall Caste
- A Composite Index of Background

All six were used in the analysis of business performance.

With the development of the best summary measures of personal competencies and of background indices, developed from detailed exploration of the interdependencies in the raw data, the next step was to define a suitable measure, or set of measures, of business performance.

## BUSINESS PERFORMANCE

The panel selection process used by the contractor for determining who were the superior businesspersons was one that was essentially unobservable as to its rationale.<sup>6</sup> It was a process inherently subject to bias, a bias neither readily observable nor controlled for. Thus, S&T attempted to develop measures of business performance which were derived from sources other than the panel rankings. These other measures could be combined with panel ranking, or treated in opposition if the results so justified.

During the interview each of the respondents was asked for certain information about his/her business. The information requested included business sales and profits for each of the three years before the interview and the sales and profits in the second year of the business. In addition each was asked how well his/her business was doing now compared to two earlier benchmark years. A matrix of data on these items was subjected to correlation and factor analyses. The factor matrix is attached as Appendix C.

Once again a great scatteration was present in the data. The panel ratings did not correlate strongly with the "objective" (sales, profits, etc.) indicators of business performance. Thus, the businessperson rated as superior by the panels did not in general have a business with higher reported sales, with higher profits or with a higher ratio of profits to sales. Moreover, the correlation of high sales with high nominal profits was weak and it was almost zero with high rates of profits.

The highest correlation was between the panels' judgments and the respondents' own judgments about how well their business had done in the most recent year. Why it is that the judgmental items correlate more strongly than do the "objective" indicators is a puzzle.

However, because of the scatteration there was again a felt need to include a number of indicators of business performance. The diversity of patterns that these data showed with respect to indicated

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<sup>6</sup>McBer's explanation as to how the panel ranking is done is not totally clear. Pages 16 and 17 of the Final Report by McBer provide the best explanation available.

performance meant that no one measure could represent the variations present. The number six reappeared. This came about empirically, not with pre-intention. The six measures of business performance chosen for the final analysis are:

- Panel Rating
- Composite of Self Rating and Panel Rating
- Composite of Profits and Panel Rating
- Profit Rate
- Recent Business Growth
- Business Size

The low correlation between the various business performance indicators, particularly between rate of profits and panel rating, remained disturbing. If a panel selection bias existed as was thought possible, then perhaps this bias was masking what was plausibly a "true relationship"--that superior businesspersons would tend to generate a higher rate of profits. It did not seem that including the six different indicators itself would be sufficient. How was one to determine which of the measures was superior in the event of determination of conflicting relationships?

It was decided to assemble reduced data sets. The reduced sets would be formed by excluding those persons who were coded as "inconsistent." Inconsistent here was defined as having high rates of profits and a low panel rating, or vice-versa. If panel bias was creating the inconsistency in the performance data then some of that inconsistency might be excluded by dropping the cases in which objective performance and panel judgement were in conflict.

The rate of profit variable was a continuum so the question was raised where did inconsistency lie along the scale. A "mild test" resulted in the throwing out of 31 "inconsistent" cases and a very stringent test resulted in the discarding of two-thirds of the cases. Particularly the latter case created a data set in which panel judgement and objective indications of rate of profit were substantially consistent in indicating superior and average performers.

The correlation and factor analyses were repeated for the two reduced data sets containing the more "consistent" subjects. It was found that reducing the sample set from 90 observations to 59 more consistent and then to 24 most consistent had virtually no impact on the basic structure of the data.

Correlation matrices and factor analyses were done for each of three data sets--90, 59 and 24 observations. There was remarkably little variation in either the correlation matrix or the factor matrix. In the correlation matrix pairwise correlations seldom deviated by more than 0.03 from one data set to another. The factor structures that were found remained unchanged across all three data sets.

**Factor Structures for the 90, 59 and 24 Observation Cases** The controlling case is the 90 observation set. This set contained data for all respondents, excluding the two individuals for whom missing values predominated. As noted, in this set of data there was an unexpected degree of independence among the variables used to represent business performance. Essentially five separate factors were derived, with a structure that indicated remarkably little overlap between the factors. The five factors are:

1. Sales--A size or quantity of sales factor in which sales in previous year, two years earlier, and three years earlier were the predominant variables.
2. Profits--A profits factor in which profits in the previous year, two years earlier, and three years

earlier were the predominant variables.

3. Profit Rate--A rate of profits factor in which the ratio of profits to sales in the previous year, two years earlier, and three years earlier were the predominant variables.

4. Growth--A rate of change in business factor in which variables computed by subtracting earlier sales from recent sales and earlier profits from recent profits were the predominant variables.

5. Rating--And finally, a rated performance factor in which the panel judgment dominated, but in which self-perceptions of one's business doing better also loaded.

For the 59 observation case the character of the factor matrix was essentially the same as the 90 observation case. The one change of consequence undoubtedly occurred because of the nature of the test used to discard subjects. Those persons who showed an inconsistency between their record of profit and panel rating were removed from the data set. This of course increased the correlation between panel rating and the rate of profits. It also coincidentally increased the correlation between panel rating and the self rating (how well is business doing now compared to earlier years).

The results for the very stringently defined data set of 24 observations are essentially the same as for the other two sets. Only the relationships between panel rating and self rating and rate of profits are further enhanced.

The primary loadings for the principal factors for the three cases are given below. Only loadings above 0.4 are listed.

Variables	<u>Factor Loading by Case</u>		
	<u>90obs</u>	<u>59obs</u>	<u>24obs</u>
	<u>Factor One--Sales</u>		
Sales Last Yr	0.92	0.93	0.94
Sales 2 Yrs Ago	0.96	0.97	0.99
Sales 3 Yrs Ago	0.97	0.97	0.99
	<u>Factor Two--Profits</u>		
Profs. Last Yr.	0.73	0.72	0.73
Profs. 2 Yrs Ago	0.90	0.91	0.89
Profs. 3 Yrs Ago	0.93	0.92	0.92
	<u>Factor Three--Profits Rate</u>		
P/S Last Year	0.70	0.65	0.81
P/S 2 Yrs Ago	0.90	0.86	0.93
P/S 3 Yrs Ago	0.47	0.48	0.37
Rec. Bus. Impr	--	--	0.55

Factor Four--Growth

Profs Yr 1 - Yr 3	0.95	0.94	0.96
Profs Yr1&2 - Yr 3	0.94	0.93	0.94
Sales Yr 1 - Yr 3	0.69	0.72	0.74
Sales Yr 1&2- Yr 3	0.67	0.70	0.78
Profs Yr 1	0.57	0.57	0.55
Profs Yr i - Yr 2	0.40	0.38	0.33

Factor Five--Rating

Panel Rating	0.91	0.90	0.90
Bus Impr last yr	--	0.57	0.54
Bus Impr ovr 3 yrs	--	0.33	0.35

As seen, the factor structures are for practical purposes identical. There is a distinct tendency for amount of sales, amount of profits, the rate of profits, the rate of business growth and the self- and panel-ratings to be unrelated to one another across the three data sets, a remarkably consistent overall pattern. The single exception is that when the 24 observation data set is analyzed the self-rating variables tend to load on the profit rate factor. The change is not great and not of obvious theoretical significance. It has consequently been ignored.

It is hard not to conclude from these empirical findings that the data have a large noise component, for surely in some real sense these various measures of business performance must be correlated with one another. It is particularly disturbing to find that absolute sales and absolute profits do not correlate more strongly. Surely a large business is going to make absolutely more profits, on the average? Perhaps the consistency in the patterns is that of random noise.

However, given the scatteration, there seemed little choice but to adopt a wide variety of measures of business performance, leaving open the question of which measure "truly" represents the conceptual factor of "business management capability."

Six indicators of business performance were chosen for the analyses undertaken to determine the degree to which indicated performance could be predicted from a knowledge of personal characteristics and background indicators of the respondents.

Some of the discussion below is differentiated for the three data sets, but as the above analysis suggests the relationships, or lack thereof, in large measure remain constant across all data sets.

At this point in the analysis the data have been sifted and boiled down. Two sets of independent variables have been assembled--one representing PECs and one representing background. A third set of "dependent" indicators have been assembled to represent business management performance.

The final step is to perform the analysis which was defined by the project purpose--that of determining a set of PECs which will discriminate superior from average businesspersons. This final step is that of ascertaining:

"While controlling for possible biases, are there PECs which can be employed to discriminate the superior from the not superior subjects in these data sets?"

## PREDICTING BUSINESS PERFORMANCE

Three principal statistical techniques were employed to determine the extent to which business performance could be predicted from a knowledge of personal characteristics and personal background. Correlation and factor analysis were employed to examine the overall patterns in the matrix constructed from the 18 final variables. Based on the empirical observations and on pre-project theory as to expected relationships, multiple regression was used to determine the extent to which values on the business performance indicators could be predicted using the independent variables representing the businesspersons measured competencies and background characteristics. The background measures and the reduced data sets are employed primarily to test for and to attempt to control possible bias.

The factor analysis suggested that only four of the performance variables (panel rating, profit rate, growth and size) could possibly be meaningful. The remaining analysis used only these four which eased the interpretation exercise somewhat.

**Correlations** The following table contains the inter-correlations between these four measures of business performance and between the independent variables developed in the earlier analyses. Only independent variables which have at least one correlation with one of the factors of 0.25 or more are listed in this table.

<u>Independent Variables</u>	<u>Performance measures</u>			
	<u>Panel Rating</u>	<u>Profit Rate</u>	<u>Growth</u>	<u>Size</u>
Personality				
Initiative	0.12	0.25	0.20	0.06
Persistence	0.34*	0.18	0.17	0.10
Personalitytype	0.28	0.27	0.20	0.05
Manage Style				
Infoseeking	0.48**	0.33*	0.37*	0.34*
Managestyle	0.20	0.29*	0.47**	0.33*
Background				
Relat in Govt	-0.06	-0.03	-0.15	-0.29*

\* Significant at 0.05

\*\*Significant at 0.01

Among the personality variables only Persistence relates in a significant manner to any of the performance measures. Persistence shows a correlation of 0.34 (10 percent of variance) with Panel Rating. However, Persistence relates significantly only to Panel Rating. Information Seeking and Management Style on the other hand, relate to most of the performance variables, particularly to the objective measures of growth and size. However, even for these variables the correlations are rather low indicating only a marginally meaningful relationship in any predictive sense.

The correlation matrix suggests that there is limited capability for empirically predicting business performance from a knowledge of scores on the personal competency or the background variables. Multiple regression was, nonetheless, employed to determine if a combination of variables would enhance the predictive power. Each business performance measure is examined separately.

**Panel Rating** To test for possible rater bias, regression equations were run for the 24, 59 and 90 cases data sets. A modest predictive ability exists within each of these data sets. Together three variables, all individually showing near statistical significance, give an equation with a multiple  $r^2 = 0.32$ . Thus, all things being equal, perhaps 30 percent of the variance in the panels' ratings of businesspersons can be predicted from a knowledge of certain background and personal competency indicators for that person. The regression equation and the significance of coefficients is as follows:

$$\text{Rating} = -0.39 + 0.12 \text{ CAST} + 0.15 \text{ INFOSEEK} + 0.09 \text{ PERSTYPE}$$

$$r^2 = 0.32$$

(0.07)            (0.0003)            (0.03)

The numbers in parenthesis indicate the statistical significance of the pairwise relationships. The information seeking indicator shows a very significant relationship. The other two variables are significant at approximately the 0.05 level (the traditional cutoff point for significance).

How should this indicated relationship be interpreted? As noted earlier there is a concern that there is bias in the panels' ratings. The expected biases would be for higher panel ratings for those of higher caste, or with aggressive personality type or for those with greater wealth. The above equation, consistent with certain expected biases, thus might be explained as caused by panel bias. Of course, the indicated relationships could as well be present because such a real relationship exists. This point will be examined again later in the analysis.

There was no essential difference in explanatory power for the 59 and 24 observation data sets, indicating that the relationship is not strengthened by discarding "inconsistent" cases. It had been thought that if errors were in part the reason for the weak relationships, the discarding process, aimed at defining one potential error, could strengthen the correlations. Such did not prove to be the case.

**Rate of Profits** The objective measure (objective in that it is not a panel rating, but is at least conceptually based on a measure of one aspect of actual performance) chosen as the most relevant indicator of business performance is that of Rate of Profits. Other things being equal, good businesspersons should show a higher rate of profits than businessperson who are less capable. Having profit rate data for a three year period gives some hope of averaging out random fluctuations in profits. Thus, when undertaking the analysis it was hoped that the Rate of Profits variable would provide a definitive index of performance.

Unfortunately, within these data there is little ability to use the independent variables to predict business performance when performance is defined in terms of Rate of Profits. The highest multiple  $r^2$  obtained with any combination of the independent variables was only 0.20. The equation given the 0.20 level involved three variables, only one of which (Information Seeking) approached significance at 0.05 (0.057).

$$\text{Profit Rate} = -0.35 + 0.06 \text{ INFOSEEK} + 0.04 \text{ PERSTYPE} + 0.03 \text{ MGTSTYL}$$

$$r^2 = 0.20$$

(0.057)            (0.21)            (0.30)

Moreover, even this weak predictive potential could only be reached for the 59 observations case where, as already noted, some inconsistent cases were discarded employing profit rate as an inconsistency indicator. The consistency criteria used for the discarding tended to reinforce the correlation between Rate of Profit and Panel Rating, creating a probable bias itself. Thus, the safest

observation to make is that *there are no personal descriptors which are useful in predicting Business Performance, if stated Rate of Profits is chosen as the indicator of performance.*

**Growth** Growth, as measured here, must be treated cautiously as an indicator of business performance. There were only two years of growth measures and it is felt that this is not a long enough time period to allow an adequate indication of business growth, even if the data were error-free. The Growth indicator used here is most probably a weak, but marginally useful, indicator of business performance.

Accepting these limits, as in the panel rating it is found that there is a modest empirical ability to predict Growth from the competency and background measures. An  $r^2$  of about 0.25 is obtained when employing Business Caste, Management Style, Information Seeking and composite Personality Type as the independent variables. However, only Management Style and Information Seeking among these variables are significant at the 0.05 level. It cannot be said conclusively that there is no predictive power. At the same time, relationships are so weak as to have no operational meaningfulness either for screening or training program development.

$$\text{Growth} = -5.5 + 2.2 \text{ BUSCAST} + 1.8 \text{ MGTSTYL} + 1.5 \text{ INFOSEEK} + 0.12 \text{ PERSTYPE}$$

(0.23)                      (0.004)                      (0.02)                      (0.86)

**Size** The final measure employed as an indicator of business management success is that of size of the firm managed. Again this may not be a highly valid index of business performance since, in the short to medium term, Size may be more influenced by access to capital than by management capability. Size is therefore probably related rather strongly to initial or family wealth for these individually-owned businesses. Nonetheless, one would expect that better managers are going to have businesses that have grown relatively larger over the years and that therefore some relationship to management skill should also exist.

Empirically there is only a limited ability to predict business Size from PEC and background indicators. Multiple  $r^2$ s of 0.23 to 0.25 can be obtained. The only variable which is significantly related in these equations is the old standby of Information Seeking. To some extent, membership in one of the traditional business castes tends to relate to business size; this may be an access to capital effect.

$$\text{Size} = 12.2 - 25 \text{ RELAT} + 10 \text{ INFOSEEK} - 5.3 \text{ CAST} + 5.2 \text{ MGTSTYL}$$

(0.06)                      (0.01)                      (0.40)                      (0.17)

**Predicting Management Performance, A Summary** Overall, the results are not very enlightening. No clear and credible pattern emerges that would permit one to say this is what characterizes better business managers. That is, with the measures of business performance used, there is very little evidence of meaningful relationships between measured performance and the competency indicators and background variables.

Panel Rating of business performance (the indicator used by the contractor) is moderately related to the competency indicator of Persistence. But this relationship may plausibly reflect a bias among panel members, where panels tend to assign high rank to those persons known to have a personality trait that is widely accepted by conventional wisdom as entrepreneurial. It cannot be said from the evidence available that the indicated relationship reflects either reality, or bias. In any case the discriminant, or predictive, power is weak.

For the other measures of management performance developed for the S&T review, Persistence

provides no predictive power. Thus, even this relationship is not of operational meaningfulness.

Among the objective measures of business performance--Profits, Growth and Size--there is a weak, although rather consistent, indication that a general management style of "knowing your business," "knowing your profession," "knowing your competitors" may be associated with superior performance. This relationship is strong enough to indicate that further research might be justified. *To this analyst there is, however, not sufficient robustness in the indicated relationships to justify their use in an operational program at this time.*

## CONCLUSIONS AS TO DATA AND PATTERNS

After an unusually exhaustive analysis a degree of uncertainty prevails as to "conclusions." The data have been analyzed seemingly with all avenues explored, not once but twice or thrice. Whatever is there in terms of relationships, must have been discovered in this process. Nonetheless, the empirical relationships remain weakly specified. Moreover the patterns, such as they are, are generally not absolutely consistent.

The verifiable absence of a relationship between the personality type variables and the indicators of business performance would itself be of great interest. But, plausible high levels of errors, or noise, in the data may cause "real" relationships to be significantly attenuated in this empirical sample. Thus, the relationships are too weak to be accepted as valid, but the plausibility of high error input which could attenuate a stronger "real" relationship is not to be ignored.

The result is a quandary. There seem to be at least three possible alternative conclusions which can be drawn from these data. The alternatives are presented below with the author's thoughts as to the relative merits of the explanations.

*Conclusion 1--The data are filled with errors and therefore do not provide a reasonable mapping of real world relationships. Because of the errors (noise) little if anything can be concluded about the true relationships between the variables.*

There is direct evidence of error in Ecuador. The Malawi data appear devoid of pattern much as would be the case if there were random data collection. Empirically, there is a case for an unacceptable level of errors.

Moreover, there is great intrinsic risk in attempting to have agents collect complex data in remote third world countries without having the project principals involved in a hands-on-manner during data collection. Thus, deductively, one might expect the data to be rather filled with errors.

The analytic findings from the India data set also tend to be consistent with a high error rate. For example, the Panel Ratings of superior businesspersons do not correlate very well with the "objective" indications of business performance such as Rate of Profit, Rate of Growth and so forth. There seems to be little pattern in the background data and such indicators of family wealth as exist in the data do not relate to size of business. Even within the set of data generated from the respondents' statements about how their businesses were doing and how much sale and profits they were making there is no satisfying set of relationships. Prior experience, intuition and theory all suggest certain of these variables should be related.

*Conclusion 2--Personality variables are not useful predictors of business performance because the personality-oriented competency measures which are represented in the data do not relate consistently to the various measures of business performance for the respondents.*

Using the criterion of statistical significance, there is a positive relationship between the composite measure of Personality Type and the indicator of Panel Rating. This is as project theory predicts. The Personality variable does not, however, show a significant relationship to the other measures of business success, such as Rate of Profits, Growth, Sales and so forth. Moreover, although there is a significant relationship to Panel Rating in a statistical sense, in the practical, or predictive, sense this relationship is not meaningful. That is, those who score high on the Personality indicators are only rated marginally better on performance as business persons than are those who score low on the Personality indicators.

It is fair to say the theory is not well supported by these data. But, the discovery of a weak relationship, in data in which there is possible presence of a high rate of errors, effectively prevents one from concluding that the data contradict the theory of high achievement personality types doing better.

It is the author's judgement that there is an extensive error component in the data. But, it is also suggested that the data can be used in a very limited and cautious way to give indications of positive relationships. The data probably cannot be considered as providing a valid basis for indicating the lack of relationships. The error component is large enough so that real relationships of modest significance might well be masked. Thus, with care the data may be usable for indicating a positive relationship, which may justify further research.

*Conclusion 3--Business success relates meaningfully to management style.*

Throughout all the analyses done within AID and by McBer there is only one personal variable that consistently relates to almost all the various measures of business performance. "Information Seeking" is a characteristic that is in almost every case associated with indicators of greater business success. It is, however, largely a moderate and never a strong relationship. In addition, the composite measure of business style--derived from Commitment to Contract, Quality Control, Planning and so forth--also relates moderately to the business success indicators, especially to Rate of Profits.

The relationships are significant statistically, but provides modest ability to separate those with better business track records from those with less success.

This third conclusion might be cautiously accepted. It is not one which is justified as operationally acceptable, but one which is sufficiently supported to justify further research.

#### SOME FINAL WORDS

1. In the context of the types of businesspersons interviewed in India--experienced medium and small industrialists--these data suggest that *personality type is not likely to be very important in success*. For the moment it therefore seems difficult to justify having operational programs based on an assumption that certain entrepreneurial types are more likely to succeed in business, or that entrepreneurial training is going to be important in business management success.

2. *The extent to which systematic and thorough knowledge of one's business and commitment to quality work is important in success is worth further investigation*. These data, if error is assumed to account for a certain degree of dispersion, could support moderately strongly that such a management style is meaningfully associated with greater success, at least in India.

3. On procedural grounds, research into questions with this degree of complexity requires much greater rigor than was applied in this project--both in design and in implementation.



2. Factor Matrix--Varimax Rotation

	Factor Loadings				
	1.	2.	3.	4.	5.
1. INIT	0.66	--	--	--	--
2. SEE/ACT	0.78	--	--	--	--
3. PERSIST	--	0.83	--	--	--
4. INFOSEEK	--	--	--	-0.83	--
5. HIQUAL	0.67	--	--	--	--
6. COMMIT	--	--	0.88	--	--
7. EFFIC	0.67	--	--	--	--
8. PLAN	--	--	--	--	0.91
9. PROSOLV	0.80	--	--	--	--
10. CONFID	0.68	--	0.51	--	--
11. ASSERT	--	0.66	--	--	--
12. PERSUAS	--	0.68	--	--	0.41
13. INFLUEN	--	0.69	--	--	--
14. MONITOR	0.67	--	--	--	--
15. EMPLOYEE	--	--	--	0.63	--

APPENDIX B

BACKGROUND DATA

1. Factor Matrix--Varimax Rotation

	Factor Loadings					
	1.	2.	3.	4.	5.	6.
1.HICAST	0.80	--	--	--	--	-0.49
2.BUSCAST	--	--	--	--	--	0.91
3.CAST	0.93	--	--	--	--	--
4.EDUC	--	--	0.66	--	--	--
5.BANKFIN	--	--	-0.41	--	0.59	--
6.RELAT	--	0.67	--	--	--	--
7.ROOMS	--	--	--	--	--	--
8.LANG	--	0.58	--	--	--	--
9.TRAIN	--	--	--	0.76	--	--
10.MOTIV-ERN	--	--	--	0.49	0.54	--
11.EXPER	--	--	--	--	--	--
12.OCCUP	--	--	--	--	--	--
13.MOTIV-OPT	--	--	0.57	--	--	--

APPENDIX C

BUSINESS PERFORMANCE MEASURES

1. Factor Matrix--Varimax Rotation

	Factors Loadings				
	1.	2.	3.	4.	5.
1.PANEL RATE	---	---	---	---	0.59
2.SALE PAST YR	0.91	---	---	---	---
3.PROF PAST YR	---	0.71	---	0.59	---
4.SALE 2 YR AGO	0.98	---	---	---	---
5.PROF 2 YR AGO	---	0.88	---	---	---
6.SALE 3 YR AGO	0.93	---	---	---	---
7.PROF 3 YR AGO	---	0.92	---	---	---
8.SELFRATE-NOW	---	---	---	---	---
9.SELFRATE-3YR	---	---	---	---	---
10.PROFRATE PST YR	---	---	0.74	---	---
11.SALE YR1-YR3	0.65	---	---	0.67	---
12.PROF YR1-YR3	---	---	---	0.95	---
14.SALE YR1+YR2	0.96	---	---	---	---
15.PROF YR1+YR3	---	0.83	---	0.41	---
16.SALE INCREASE	0.61	---	---	0.57	---
17.PROF INCREASE	---	---	---	0.92	---
18.SALE 3 YRS	0.96	---	---	---	---
19.PROF 3 YRS	---	0.89	---	---	---
20.PROFRATE 2 YRS	---	---	0.91	---	---
21.PROFRATE 3 YRS	---	---	0.95	---	---