Entrepreneurship and bureaucracy explaining economic development across countries

Applying the actor-structural approach to economic development

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ABSTRACT:
In this paper, it is shown that national differences in the rate of economic growth can be explained by economic behaviour, entrepreneurship and the efficiency and size of a country’s bureaucracy. The analytical framework is based on an actor-structural approach assuming that all social phenomena can be explained by a combination of agency and structure. A model based on an actor-structural approach is offered and tested on cross-national data from 37 countries. Ordinary least square models including entrepreneurship and various structural independent variables are evaluated in terms of explanatory power and compared to traditional one-sided models. The results indicate that entrepreneurship combined with structural variables,
cluding bureaucracy, offer high explanatory values and that a large part of the variance in economic development, left unexplained by agency behaviour, is explained by the regulation of that behaviour. Due to limited and recent cross-national data on entrepreneurship it is impossible to rule out the possibility that the results are to some extent due to selection, reverse causal links, or relationships excluded from the analysis. In terms of policy implications the results indicate that the removal of bureaucratic barriers to entrepreneurs could have large potential payoffs in economic growth.

INTRODUCTION

This paper aims at contributing to the question: What causes some societies to develop and others to stagnate? Since social change or development is a very wide concept, this paper concentrates on economic development operationalised as long-term economic growth. In social and economic sciences, the attempts to explain economic development are numerous and diverse. A large number of highly heterogeneous independent variables, contributing to or hindering economic development, have been identified by theoretical and empirical research (Barro 1998; Barro and McCleary 2003; Berggren 2003; Evans and Rauch 1999; Ginsburg 2000; JamesGwart and Emerick 2003; Knack and Keefer 1997; Minniti, Bygrave and Autio 2005; Whiteley 2000).

This paper, the scope is beyond considering separate explanatory variables and testing their contribution to economic development; rather, entire models are considered. The standard method of testing separate independent variables involves introducing the variable in question into a standard model consisting of variables that previous empirical researches have found important. These are, typically, GDP per capita, levels of investment, and education. In cross-national research, the size of these models generally kept small due to the miniscule number of observations.
development than models that do not do so. Similar to several researchers (Julien 1989; Schumpeter 1934; Shane 2003), I will argue that entrepreneurs are the agents of economic change but that their contribution to economic development is dependent on the environment in which they operate, their structure. It is held here that structure has to be included in the analysis and that this two-sided model will result in higher explanatory power as compared to the traditional one-sided approaches.

Entrepreneurship will be used as an example of a typical agency-based theory, and economic freedom and social capital as examples of structural theories. The choice of these examples is based on their frequency in recent social research as well as in policies related to economic development. Following this, the paper presents a model based on the actor-structural approach combining agency and structural factors to explain economic development, in this case, entrepreneurship combined with different structural factors: economic freedom, bureaucracy, social capital, and taxation. Finally, this argument is tested empirically on cross-national data and upheld.

The introduction of this paper is structured in the following way. The theoretical section discusses development theory and how the various explanatory factors are related to economic development in the traditional one-sided approaches. This is followed by a section that describes the two-sided agency-structure approach in relation to economic development and outlines the analytical framework of this paper.

DEVELOPMENT THEORY

The interest in economic development is shared by social and economic scientists. While social scientists tend to produce development theory, economists tend to produce growth theory. Analytically, economic development and economic growth are not synonymous. Long-term economic growth is, however, frequently used as a proxy for economic development, assuming that these different theoretical phenomena are...
ngly empirically correlated. Since long-term economic growth is consid ered as a proxy for economic development, these two research approaches in practice, trying to explain the same empirical phenomenon. The difference between growth and development theory therefore does not necessarily involve the dependent variable. Instead, the difference appears in the scientist’s academic identity. In effect, these two academic communities are trying to explain the same phenomenon, using their independent factors; the social scientists use factors such as norms, trust, networks and dependency, while the economists use factors such as capital, savings, investment, fiscal policy and taxation.

Most social scientists, it is obvious that the initial causes of economic development are not economical. It can be argued (Soto 2002) that posited economical explanations do not explain why people in certain countries save, invest and create more wealth than those in other countries. Indeed some of these economic ‘causes’ appear more like development itself, than the real causes of development. Even in the field of economic growth theory, ‘non-economic’ factors are frequently used as explanatory variables to explain economic development/growth (Barro 1997; North 1990; Schumpeter 1934). One general conclusion derived from previous economic research is that one has to look beyond the narrow economic factors to find the real determinants of economic development (Barro and McCleary 2003; Soto 2002). On the basis of this conclusion, I will concentrate on the non-economic causes of economic development in this paper.

Entrepreneurship and development

The idea that entrepreneurship is essential for economic development is shared by almost everyone (Julien 1989). To most researchers, entrepreneurship is about behaviour and newness. There appear to be at least two competing views on what this newness consists of. While Schumpeter (1934) and his followers would argue that new ideas are entrepreneurial
Table 1. The newness of entrepreneurship; new idea, new organization, or both.

<table>
<thead>
<tr>
<th>Organization</th>
<th>New</th>
<th>Old</th>
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<tr>
<td>New</td>
<td>1</td>
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<tr>
<td>Old</td>
<td>3</td>
<td>4</td>
</tr>
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</table>

There would be little controversy regarding cell 1 and 4; cell 1 is entrepreneurship and cell 4 is not. When it comes to cell 2 and 3, it is a matter of opinion. The followers of Schumpeter would consider cell 1 as entrepreneurship, while Gartner would consider cell 1 and 3 as entrepreneurship. Others, forced by data limitations, define entrepreneurship as business ownership and measure it by the number of business owners as a share of the total labour force (Audretsch and Thurik 2001).

Several researchers have theoretically and empirically tried to link entrepreneurship to economic development/growth (Audretsch and Thurik 2001). Independent of the entrepreneurship definition, entrepreneurs are believed to introduce newness into the economy by starting new businesses, introducing new ideas and/or exploiting new resources. By doing so, entrepreneurs act as agents of change; and hence, at the aggregated level, more entrepreneurs mean more development. The theoretical reasoning clearly varies according to the definition of entrepreneurship and the theoretical framework used. The apparent consensus concerning the positive consequences of entrepreneurship is, however, superficial since many see entrepreneurship as a free service (Julien 1989) and not something that causes economic development. Similarly, institutional writers such as Soto (2000) claim that developing countries are teeming with entrepreneurship...
Economic freedom and development

Probably the most influential development theory in recent times is the notion of economic freedom. Economic freedom implies ‘the degree to which a market economy is in place, where the central components are voluntary exchange, free competition and protection of persons and property’ (Gwartney and Lawson 2002). It is believed that voluntary exchange, petition and protection of persons and property encourages economic agents to engage in growth enhancing activities, such as pursuit of preservation, hard work and so on. In an unfree economy, these activities are not rewarded and are therefore less frequent.

Several attempts have been made to quantify economic freedom internationally. One example, The Index of Economic Freedom, is published annually by the Heritage Foundation. This index include trade policy, property rights, size of government, business regulation etc. There is a large body of research, using a wide range of theoretical frameworks and control variables, examining the effect of economic freedom on development/growth and the positive relationship seem very robust (Berggren 2003; Doucouliagos 2005; Gwartney and Lawson 2002).

However, since these indexes include a large number of factors, it is difficult to determine which factors promote economic development and do not. And some empirical research has found theoretically unexpected results. Carlsson and Lundström (2002) found that a liberal trade policy and the size of government are significantly and negatively correlated to growth, implying that big governments and restricted trade regimes promote growth. The large number of aggregated components in these indexes and the fact that some of the components are negatively correlated to growth makes the causal reasoning very fuzzy. The number of aggregated components is too large to be theoretically interesting and to have specific policy implications. Furthermore, these indexes are not only about freedom, they also include components measuring institutional quality and macro-economic conditions such as judicial independence and recent inflation, respectively. Taxation and bureaucracy are aspects of economic freedom. High taxes are often perceived as an impediment to economic development by liberal economists. Taxes are perceived to drain resources from the
luctive private sector and thereby limiting the freedom and capabilities of economic actors.

Social capital and development

Since the publishing of Putman’s Making Democracy Work (1993b), social capital has attracted immense interest in the field of social sciences and to explain a wide range of social phenomena, including economic development. Social capital, however, is a very wide concept. Three meanings of the term can be identified; trust, civic norms and associational activity (Knack and Keefer 1997). Of these, Knack & Keefer found trust and civic norms to be significantly and positively correlated to long-term economic growth using cross-national data on 29 market economies. Associational activity, Putnam’s definition of social capital, was not found to be correlated to long-term growth. According to Coleman (1988), social capital does not lie in the individual agent, but in the relations between agents. Others view social capital, particularly trust, as a personal attitude. The causal link between trust and economic growth is simple. Individuals in high-trust societies do not require to spend much time protecting themselves, writing contracts, monitoring business activities and so on. Trust makes transactions simple and efficient and the need for formal institutions to mediate conflicts is small. Behaviour is controlled by common norms rather than by explicit written rules. In low-trust societies, every transaction is a risk to a greater extent, and this is likely to hamper economic activity and growth. For a detailed discussion on the causal relationship between trust and economic growth, see Knack & Keefer (1997) and Whiteley (2000).
The actor-structural theoretical approach (Rundqvist 1998) can be subdivided into a conflationary and non-conflationary type (Archer 1995). The actor theoretical approach, sometimes referred to as methodological individualism (Martin and McIntyre 1994), argues that social phenomena are explained by agency factors and that social structure is a mere aggregate of agency behaviour. Hence, in a theoretical sense, there is no structure. Applied to economic development this school of thought argues that development can only be explained in terms of agents; education, entrepreneurial spirit, psychological characteristics, experiences (Barro 1996; Barro 1998; Heertje 2004; Krueger and Lindahl 2001).

The structural theoretical approach, on the other hand, sometimes referred to as methodological collectivism (Martin and McIntyre 1994) argues that social phenomena are explained by structural factors, and that agency behaviour is a consequence of social structure. Agency behaviour is determined by structure and since all social phenomena can be completely explained by structure, in a theoretical sense, there are no agents. Applied to economic development this school of thought argues that development can only be explained in terms of structure; social norms, rules, circumstances such as social capital, legislation, taxation, bureaucracy (Ginsburg 2000; North 1990; Platteau 2001; Putnam, Leonardi and Nanetti 1993a).

In the non-conflationary actor-structural approach, it is stipulated that society consists of both agency and structure and that these are not the same thing. Hence, agency and structure cannot be reduced to one another; structures do not melt away into agents, nor agents into structure (Sztompka 1991). This ontological idea of society’s two-sidedness is regarded as a prerequisite for the logical connection between the theory empirical application of any research question (Rundqvist 1998).
Figure 2. An ontological model based on the non-conflationary actor-structural approach.

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The theoretical framework in this paper is based on a non-conflationary-structural approach; see Figure 2. Agency behaviour is not entirely a consequence of structure, and structure is more than aggregated actions. This implies that neither of the one-sided approaches can fully explain social phenomenon (Archer 1988). According to this non-conflationary actor-structural approach, an agent is a social unit that could have acted otherwise, i.e. the agent can choose between different actions. The agent can be individuals, groups of individuals, companies and so on depending on the analytical level. Structures are social features, external to the agent, that enable, limit or determine the agent’s behaviour. Structures can become causes only by influencing or transforming the effects of agency behaviour.

The link between structure and the social phenomena to be studied is therefore indirect. The empirical application of the actor-structural approach in this study begins with entrepreneurship as the explanatory agency factor and economic development as the dependent factor. Structural factors relevant to entrepreneurship are introduced in accordance with the actor-structural approach. The structural factors are selected because they...
structures. Due to this emphasis on agency and its structure, it might be appropriate to call this approach the ‘agency in structure’ approach.

Entrepreneurship, bureaucracy and development

In a market economy, economic development is a consequence of private entrepreneurs and enterprises and there can be no direct link, as discussed above, between the structural/institutional environment and economic development. The behaviour of these entrepreneurs is regulated by different aspects of the entrepreneurial environment (Gnyawali and Fogel 1994). In this paper I concentrate on the bureaucracy as an important aspect of the entrepreneurial environment. Entrepreneurs are the actors and bureaucracy is the structure. The behaviour of the actors has to be regulated by bureaucracy to avoid its potentially negative effects on other actors. If bureaucracy can do this without imposing a burden on the creation and development of businesses, the bureaucracy is beneficial to the development of the economy. If not, the bureaucracy will be an obstacle to the creation and growth of individual firms and to the aggregated economic development at the national level. The behaviour of the economic actors is also sequence; if they behave entrepreneurial, i.e. if they are creative and exploit new possibilities, the economy will develop at the aggregated level.

Much earlier empirical research have fund that entrepreneurship is a major contributor to economic development (Audretsch and Thurik 2001; Bosma and Harding 2006; Shane 2003) and that the legal framework and the manner in which it is implemented by the bureaucracy are major obstacles for these entrepreneurs (Soto 2000; Soto 2002; Svensson 2003; World Bank 2006). de Soto appears to reason in a similar way, claiming that the main obstacle for poor entrepreneurs is the legal system, which excludes and forces them to operate outside the law. Entrepreneurs forced to operate outside the legal system are unable to benefit from the institutions that are essential for operating a business, i.e. property rights, insurance...
argues that economic behaviour, such as entrepreneurship, is a rational response to the institutional environment, and therefore, not a cause in itself. If entrepreneurship is a direct response to the institutional/legal framework, differences in economic development cannot be explained by differences in behaviour, but only by differences in structure. Since agency and structural factors have to be combined to explain the differences in economic development, I obviously disagree.

The bureaucracy can be an obstacle to the entrepreneurs in a number of ways. Firstly, it can be ineffective, i.e. it can delay the procedures required to start and develop a business, demand bribes and so on. Secondly, bureaucracy can differ in terms of size, i.e. it can differ in the number of aspects of a business that it regulates. It can also differ in the strictness of regulations. Others have concentrated on the positive effects of bureaucracy on economic development; Evans and Rauch (1999) found a positive correlation between ‘Weberian’ state structures and economic development. The effectiveness of the bureaucracy is strongly correlated with the level of economic development; richer countries are able to spend more money on the bureaucracy to ensure that it works effectively. Poor countries cannot sufficiently remunerate workers in the bureaucracy to assure high motivation etc. As a consequence, bureaucracies in poor countries tend to be ineffective and/or corrupt. The correlation between the level of economic development (GDP/capita 1995) and Transparency Internationals Corruption Perception Index (CPI 2003) (www.transparency.org) is very strong.

Concerning the creative entrepreneurs, those exploiting new ideas, bureaucracy can be double-trouble. The creative entrepreneur faces a set of obstacles, unknown to the ordinary business owner. These obstacles usually originate from the newness that the entrepreneur wishes to introduce. In the words of Schumpeter, ‘every step outside the boundary of routine cul tivates and involves a new element’ (Schumpeter 2000).
main hypothesis in this paper is based on the assumption that bureaucratic regulation (subsequently referred to as bureaucracy) is the structure of entrepreneurial behaviour (subsequently referred to entrepreneurship), that is, it can enable, limit or determine entrepreneurial behaviour. It can enable entrepreneurial behaviour by providing necessary legal institutions and offering efficient services etc. and limit entrepreneurial behaviour by requiring business licenses, handling applications inefficiently etc. In other words, the bureaucracy forms a significant part of the environment in which economic agents, such as entrepreneurs, operate. However, these entrepreneurial attempts to start businesses are not regarded as a mere structural consequence. Rather, bureaucracy decides if these entrepreneurial attempts will lead to aggregated economic development or not; see Figure 3.

Figure 3. The actor-structural approach applied to economic development.

Entrepreneurship → Economic Development

Bureaucracy

application of this reasoning on economic development results in forming hypotheses.
Hypothesis 2. High levels bureaucracy contributes negatively to a country’s economic development.

Hypothesis 3. Other relevant structural variables (economic freedom, social capital and taxation) affects a country’s economic development.

In order to accept hypotheses 1, 2 and 3 independent variables have to be significant (p < 0.10) and remain significant when introducing control variables in the model. In hypothesis 3 it is tested if other, to entrepreneur, relevant structural variables (economic freedom, social capital and taxation) has an effect on development similar to the effect of bureaucracy. It is also assumed, based on the agency-structural approach, that the adjusted $R^2$ is higher in the two-sided models as compared to one-sided models. Two-sided models combine entrepreneurship relevant structural variables.

METHOD AND DATA

In order to evaluate the different types of development theories and factors used to explain economic development, cross-national data and multiple regression models (OLS) are used. The evaluation of the theories pertains to each theory’s ability to predict in terms of explanatory power. Admittedly, this is a very limited method to judge the quality of a theory, since the quality of theories is also related to logic coherence, elegance and so on (Craib 1992). However, the ability to predict is empirically testable; therefore, the only way to objectively evaluate a theory aimed to predict, a statistical measure, adjusted $R^2$, is used to compare the models. An unadjusted $R^2$ can be interpreted as the share of dependent variance explained by a model. A model with extra predictors will always have a larger $R^2$; but the adjusted $R^2$ compensates for the model complexity and number of observations. Therefore, a fairer comparison is achieved with this type of model.
e research units, it is possible to combine data from different sources, which makes it possible to test theories that would not have been possible otherwise. Clearly, all methods have their own pros and cons, and good insights into the development phenomenon may be achieved using a variety of methods. For a lengthier discussion on the pros and cons of cross-national analysis, see (Herkenrath 2002).

In order to be able to compare the different theories, I will use the same dependent variable in all the tests, although I am well aware of the fact that several proponents of the different theories will argue that it is not adequate or accurate. I have chosen the World Bank’s measure of average annual GDP growth between 1990 and 2001 (World Bank 2003) as my dependent variable. This period should be long enough to negate the economic cycles of different countries in the analysis.

Regarding independent variables, internationally comparable data on entrepreneurship, social capital, economic freedom, bureaucracy and taxation levels are collected from different sources. The variables used and their origins can be found in Appendix 1. As a first choice data from the running of 1990-2001 period was used. When this has not been possible from other years have been used and the variables stability over time been evaluated. All independent variables appear to be relatively stable over this time period. Due to this I have, throughout, chosen to use data with a full set of data, rather than use data for the initial years of a period with data available for a much smaller number of countries. Since multiple regressions are used in the statistical analysis, it is important not the number of cases in each regression.

International data on entrepreneurship, produced by the Global Entrepreneurship Monitor (GEM), perceives new organizations as an indicator of entrepreneurship. TEA (Total Entrepreneurial Activity) is measured as the share of the adult population involved in entrepreneurial activities. The TEA measure varies from 18.0% in Thailand to 1.8%
from 2003 is a relatively good measure for the whole period. The data published in 2003 refers to respondent behaviour in the preceding 36 months. The sample is dictated by the availability of the TEA measure from the GEM research (Reynolds et al. 2002), 37 market economies in these countries are: Argentina, Australia, Belgium, Brazil, Canada, Croatia, Denmark, Finland, France, Germany, Hong Kong (China), Hungary, Iceland, India, Ireland, Israel, Italy, Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Russia, Singapore, Slovenia, South Africa, Spain, Sweden, Taiwan (Taipei), Thailand, United Kingdom and United States.

A measure of economic freedom, The Economic Freedom Index (EFI) (Gwartney and Lawson 2002), is used. It is defined as the “freedom that is concerned with the material autonomy of the individual in relation to the state and other organized groups” (Kane, Holmes and O’Grady 2006). A measure on bureaucracy is taken from the same source. This measure includes factors such as ease of obtaining a business license, corruption in the bureaucracy, regulations that impose a burden on a business and so on. This data is available for 156 countries, for the year 1999. The countries are graded on an ordinal scale from 1 to 5, where 1 implies that ‘existing regulations are straightforward and applied uniformly to all businesses, regulations are not much of a burden for business and corruption is nonexistent’, and 5 implies that ‘the government impedes the creation of businesses, corruption is widespread and regulations are applied randomly’. Both these variables limit the freedom of entrepreneurs and therefore correlate negatively with economic development.

A measure on taxation, defined as tax revenue as % of GDP, is from the World Bank Development Indicators and OECD Revenue Statistics. This measure varies from 8 % to 44 %. This variable is believed to limit the freedom of entrepreneurs and therefore negatively correlated to economic development.
...ed, or that you can’t be too careful in dealing with people?’ The percentage of people who trust other people varies from 63.7% in Norway, 7% in Brazil. (www.worldvaluessurvey.com). Data on social capital available for Thailand and Hong Kong and regressions including social capital is therefore excluding these two countries. High values of social capital, meaning high levels of trust, should make business transactions easier for the entrepreneurs and this variable should therefore be positively related to economic development.

Since several independent variables are correlated to the level of economic development, a measure from the middle of the period (1995) of gross domestic product per capita in U.S. dollars is used as a control variable. For all bivariate correlations and potential multicollinearity problems see appendix 2.

Table 1. Descriptive statistics of variables used in multiple regression models.

<table>
<thead>
<tr>
<th>Variable name and source</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Date of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total entrepreneurship activity (%) (Global Entrepreneurship Monitor)</td>
<td>7</td>
<td>1.8</td>
<td>18.9</td>
<td>7.8</td>
<td>4.5</td>
<td>2003</td>
</tr>
<tr>
<td>Social capital (% ‘yes’) (World Values Surveys)</td>
<td>5</td>
<td>4.7</td>
<td>63.7</td>
<td>35.2</td>
<td>13.7</td>
<td>1981-1999</td>
</tr>
<tr>
<td>Index of economic freedom (Heritage Foundation Index of Economic Freedom)</td>
<td>7</td>
<td>1.3</td>
<td>3.8</td>
<td>2.3</td>
<td>0.6</td>
<td>1999</td>
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</table>
RESULTS

The bivariate correlation between the level of entrepreneurial activity and economic development is positive and significant at \( n = 37, r = 0.51 \). All bivariate correlations can be found in Appendix 2. When controlling for GDP per capita, the level of entrepreneurial activity remains significant (model 1 in Table 2). In a simple one-sided model, higher entrepreneurial activity in a country appears to result in faster economic development.
The effect of social capital on economic development remains insignificant even when the level of GDP/capita is included as a control variable (model 2 in Table 2). Adjusted R² at -0.05.

The Index of Economic Freedom is positively and significantly correlated to economic development (r = 0.29, n = 37). The minus sign only indicates the manner in which the index is constructed. When controlling for GDP/capita, the same measure remains significant (model 3 in Table 2). Economically free countries appear to develop faster than economically unfree countries. A model that includes the pure bureaucracy variable (model 4 in Table 2) results in a significant (p < 0.05) bureaucracy variable with expected sign.

Table 2. One-sided approaches. Agency or structure explaining economic development. Coefficients with standardized coefficients in parentheses.

<table>
<thead>
<tr>
<th>Explanatory variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
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<tbody>
<tr>
<td>Entrepreneurship</td>
<td>0.25***</td>
<td>(0.56)</td>
<td></td>
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<tr>
<td>Social capital</td>
<td>0.01</td>
<td>(0.04)</td>
<td>-0.1</td>
<td>(0.1)</td>
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<tr>
<td>Economic freedom</td>
<td>-</td>
<td>-1.89***</td>
<td>-</td>
<td>-</td>
<td>1.9</td>
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<td></td>
<td></td>
<td>(0.55)</td>
<td>(-0.55)</td>
<td>(-0.55)</td>
<td>(0.55)</td>
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</table>
As shown above, the entrepreneurship variable and the different structural variables, used in one-sided models, cannot explain much of the observed differences in economic development. Even if all structural variables are included in the same atheoretical model (model 5 in Table 2) adjusted $R^2$ remains at a very low level, i.e. 0.11. These results suggest that economic development cannot be explained successfully by using agency and structural variables separately.

A two-sided multiple regression model that includes entrepreneurship and bureaucracy as independent variables, and controlling for differences in GDP/cap, results in a considerably higher adjusted $R^2$ (model 6 in Table 3). This suggests that the model has a good fit and that almost 40% of the variation in economic development can be explained by a combination of entrepreneurial activity and bureaucratic size and efficiency. It also implies

<table>
<thead>
<tr>
<th></th>
<th>Taxation level</th>
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<tr>
<td>trolley</td>
<td>GDP/capita</td>
<td>0.02</td>
<td>-0.01</td>
<td>-0.07**</td>
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<td></td>
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<td>(0.13)</td>
<td>(-0.07)</td>
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<td>constant</td>
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<td>0.71</td>
<td>3.42</td>
<td>8.78</td>
<td>6.88</td>
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<td>37</td>
<td>35</td>
<td>37</td>
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<tr>
<td></td>
<td></td>
<td>6.36***</td>
<td>0.15</td>
<td>4.24**</td>
<td>3.77**</td>
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<tr>
<td></td>
<td></td>
<td>0.27</td>
<td>0.01</td>
<td>0.20</td>
<td>0.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.23)</td>
<td>(-0.05)</td>
<td>(0.15)</td>
<td>(0.13)</td>
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*p < 0.10  **p < 0.05  ***p < 0.01
a large part of the variance, left unexplained by agency behaviour in model 1, is explained by the regulation of that behaviour. The impact of separate independent variables on economic development shows that a one percent increase in entrepreneurial activity causes a 0.24 increase in average annual growth. A one step change in the bureaucracy variable causes a 1.12% change in the average annual growth. The standardized coefficients show that the impact of these two independent variables is highly equal. To test the robustness of this central model two outliers were removed. Thailand and India combine extremely high levels of entrepreneurship, 18.9% and 17.9% respectively, with high growth rates. It might be that the high explanatory values in model 6 are strongly affected by these two countries. However, computing the regression excluding these countries, not shown, entrepreneurship and bureaucracy are still significant (p < 0.01). Further adjusted R^2 and the coefficients are only marginally affected. The main hypothesis of this paper can therefore not be rejected.

Table 3. The two-sided approach. Entrepreneurship, in different structural settings, explaining economic development. Coefficients with standardized coefficients in parentheses.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient 1</th>
<th>Coefficient 2</th>
<th>Coefficient 3</th>
<th>Coefficient 4</th>
<th>Coefficient 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureaucracy</td>
<td>-1.12**</td>
<td>-1.22**</td>
<td>-1.1</td>
<td>-1.1</td>
<td></td>
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<tr>
<td></td>
<td>(-0.42)</td>
<td>(-0.46)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Taxation level</td>
<td>-0.01</td>
<td></td>
<td></td>
<td></td>
<td>0.0‡</td>
</tr>
<tr>
<td></td>
<td>(-0.04)</td>
<td></td>
<td></td>
<td></td>
<td>(0.2)</td>
</tr>
<tr>
<td>GDP/capita</td>
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<td>-0.03</td>
<td>-0.04</td>
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<tr>
<td></td>
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<td>(-0.22)</td>
<td>(-0.17)</td>
<td>(-0.21)</td>
<td>(0.2)</td>
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<tr>
<td><strong>Constant</strong></td>
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<td>2.87</td>
<td>5.42</td>
<td>0.79</td>
<td>2.3§</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>35</td>
<td>35</td>
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<tr>
<td><strong>F-value</strong></td>
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<td>6.86**</td>
<td>7.02**</td>
<td>4.99**</td>
<td>5.4*</td>
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<td></td>
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<tr>
<td></td>
<td>(0.39)</td>
<td>(0.39)</td>
<td>(0.35)</td>
<td>(0.26)</td>
<td>(0.3)</td>
</tr>
</tbody>
</table>

\*p < 0.10 \**p < 0.05 \***p < 0.01

In model 7, the level of taxation is included. The level of taxation variable is not significant and adds no explanatory power. In model 8, the bureaucracy variable is replaced by the economic freedom variable. Although economic freedom is significant, it reduces the...
anatory power as compared to model 6. This is remarkable since economic freedom variable contains 10 aspects of economic freedom, bureaucracy variable is one of these 10 aspects. This suggests that some aspects of economic freedom have no, or theoretically unexpected, effect on economic development.

In model 9, the bureaucracy variable is replaced by another structural variable, i.e. social capital. In this model, high levels of social capital do not significantly contribute to economic development or increase explanatory power.

In model 10, entrepreneurship is combined with all structural variables except economic freedom (because of strong theoretical and statistical association with the bureaucracy variable). As compared to model 6 adjusted $R^2$ is not affected and the entrepreneurship and bureaucracy variables remain significant.

The control variable, GDP/cap, is insignificant in all the two-sided models indicating that the gap between rich and poor countries has remained stable in relative terms. This result could have been affected by the fact that poor non-western countries are under-represented in the sample.

To sum up the results, in terms of explanatory power, models based on an actor-structural approach are better than those based on either of the one-sided approaches. By departing from the entrepreneurship variable and adding relevant structural variables, a new theoretically-founded explanation on economic development can be offered.

DISCUSSION

The results presented in this paper suggest that development theories have to combine agency and structural variables to be able to explain the empirical phenomenon of economic development successfully. The theoretical combination of entrepreneurship and relevant structural variables considerably increases the explanatory power. Adjusted $R^2$ fluctuates between 0.05 and 0.23 in the case of the purely structural or agency.
ries, and between 0.26 and 0.39 in models where entrepreneurship relevant structural variables are combined. This suggests that the variance unexplained by the entrepreneurship variable, the residual from model strongly correlated to the relevant structural variables. In other words, between agency behaviour and economic development is dependent regulation of agency behaviour, the bureaucracy in this case. It is not position that these two types of variables can be combined anyhow large explanatory power. Any structural variable combined with agency variable will not automatically result in high explanatory power, the choice of variables matter. Maybe the ‘agency in structure’ approach might serve as a guideline on combining agency and structural variables for high explanatory power, departing from the agency variable thereafter adding its structure in the analysis. However, the evidence presented here cannot offer any convincing evidence on this as a general rule.

The two main hypotheses suggest that economic behaviour (entrepreneurship) and the regulation of this behaviour (bureaucracy) explain a large part of the cross-national variance in economic development. Both independent variables significantly contribute to economic development and remain significant in models including various control variables. The explanatory power (adjusted $R^2 = 0.39$) is higher than in the one-sided approaches. These two main hypotheses can therefore be rejected.

Concerning hypothesis 3 the results are mixed, social capital, taxation and control variable (GDP/capita) have no effect on economic development. However, it is possible that the social capital has different functions in different types of countries. In poor countries, where the bureaucracy tends to be ineffective, social capital might be more important. In this manner dysfunctional bureaucracies might be replaced by a high level of social capital, or at least carry out a similar function. Knack and Keefer (1997) have argued that in some circumstances social capital might replace an efficient bureaucracy and reliable legal institutions, and that social capital is more important in societies that lack reliable legal institutions. In these societies, businesses cannot rely on the legal institutions to settle disputes between economic actors. They have to rely on trust and common norms.
een and shared by the actors. This is particularly true for informal businesses that are excluded from legal protection and have to rely on social ties. Knack and Keefer (1997) found empirical support for this argument. The data presented in this paper, however, does not indicate that this might be true. The sample in this study is too small to divide further, and therefore, cannot be used to shed further light on this issue. However, it makes theoretical sense to argue that in the absence of a functional legal framework, social capital becomes more important. This issue deserves further investigation. The non-existing effect of the level of taxation conforms with de Soto (2002) findings. Using qualitative methods, he similarly concluded that taxes are a very small problem for small entrepreneurs, as compared to ‘other legal costs’. The other costs originate from trying to comply with or evade bureaucratic regulation. Small and efficient bureaucratic regulations appear to be more important than low taxes. Higher taxes, if used to make the bureaucracy more efficient, could promote economic development. Entrepreneurship, economic freedom, and bureaucracy all seem to have a robust effect on economic development with the theoretically expected sign.

Although this study is multivariate, it is impossible to rule out the possibility that the results are to some extent due to selection, reverse causal linkages, or relationships excluded from the analysis. The data on entrepreneurship is small and very recent to be able to convincingly test the hypotheses. Therefore, the results presented in this paper must be considered preliminary, but promising.

Terms of policy implications the results indicate that the removal of bureaucratic barriers to entrepreneurs could have large potential payoffs of economic growth. Further it explains why high levels of entrepreneurship, as observed in many poor countries, are not automatically transformed into fast rates of economic growth. These results strengthen the case for entrepreneurship as a “development variable”. M
References


## Appendix 1

### Description and source of used variables.

<table>
<thead>
<tr>
<th>Term</th>
<th>Measure</th>
<th>Source reference</th>
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<tr>
<td>Economic development</td>
<td>Average annual GDP growth between 1990-2001</td>
<td>World Bank Development Indicators (WDI)</td>
</tr>
<tr>
<td>Level of economic development</td>
<td>GDP/Capita 1995 (U.S. dollars)</td>
<td>World Bank Development Indicators (WDI)</td>
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<tr>
<td>Entrepreneurship</td>
<td>Total Entrepreneurship Activity (TEA)</td>
<td>Global Entrepreneurship Monitor (GEM)</td>
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<td>Bureaucratic regulation (1-5)</td>
<td>Heritage Foundation</td>
</tr>
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<td>Corruption Perception Index</td>
<td>Transparency International</td>
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<tr>
<td>Economic freedom</td>
<td>Index of Economic Freedom</td>
<td>Heritage Foundation</td>
</tr>
<tr>
<td>Social capital</td>
<td>Can people in general be trusted (%)</td>
<td>World Values Surveys</td>
</tr>
<tr>
<td>Taxation</td>
<td>Taxation level (% of GDP)</td>
<td>World Bank Development</td>
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Appendix 2

Bivariate Pearson correlations and significance (two-tailed) between independent variables used in multiple regression models.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
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<td>Entrepreneurship (%) 2003</td>
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<td>0.497</td>
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<tr>
<td></td>
<td>-0.107</td>
<td>0.529</td>
<td>37</td>
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<tr>
<td>GNP Capital (% &quot;Yes&quot;) people in general be trusted (%)</td>
<td>-0.412</td>
<td>0.014</td>
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<tr>
<td></td>
<td>-0.054</td>
<td>0.757</td>
<td>35</td>
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<tr>
<td>GNP of Economic Freedom 1999</td>
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<td>-0.000</td>
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</tr>
<tr>
<td></td>
<td>0.188</td>
<td>0.918</td>
<td>37</td>
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<tr>
<td>Bureaucratic regulation</td>
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<tr>
<td></td>
<td>0.615</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>Taxation level (% of GDP) World bank development indicators</td>
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<td>0.957</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>0.663</td>
<td>0.37</td>
<td></td>
</tr>
<tr>
<td>GDP per capita 1995 in US dollar</td>
<td>0.000</td>
<td>1.000</td>
<td>37</td>
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Are traditional Western ethical theories still relevant in a cross-cultural and entrepreneurial business world?

David A Robinson – Associate Professor of Entrepreneurship: Faculty of Business, Technology and Sustainable Development, Bond University, Australia.

Jieru Zhou – Associate Professor: ANTAI School of Management, Shanghai Jiao Tong University, Shanghai, China.

Introduction

This is an area of business largely left to the imagination. Typically, managers are guided by the company code or culture, or at least have a person higher up the hierarchy that they can refer to when faced with a decision containing ethical dimensions. Entrepreneurial managers, being opportunistic and often working alone, may overlook or even ignore the ethical elements of business decisions. Under circumstances of intense competition and the need for expediency, conflicting priorities arise and the entrepreneur may be faced with certain
nmas. In seeking to resolve these, entrepreneurs must usually rely on their own judgment to determine ‘what is right’.

Moral choices have a significant impact on business decisions, and since the fact that entrepreneurs usually make those choices without seeking advice from people well-versed in ethics, it is important to know whether or not they are likely to have ethical bias or particular orientations.

Traditional Western ethical theories recognise three bases for ethical choice, namely virtues, rules and/or consequences. This paper assesses the ethical orientations of managers with entrepreneurial intentions by means of a questionnaire administered to Master of Business Administration candidates in China and Australia, who either have or do not have the intention to become entrepreneurs.

The research problem is two-fold, namely:

1. To determine whether entrepreneurially-inclined managers are more oriented than their corporate counterparts toward any of the three ethical theories when making decisions.

2. To determine whether there are any differences in ethical orientation between Chinese and Australian entrepreneurially-inclined managers.

Entrepreneurially-inclined manager is defined as one who is an established manager and who has entrepreneurial inclinations, whether already realised or not. This means either that they are currently managing their own business or considering entrepreneurship as a future endeavour. Either way, they are self-proclaimed entrepreneurs in the psychological and behavioural sense of the term. Likewise, those designating themselves as ‘not entrepreneurially-inclined are either working as managers in corporate businesses and not intending to become self-employed or are currently engaged in non-profit undertakings as a long term career choice.
business-related responsibilities typically remain his/her priority at all times. There is usually little time for any matters that fall outside of the realm of business ownership and management. This usually results in the entrepreneur being totally absorbed by work-related issues, which makes it difficult to discern where business ends and other aspects of his/her life fit in.

Entrepreneurs continuously pursue opportunity (Stevenson 1983), they may be faced with opportunities where they are compelled to make choices between alternatives. They typically face aggressive competition in the marketplace and extraordinary financial risks. Sometimes none of the choices appear appropriate to them, or more than one appears equally desirable. In addition, they are usually unable or unwilling to consult with others about the decision, so they must rely on their own judgment to determine ‘what is right’.

It is hypothesised that entrepreneurially-inclined managers will tend to be biased toward consequentialism (as opposed to deontology and virtues) than their corporate counterparts and that there are differences in ethical orientation between Chinese and Australian managers with entrepreneurial intentions.

Literature Review

Research that addresses entrepreneurs’ motivations in a direct manner clearly shows that entrepreneurs are not just single-minded profit maximizers who appropriate the value created by other people’s work, alluded to in economic theory (Hebert & Link, 1988: 48). When asked about start-up motivations they state a range of economic and non-economic driving forces. The top two motivators tend to be the desire to be one’s own boss, and the compulsion to bring an idea they may have nurtured for some time to reality, or some variation on those themes (e.g. Birley & Westhead, 1994; Vesalainen & Pikhala, 1999). When economic motivation occasionally takes primacy, it is economic necessity rather than the dream to become rich that is the primary motivator for starting a business (Solymossy, 1997).
lund, Davidsson & Delmar (2003) in their longitudinal study of ongoing small businesses demonstrated that expectations concerning the effect of business growth on employees’ well-being are far more important than the effect of growth on the entrepreneur’s income stream alone, which indicates that non-economic concerns can influence entrepreneurial decision making. Reviewing a range of research studies, Sapienza, Korsgaard & Forbes (2003) specifically discuss entrepreneurs’ characteristic self-determination as an important enough motivator to overshadow even potential financial losses. Delmar (2000), while conceding that there are some generalisations made about entrepreneurs, concludes that there is no typical profile.

According to the literature, entrepreneurs appear to be as heterogeneous as any other group, in the psychological, demographic and socio-economic sense. Thus, we might expect that they are not inherently a special breed of ethical issues either. Although Bucar, Glas and Hisrich (2003), in one of the few studies devoted to entrepreneurial ethics, found differences between entrepreneurs and corporate managers in their attitudes towards behaviours that might be seen as unethical, those results are better explained by situational characteristics rather than innate differences of character between entrepreneurs and non-entrepreneurs.

I would now like to touch on the most salient aspects of Western ethical theory, as well as the Chinese perspective, before venturing to describe the domain of entrepreneurial ethics.

When one asks the question "What is the right thing to do?” it usually means he is searching for the most appropriate moral action. In our ever-present search for ‘right’, we are consciously or unconsciously engaging in ethics, which in its most basic form is simply ‘the philosophical reflection on moral issues’ (Robinson D, 2002).

If morality changes over time, with societal norms and regulatory sites, then how can one know for sure what is moral? Certain minimu
• Morality as responsibility, i.e. acting in accordance with other people's concerns, rights and expectations. That means not only refraining from doing things that cause harm to others, but also actively pursuing their welfare – it implies the imperative to do as you say and believe.

• Morality as concern for others, i.e. understanding how other people experience a loss, for example, which compels us to not want to impose a loss on another.

• Morality as reason, i.e. they should be justifiable according to an objective set of criteria.

• Morality as consistency, i.e. similar cases are treated similarly without double standards.

• Morality as universality, i.e. the same conditions must be applied to all concerned.

The above five form a convenient checklist for entrepreneurs who wish to ensure that their decisions are ethical. Problems occur when one or more of the above conditions do not appear to be fulfilled by an anticipated business decision. Entrepreneurs need to choose the best under the circumstances. How do entrepreneurs make the best choice?

One way to do so is to seek out an applicable rule, norm, value or example, then he/she seeks to apply normative ethics. Normative ethics is the branch of philosophy concerned with moral obligation and intrinsic value in the actions and character of human beings (Boylan 2000). Two niches of western normative ethics are virtue ethics and rule-based ethics.

Virtue ethics is a relatively stable character aspect that disposes a person to act in a benevolent way. To describe something as a relatively stable character aspect is the same as saying that it has become a habit. Virtue ethics therefore focuses on the formation of one's character to equip one for good citizenship in an organized community, in the belief that a community made up of people of good character would be a good community.
s, the culture was propagated that morality should be formed as part of a person’s character (Negri 1988), such that it should then be unnecessary to impose any particular theory of morality on ourselves or others, but we would be morally equipped to act always in accordance with our personalities, which would be trustworthy because they would have been formed around a right moral value system. There is sufficient evidence of crime and corruption all around us in this day and age to show that we do need rules and laws to guide and direct people’s behaviours if we are to enjoy a fair society. Perhaps it is precisely because of the multiplicity of rules and laws that ethics per se is today a seldom discussed topic, which seems to surface only when rules or laws are indeed transgressed and the offending parties are found to be ‘unethical’. Ethics should not be about judging conduct after the event. More appropriately, ethics should be the little voice inside everyone, calling them to reason and pre-mediated accountability for actions.

Virtue ethics cannot provide absolute guidelines to individuals and communities, because of cultural differences and the process of adaptation (Negri 1998). Although some hypothetical concept of a virtuous person, akin to the legal concept of the reasonable man, may be useful in assessing the moral appropriateness of human behaviours, where no absolute measures exist, the entrepreneur would still require a comprehensive description of what constitutes a virtuous person, and it would seem improbable that such a description could cover every eventuality. As virtue ethics emphasizes the roles of character and reason, perhaps all we need describe is what it means to be reasonable and of good character, but again the application of those ideals would be subject to the entrepreneur’s own interpretation. The lack of clear guidelines gave rise to more prescriptive forms of normative ethics, referred to as rule-based ethics.
Rule-based ethics seeks to evaluate moral considerations against a set of rules that constitute a moral theory, which determines what is regarded as acceptable behaviour. Two rules may be applied, namely:

- Consequentialism, under which actions should be judged according to their consequences, and
- Deontology – under which the opposing view is assumed, i.e. that the judgement of rightness or wrongness of any action is not dependent on consequences, but rather on the intrinsic goodness of the action, in and of itself.

Consequentialism

The most popular approach to consequentialism is utilitarianism – the belief that “an action is morally right when that action produces more total utility for the group as a consequence than any other alternative does” (Boylan 2000: 66). The goal of utilitarianism is often stated as the greatest good for the greatest number (Boylan, 2000; Rachels, 1993; Rossouw, 2002). Weiss (2003) extends the utilitarian concept to business by going beyond the traditional, idealistic definition of ‘greatest good for the greatest number’ producing the following tenet (Weiss, 2003: 80): An action is morally right if “the (immediate and future) net benefits over costs are greatest for all affected”. Such an approach to morality is similar to the cost-benefit analysis commonly used in business decision-making. Weiss thereby attempts to make the utilitarian label fit into a pragmatic business context, but the weighing of benefits against costs cannot qualify as a normative ethical approach to decision making unless it simultaneously complies with all conditions for morality. Since the cost-benefit approach can be utilized quite independently of any ethical conscience, the entrepreneur is still left without any real method of ensuring ethical correctness.
mediate personal pleasure is unlikely to lead to long-term happiness (e.g., robber becomes a fugitive or a prisoner). An astute risk taker might gh-up the probability of being caught and decide to go ahead and rob anyway. So, a form of consequentialist reasoning is found in ethicalsm, where conflict of interest between what is good for oneself and what is good for society is resolved by the individual simply placing his own happiness first. Egoism cannot be propagated as a universal moral principle, as it contradicts many of the minimum conditions for morality, such as responsibility and concern for others. Alternatively, altruists regard concern for others as more important than concern for themselves. Based on the above, it seems important to know whether or not entrepreneurs tend to rely on consequentialist-type reasoning when faced with ethical decisions.

Deontology

Deontology, by contrast, focuses purely on the intrinsic rightness of an action, without regard for its consequences. Deontologists believe in the absolute necessity of duty, irrespective of the rewards or punishments that follow. So, for example, the deontologist would not tell a lie, even if doing so might save the lives of many people. Immanuel Kant (1724-1804) insisted that two concepts, in particular, are necessary for consistent moral behaviour, namely human reasoning and goodwill. He defined goodwill as “the will that obeys the universal moral law” (Rossouw, 2002:51). As some duties are absolute, e.g. the duty to tell the truth, others are the duty to exercise, there are two forms of imperative - the categorical imperative is a universal moral obligation that is not dependent on anything, whereas the hypothetical imperative is a conditional moral obligation. Kant’s Categorical Imperative requires people to always act in such a way that they can, at the same time, wish that everyone would act in that way. For
viously at all times. The main difference is that it seeks to prescribe moral duties by promoting an imperative to act morally, assuming that people do not, of themselves, always act in virtuous ways. It supports most of the minimum conditions for morality, in particular responsibility, concern for others, consistency, universality, and reason. Entrepreneurs, however, reside in a world where they obtain their highest value from being different from others, i.e., they seek to be the first, the best, the quickest, the cheapest, the most innovative, so it is unreasonable to expect them to base their actions on what everyone else would do.

With the advent of a ‘global village’ and the resultant exposure to different cultures, people are now realizing that “what is right in one culture is not necessarily right in someone else’s” (Rossouw, 2002: 66). This has given rise to cultural relativism. Adapting to the cultural mores of a foreign country with which one is attempting to conduct business was once considered a moral duty but certain countries have recently declared it a questionable practice. How then can cultures ever agree on what is ethical?

Chinese perspective

Business Ethics in China is deeply affected by Chinese traditional culture, especially by Confucianism. Confucianism advocates a number of important values that underpin human relations and interactions, but its substance is centered on four unique yet inter-related concepts (Tu Wei-ming, 1995). The first of these is the central value of goodwill (ren), which identified the priority of the human person to extend generosity and compassion to all humanity. It promotes reflection on one's allegiances and maintains that one's allegiance is not to one's state, but to the human community through goodwill. The second is protocol (li), which means that every person should follow the rules of proper conduct. These are unwritten laws and regulations that governed thought and action in society and regulated human behavior and desire. The third is filial piety (hsiao) which teaches people to love their family first and then to extend this love and respect to the rest of society. The fourth is the doctrine of the mean (zhong)
g) that teaches an appreciation of central virtues that achieve the necessary balance between extremes. It is believed that if people adhere to the doctrine of the mean they achieve the desired harmonious balance, which is considered essential for a harmonious society.

In the Chinese business system, these classic perspectives affect Chinese entrepreneurs’ thinking when they make decisions. Thus, their search for optimum solutions must satisfy not only economic interests, but also the aforementioned societal principles. These principles become manifest as a desire to respect the mean, regard humanity as the basic element, and concern for honesty, morality, and harmony. In addition, business leaders take upon themselves the burden of ‘reflourishing’ China through their industry as they consider the economic well-being of their country to be their responsibility (Qizhong Zhu, Chuanqing Wu, 1996). They also hope that their companies have constant, consistent long-term development and sustainability as a result of applying these universal principles.

In addition to the above, Guanxi takes on a special role in Chinese culture. Guanxi can be defined as a principle encompassing “pre-existing relationships of classmates, people from the same native-place, relatives, superiors and subordinates in the same workplace, and so forth” (Y.H. Wong, 2000). Since these relationships define how members of society interact in relation to each other, an appreciation of guanxi is essential to understanding Chinese business behavior. Although guanxi is based on a societal system that arguably has its origins in Confucian thought, still, guanxi describes an invisible network of personal relationships that can and do invariably provide the most efficient way of getting anything done.

There are five guanxis, namely:
 • elder-younger brother and
 • friend-friend.

This hierarchy of relationships, not unlike W. D. Ross’s (1930) prima facia, a 20th Century adaptation of deontological responsibility theory, dictates the appropriate social status and responsibility of a person in the society (Pablos, 2001). From Chenting Su and James E. Littlefield’s point of view (2001), there are two types of guanxi prevalent in mainland China, namely favor-seeking guanxi that is culturally rooted, and rent-seeking guanxi that is institutionally defined. Notwithstanding this modern-day distinction, the fostering and nurturing of personal relationships is a lamentably important social behavior in the life of the Chinese people (duo, 2005).

The reality might be that in the Chinese business system there is no single decision-maker. Rather, it may be the network itself, i.e. guanxi, that is the ultimate, collective ‘decision maker’ (Ford, 1997). Thus when Chinese entrepreneurs make any decisions, and more especially a decision containing ethical component, they will undoubtedly think about whether it will profit their own social relationships. It follows that Chinese people prefer their relatives and the ones with whom they are already familiar. This is the origin of Chinese renqing (translated ‘favor’) and ‘kinship culture’ (Kingrui Zhu, 2005). So to Chinese entrepreneurs, guanxi is another important influencing factor in the decision making process. The underlying reason is that good guanxi will certainly bestow a company with rich profits without guanxi, or with a bad guanxi, entrepreneurs would be greatly limited in their ability to accomplish anything.

Toward an entrepreneurial ethic
control and forced their behaviour in a direction that clashed with their or generally accepted ethical standards (cf. Cialdini, 1988, on the effects of ‘Authority’). In addition, as the key decision makers they are likely to frequently face complex and novel decisions, involving tradeoffs ethical implications and for which no satisfactory, predefined solution. This realisation renders ethical issues very pertinent to entrepreneurs. Teal and Carrol (1999) found that entrepreneurs exhibit moral reasoning s on a higher level than either middle-level managers or the general population. This appears logical considering that entrepreneurs have to shoulder responsibility for difficult decisions more often than their corporate counterparts.

Judging from the above review it is clear that the situation entrepreneurs themselves in differs markedly from that of most other people, and this in itself renders them a particularly interesting group to study from an ethics point of view. It is therefore important to discover whether or not the group people we delineate as entrepreneurially-inclined have any natural, conscious or unconscious, bias toward one or other ethical orientation.

Methodology

A questionnaire – Ethics in Business – was developed, consisting of thirty-seven questions. Of these, four had definitive short answers and were based on a mini case designed to examine respondents’ attitudes towards ethical considerations in sales, inter-personal matters, administration and company culture, while the remaining thirty-three required responses based on a dichotomous Likert scale consisting of five options ranging from ‘strongly disagree’ (SD) to ‘strongly agree’ (SA) with a neutral point (N) between ‘agree’ (A) and ‘disagree’ (D). Options were scrambled to negate repetition and monotony. An additional feature of the questionnaire was that some questions contained response options where the two sides of the scale were simple opposites, thus signifying degree of acceptance or rejection of the relevant ethical theoretical basis, while others were set up to force a trade-off between two opposing theories. There were an equal
umber of options for each of the three theories, both as acceptance/rejection questions and as trade-off questions, thus negating instrument bias (see appendix 1).

Ethics in Business questionnaire was administered to business managers in Australia and China. These included mature age MBA students with significant managerial experience, who consider themselves entrepreneurially-inclined, some established entrepreneurs as well as a mix of corporate managers of for-profit companies and managers of not-for-profit companies. Within the sample are participants from MBA schools in China and Australia. Although the Australian group contains students from China or other Asian countries, and both business school groups contain a small number of students from Europe, the fact that identification was not compulsory has meant that it was impossible to separate those questionnaires, thus limiting the analysis, yet providing a higher response rate in the aggregate.

Analysing responses, points were allocated according to the degree of acceptance/rejection (positive vs. negative points) or the trade off between opposing theories (both positive). Thus, three points were allocated to ‘strongly agree (SA)’ or ‘strongly disagree (SD)’ responses and one point to agree/disagree (A)/(D) responses. Points were tallied (with positives and negatives netted, where applicable) and aggregated per participant and then averaged for the group, showing clearly the average nett preference of each group for each particular theory. Results were tabulated and then analysed means of Chi Square statistics (Mathbeans Project, 1999) to test hypotheses.

Findings
Responses were summarized and are described in Table 1:

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<thead>
<tr>
<th>Group</th>
<th>Virtue</th>
<th>Conseq.</th>
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<td>China IMBA Group 2</td>
<td>10.2</td>
<td>4.2</td>
<td>7.4</td>
<td>1.5</td>
<td>1.2</td>
<td>0.5</td>
</tr>
<tr>
<td>China Entrepreneur/Manager</td>
<td>10.5</td>
<td>4.8</td>
<td>9.4</td>
<td>3.1</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Australia MBA Group (30)</td>
<td>23.0</td>
<td>-0.5</td>
<td>4.4</td>
<td>1.7</td>
<td>1.3</td>
<td>-0.4</td>
</tr>
<tr>
<td>Entrepreneur Subtotal (161)</td>
<td>55.0</td>
<td>10.5</td>
<td>27.6</td>
<td>8.4</td>
<td>4.7</td>
<td>-0.6</td>
</tr>
</tbody>
</table>
It can be seen from the table that, in general, virtue ethics enjoyed the most support (65.3%) with deontology second (26.1%) and consequentialism least (8.6%). When forced to evaluate consequences, respondents rated utilitarianism (59.1%) above altruism (40.9%) and placed least importance on egoism (0.0%). When only the entrepreneurially-inclined managers considered, the picture remains similar:

- Virtues 59.1%, Deontology 29.6%, Consequentialism 11.3%
- Utilitarianism 64.1%, Altruism 35.9%, Egoism 0.0%

<table>
<thead>
<tr>
<th></th>
<th>Australia</th>
<th>Not for Profit Group</th>
<th>Corporate Group</th>
<th>Corporate Sub-total</th>
<th>Total (188)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general</td>
<td>19.2</td>
<td>1.4</td>
<td>4.5</td>
<td>2.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Virtues</td>
<td>78.1%</td>
<td>3.1%</td>
<td>18%</td>
<td>50.0%</td>
<td>47.7%</td>
</tr>
<tr>
<td>Deontology</td>
<td>16.2</td>
<td>0.0</td>
<td>4.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Consequential</td>
<td>19.2</td>
<td>1.4</td>
<td>4.5</td>
<td>2.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Utilitarianism</td>
<td>78.1%</td>
<td>3.1%</td>
<td>18%</td>
<td>50.0%</td>
<td>47.7%</td>
</tr>
<tr>
<td>Altruism</td>
<td>16.2</td>
<td>0.0</td>
<td>4.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Egoism</td>
<td>19.2</td>
<td>1.4</td>
<td>4.5</td>
<td>2.3</td>
<td>2.1</td>
</tr>
<tr>
<td>Total</td>
<td>78.1%</td>
<td>3.1%</td>
<td>18%</td>
<td>50.0%</td>
<td>47.7%</td>
</tr>
</tbody>
</table>

Chi Square analyses were conducted to test the following effects and hypotheses:
Whether or not there is any significant difference between entrepreneurial and corporate managers with respect to ethical orientation. The Chi Square statistic was 6.01 with 2 degrees of freedom. As this is greater than 5.99, the null hypothesis can be rejected with a 0.05 error probability, or 95% confidence level. It is therefore concluded that there is a significant difference in ethical orientation between entrepreneurially-inclined and corporate managers. The corresponding contingency table is shown in Appendix 2.

Whether or not there is any significant difference between Chinese and Australian entrepreneurially-inclined managers in the distribution of their ethical orientations. The Chi Square statistic was 11.5 with 2 degrees of freedom. As this is greater than 9.21, the null hypothesis can be rejected with only a 0.01 error probability, or 99% confidence level. It is therefore concluded that there is a significant difference between Chinese and Australian entrepreneurially-inclined managers in the distribution of their ethical orientations. The corresponding contingency table is shown in Appendix 3.

Four things become evident from these results:

1. The aggregated responses definitely did not favour consequentialism above virtue ethics or deontology. All cultural groups were oriented mostly toward virtues, then deontology, and placed consequentialism last. (Similarly, all cultural groups preferred utilitarianism above altruism with egoism last).
2. A significant difference in ethical orientation was found between the two cultural groups.
3. Virtues was the most preferred way of deciding ethical issues in business among entrepreneurially-inclined managers.
4. There are significant variations between the aggregated responses of the Chinese and Australian managers.
Aggregated results ignore the sensitivities of individual respondents, and a complete picture is presented when one looks at the range of orientation, as shown in Table 2:

Table 2: Range of Responses by Cultural Grouping

<table>
<thead>
<tr>
<th>Group</th>
<th>Virtue</th>
<th>Conseq.</th>
<th>Deontol.</th>
<th>Utilitarian</th>
<th>Altruism</th>
<th>Egoism</th>
</tr>
</thead>
<tbody>
<tr>
<td>China MBA Group</td>
<td>hig</td>
<td>lo</td>
<td>hig</td>
<td>lo</td>
<td>hig</td>
<td>lo</td>
</tr>
<tr>
<td></td>
<td>h</td>
<td>w</td>
<td>h</td>
<td>w</td>
<td>h</td>
<td>w</td>
</tr>
<tr>
<td>China Entrepreneur Group</td>
<td>hig</td>
<td>lo</td>
<td>hig</td>
<td>lo</td>
<td>hig</td>
<td>lo</td>
</tr>
<tr>
<td></td>
<td>h</td>
<td>w</td>
<td>h</td>
<td>w</td>
<td>h</td>
<td>w</td>
</tr>
<tr>
<td>Australia MBA Group</td>
<td>30</td>
<td>-4</td>
<td>15</td>
<td>-7</td>
<td>13</td>
<td>-2</td>
</tr>
<tr>
<td>Australia Corporate Group</td>
<td>34</td>
<td>11</td>
<td>6</td>
<td>-8</td>
<td>22</td>
<td>-8</td>
</tr>
<tr>
<td>China Entrepreneur Group</td>
<td>39</td>
<td>5</td>
<td>10</td>
<td>-</td>
<td>20</td>
<td>-6</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China Entrepreneur Group</td>
<td>25</td>
<td>-4</td>
<td>20</td>
<td>-</td>
<td>29</td>
<td>-3</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Limitations

Validity of this research is limited by the following factors:

- The possible cross-over of values and ethical orientation between cultures, especially where some of the Australian participants may be of Asian origin;

- The use of MBA students pursuing entrepreneurship studies and relying on their own perception of themselves as ‘entrepreneurially-inclined’ as the main criterion for inclusion in the study. This is especially relevant to the China group, where the term ‘entrepreneurially-inclined’ may have been interpreted differently from the established meaning in English first language countries;

- The possibility of respondents choosing answers they perceived as ‘correct’ cannot be discounted, even though the instructions stated clearly that there were no right or wrong answers;

- This study has only considered the three major ethical theoretical bases, namely virtues, deontology and consequentialism. Since entrepreneurs inhabit a world of opportunity, which often requires expedient action, it follows that there may be little time in their day to day lives for reflective ethical consideration, which raises the possibility that the indications of ethical orientation found in this study may not carry through to the real worlds of respondents;

- In the light of hypothesis 2 being confidently rejected, it is possible that the rejection of hypothesis 1 could be influenced by the fact that the corporate group were all Australian and the entrepreneurially-inclined group were mainly Chinese;

- Finally, even though the hypotheses tested returned definitive results, the reliability of the research is limited by the fact that the
Conclusions

There is little doubt that ethical reasoning remains a complex mosaic of virtue ethics, deontology, and consequentialism (Robinson D, 2002), and any attempt to typecast entrepreneurs or even define an entrepreneurial ethic may indeed be futile. Nevertheless, this study has identified that the way entrepreneurs decide what is ethically appropriate is not, as sometimes believed, based on selfish, egoistic or even consequentialist bias, in the main. The findings that entrepreneurs’ chief orientation is to virtues appearing and counter-intuitive, and suggest the existence of a more sensitive, searching, inner soul beneath the apparent hard-nosed, business-oriented, public image of the typical entrepreneur, as current parallel research has suggested (Robinson, Davidsson, van der Mescht and Court, 2006).

One striking difference between the entrepreneur and others is that the areas of their lives are not easily delineated. Their dilemmas therefore extend to personal, business, and family matters, and these are more likely to be mingled than their corporate counterparts. Since moral choices are unavoidable in business, we would have to agree with Megone’s (2002: 28) assertion that the real challenge, where entrepreneurs are concerned, is “to make the ethical component of business decision-making explicit so as to make it better”. Given the strong indication that entrepreneurs, like their corporate counterparts, regard virtue ethics highly, future research could be used on ways to ensure they are equipped to make business decisions without violating any personal principle or value. In this regard, the Business Ethics Synergy Star (BESS) (Robinson et al, 2006) will no doubt prove a valuable tool.

Now return to the main question and title of this paper - Are traditional Western ethical theories still relevant in a cross-cultural and entrepreneurial business world? This research has shown that there are significant
new businesses are brought into existence, it is probable that the nature of decision-making will continue to change significantly and rapidly. There is an urgent need for the establishment of a modern-day ethic that accommodates both Western ethical theories and the traditional Chinese ethics, including Guanxi, which do not appear in principle to be at conflict with each other. While it is unlikely that a single, universal business ethic will ever prevail, and probably undesirable that it ever should (as any absolutistic system would limit creativity and all but erase valuable cultural heritages), the challenge remains to make ethical decisions and conduct business in ways that are considered morally acceptable to all parties concerned.

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Innovation Center: A Climate for Attracting and Developing Creativity

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Abstract
Creativity has been defined as the ability to make or bring into existence something new. To prevent failure of innovative creativity, it is necessary to develop a system to lead creativity into innovation. Science and technology parks can play a supportive role by providing an environment in which creative individuals receive necessary services to make novel innovations. It is
pected that in this synergic environment, the innovations will find their way to market through the establishment or involvement in technology companies.

This paper reports on the development of Innovation Center in Yazd Science & Technology Park (YSTP). Based on theories of activity and innovation, a supportive structure model was designed. The required services to foster the innovative creativity atmosphere were identified. The designed model was implemented in the Park and the preliminary results show considerable success.

1. Introduction

The concept of creativity is being increasingly recognized as having its "social side". Creativity can be interpreted as an interaction between an individual and the immediate socio-cultural context, therefore being an interpersonal phenomenon [1]. The beneficial or detrimental aspects of social facilitation of creativity are situational, but it seems clear that the presence and behavior of others is having an effect on creativity and its benefits. So definition of creativity should be based on the context in which it flourished. Creativity has been defined as the ability to make something new, whether a new solution to a problem, a new method or device, or artistic objects or form. Creativity can be recognized as a combination of Idea and Action whereas innovation shows the combination of creativity and commercialization of product [2].

EU definition of innovation states that Technological product and process (TPP) innovations comprise implemented technologically new products and processes and significant technological improvements in products and processes. A TPP innovation has been implemented if it has been introduced on the market (product innovation) or used within a production process (process innovation). TPP innovations involve a series of scientific, technological, organizational, financial and commercial activities. The TPP innovating firm is one that has implemented technologically new or
significantly technologically improved products or processes during the period under review.

In this paper a structure is proposed to foster creativity and innovation among creative individuals or teams. Supportive structure's concept was based on the theories of creativity and innovation. This supportive structure provides unique opportunity for young creative innovators and enables them to develop their ideas in one hand and help SMEs to access creative innovators on the other hand[3].

Supporting Hi-Tech SMEs are known as macro scale duties of STPs, supporting creativity and innovation among individuals and teams can be considered as the micro scales duties. Following are the main activities that STPs can do to provide an innovative environment [4]:

- enhance ability to commercialize and make social use of our scientific, technological and creative ideas;
- contribute to political, technological, environmental, health and social priorities;
- build on the economic importance of creative industries and service sectors;
- extend work patterns to account for an ageing society;
- foster a greater public awareness of the importance of scientific and technological change;
- invest in long term benefits of cross-disciplinary educational activity;
- make more efficient use of material resources and human capital; and
Regarding the definition of creativity, different viewpoints can be found in the literature [1, 2, 4]:

John Haefele (CEO and entrepreneur): Creativity is ability to make new combinations of social worth.

Carl Rogers (psychologist and writer): Creativity is emergence of a novel, relational product, growing out of the uniqueness of the individual.

Henry Miller (writer): Creativity is occurrence of a composition which is both new and valuable.

Newell, Simon, & Shaw (Team of logic theorists): Creativity is a special class of problem solving characterized by novelty.

H.H.Fox (scientist): Creativity is any thinking process in which original patterns are formed and expressed.

E.Paul Torrance (Educator, Academic, Creativity investigator): Creativity is Fluency, flexibility, originality, and sometimes elaboration.

Rollo May (writer, philosopher): Creativity is the proof of bringing something new into being...

Roger von Ouch: Creative thinking involves imagining familiar things in a new light, digging below the surface to find previously undetected patterns, and finding connections among unrelated phenomena.

Carnevale, Gainer, Meltzer (innovation Interpreter): Creativity is ability to use different modes of thought to generate new dynamic ideas and solutions.
 Amar. For instance, adaptive creativity might involve studying an invoicing system, identifying what is wrong with that system, and fixing it.

2. Innovative creativity, in which something new is created. In the case of the invoicing system, for instance, “someone who is more inclined toward innovative creativity would not try to correct the system. Rather, he or she would throw out the system and create a new one.” The concept that is considered in most of creativity studies is innovative creativity.

To provide an environment that encourages innovative creativity, it is necessary to develop a system. This system is recognized as processes which creation demand that unique ideas find inviting homes. Ideas must seek development, production, refinement before they reach fruition and manifestation and for others to see their beauty or their worth. This process takes time and energy as creators become consumed with the tasks of taking ideas and making them visible, audible or usable. Adjacent to a focus on creative and innovative individuals, a group or team focus has been established in research and practice. Therefore supporting creativity and innovation means providing support for individual and team efforts in a systematic scheme.

According to a study, systematic creativity is constructed from 5 levels, each level having its own characteristics. By fostering individuals' creativity, their creativity level will go to higher levels. The first three levels of creativity can be attained by anyone who is motivated and who has persistence enough to see projects and ideas through. The last two levels may be unattainable to all but those who are highly gifted creatively, or who are naturally creative geniuses:

1. Primitive and intuitive expression: This first level of creativity incorporates the primitive and intuitive expression found in children and
academic and technical level: The second level of creativity is the academic and technical level. At this level the artist learns skills and techniques, developing a proficiency that allows creative expression in myriad ways. The academic artist adds power to expression through the tery of craft.

Inventive level: Many artists experiment with their craft, exploring new ways of using familiar tools and mediums. This heralds the invention. Breaking rules is the order of the day, challenging the boundaries of academic tradition, becoming increasingly adventurous and experimental. Inventors use academic tradition and skills as a stepping-stone into new tiers.

Innovative level: At the level of innovation the artist, writer, musician, inventor, thinker is more original. Materials and methods that are out of the ordinary are introduced. Now the creator breaks the boundaries. The academic or inspirational foundation remains as a substructure of unconscious thought guiding these creative efforts.

Genius level: The fifth level of creativity is characterized as genius. There are individuals whose ideas and accomplishments in art and science defy explanation. Genius is arguably the one level that is unexplainable and inattainable for most of us, something that an individual is born with.

Fostering rules, Creative human resources and supportive structure are primitive needs of creative systems. Systematic creativity cannot lead to innovative creativity without integration of these parts.

Rules for Fostering Creativity

There are some simple rules in fostering creativity among individuals
Creativity grows among friends and celebrations, and withers among enemies and confrontations.

Creative ideas are often fragile -- like children creative ideas and people deserve protection.

Creative successes are often preceded by failures -- for explorations, ings, daydreams, flights of fancy, trial and error are the natural companions of creativity.

Creating is a distinctly human trait. Exploring and fulfilling one's creativity is a sacred trust -- a potential given not just to selected individuals, but all humans.

Violating someone else's creativity is an assault on the very essence of her's inner being.

Feedback on creative ideas and products should be supportive, and should build on strengths, never concentrate solely on weaknesses.

Often born from internal or external chaos, dissonance, strife, or disequilibrium, creative production can be a way of creating order, dealing with anger or grief, or solving problems as individuals seek to regain nce.

Being creative can be exhilarating, even addictive, and the creative spirit can be wonderfully contagious.

If one wishes to observe, appreciate and encourage creativity in oneself or others, one must learn to be quiet and still, to listen, and to watch, and with the heart as well as the eyes.

Creative Human Resources
Is is far more elusive. The characteristics of creative human resources as follows [6]:

1. Individual human talent is non-replicable.
2. The output of human capital is infinitely reusable.
3. The value of knowledge stocks is cumulative and exponential.
4. Returns to creative capital are tangible and intangible.

Indeed, improvement attempts to enhance the quality of creative human resources can make all efforts much productive [7]. Productivity of creative systems goes higher by considering following individual creativity characteristics [8].

- Display a great deal of curiosity about many things; are constantly asking questions about anything and everything; may have broad interests in unrelated areas. May devise collections based on unusual things and interests.
- Generate a large number of ideas or solutions to problems and questions; often offer unusual ("way out"), unique, clever responses.
- Are often uninhibited in expressions of opinion; are sometimes radical spirited in disagreement; are unusually tenacious or persistent -- fixate on an idea or project.
- Are willing to take risks, are often people who are described as a "high risk taker, or adventurous, or speculative."
- Display a good deal of intellectual playfulness; may frequently be caught fantasizing, imagining or daydreaming. Often wonder out loud and might be saying, "I wonder what would happen if..."; or "What if we change..."; or "Can I manipulate ideas by easily changing, elaborating, adapting,
6. Display keen senses of humor and see humor in situations that may not appear to be humorous to others. Sometimes their humor may appear bizarre, inappropriate and irreverent to others.

7. Are unusually aware of his or her impulses and are often more open to rational within him or herself. May freely display opposite gender characteristics.

8. Exhibit heightened emotional sensitivity. May be very sensitive to beauty, and visibly moved by aesthetic experiences.

9. Are frequently perceived as nonconforming; accept disordered of chaotic environments or situations; are frequently not interested in details, areribed as individualistic; or do not fear being classified as "different."

10. Criticize constructively, and are unwilling to accept authoritarian pronouncements without overly critical self-examination.

Supportive Structure for Innovative Creativity

Creative system needs a supportive structure to integrate all necessary factors for innovative creativity to be flourished. Setting up and developing innovative results from creativity, drive and commitment of creative individuals are affected by the supportive structure. In this respect, it is important to investigate relationship between creativity and innovation [9]. Supporting creativity and innovation processes means (simultaneously) providing support for individuals and for teams as well as for convergence and divergence (describing phases in creativity and innovation). Providing support for creativity and innovation carried out through processes of facilitating activities during those phases [9, 10]. According to pioneers' theories, enterprises are required to demonstrate creativity and innovation that if they are to survive and flourish in a competitive and increasingly demanding world. Understanding innovation and creativity concept will help to understand the supportive structure and its duties [11].
Innovation goes beyond mere invention to mean the creative application of technologies, processes or ideas to some useful purpose. Innovation is becoming a highly valued commodity, viewed as key to economic growth and competitiveness. As a result, pressure is increasing to identify areas that present the greatest opportunity for innovation and to develop models to accelerate the pace of innovation [12].

Innovation is defined in different ways [13, 14, and 15]. Schumpeter, Pavitt, and Tidd defined innovation as a process encompassing the development of ideas into marketable products/processes. In line with the foregoing definition, Freeman described innovation as a process comprising technical, manufacturing, management, and commercial activities of new (or improved) products. Major studies on the innovation development process concepts are as follow:

- Rogers believes that the innovation development process comprises of six stages: (a) problem definition, (b) research (basic and applied), (c) development, (d) commercialization, (e) adoption and diffusion, and (f) consequences.
- The innovation development process of the manufacturing industry based on Cooper and KleinSchmidt theory comprises of: (a) Preliminary assessment, (b) detailed investigation (problem definition), (c) development, (d) testing and validation, and (e) commercialization.
- Kline & Rosenberg represents the chain-link model the process of innovation—a set of linked activities that may occur in a variety of sequences. The model includes the innovative activities as well as the elements of research, knowledge, and market.

Schmookler believes that development of technological innovation depends on the evolution of the market demand. The pull from the demand side influences the development of the product life cycle in technological innovation. The core premise of innovation is the strategic implication of creativity, knowledge and new ideas have become essential in an era where innovative business models enable organizations to get ahead of competitors.
Creativity and innovations contain higher levels of subjectivity than other aspects of business and therefore training for innovation and innovation are often avoided in “hard” business training (reported by Van Vuuren 1997) [17]. The word innovation implies creativity, without which there would not be innovation. Also, innovation often requires or results from invention, which is certainly creative. Creativity is necessary but not sufficient for successful innovation. There must also be a good plan or strategy and good leadership for successful innovation coming from an individual or team, particularly when it has large financial or social impact. It was hypothesized that people with high levels of self-evaluated creativity will have high levels of implementation with regard to innovation. Individual persons initiate, contribute to and evaluate all parts of creativity and innovation processes. Individual efforts and achievements are the basis for creativity and innovation [12, 18].

Moreover, the role of intrinsic motivation in creativity and innovation was solidly supported by an interview study of 120 scientists by Amabile and Gryskiewicz (1987). They found that "the single most frequently mentioned characteristic of highly creative work was intrinsic motivation - being motivated primarily from within, from the scientist's own interest in the work itself and not from external pressures. In this study as in most of Amabile's research, intrinsic motivation is seen as a characteristic of the individual more than of the task [1].

In literature, there is a plenty of anecdotal evidence for the significant role of individuals in innovation processes. Also promoting creativity and innovation in a team is another clear and important issue. Picking creative people with wide experience and knowledge, putting them in a supportive environment and challenging them with an interesting project with an emphasis on creativity more than productivity cause creation of disruptive technologies in comparison with sustaining technology [3, 5, 19].
starting point of innovation, which gets into motion a series of events culminating in the entrepreneurial event.

Creativity among individuals working in particular fields comes from a combination of ability, skill, and incentive/strong interest in those fields. If one is to be creative and innovate successfully in a particular area, he/she must be at the forefront of the field and, as well, have a strong desire to innovate. These features often require creativity of a kind that does not contribute directly to the innovation but certainly is important for its success. Innovation supportive center must promote technological creativity and innovation culture by training creative people based on spreading incentives, expanding abilities and developing skills among creative individuals.

Creativity Hybrid Triangle shows relationship between these concepts [2

![Creativity Hybrid Triangle](image-url)
1 regard to the application of innovative creativity in the entrepreneurship domain, the first step of the process is for the potential entrepreneur to recognize an opportunity to innovate. To recognize an opportunity to innovate, the entrepreneur must participate in a creative activity [22]. After an opportunity is recognized, the entrepreneur must develop alternative courses of action to take advantage of this opportunity. This point, ideas need to be enhanced, theories explaining the observed opportunities used to be developed, alternatives need to be compared, criteria established, problems defined and hypothesis and plans formulated. The process has been shown in Figure 2.

Figure 1. Creativity Hybrid Triangle

Figure 2. The Creativity-Innovation Process

Successful innovation needs an integration of creativity, in-house research activities, production activities, marketing, and interorganizational relationships.

STP Innovation Center, a Model for Fostering Creativity
innovation among creative individuals [15]. A gap analysis was applied to the architecture to achieve a system for supporting creative and innovative individuals. Innovation center was the result of the gap analysis and its duties were defined in accordance with YSTP objectives.

Theoretical contributions to the NIS literature have outlined the importance of institutions. Moreover, Francois Moreau has argued that a further theoretical development of the elements of NIS is necessary in order to achieve a success of other parts [23]. Owlia et al. studied the emergence of innovation center as an infrastructure in Iranian science parks. Figure 3 vs the relations between Iranian NIS elements [24].

Innovation center is a supportive structure for Iranian creative individuals and adult innovators, comprising of 9 key elements of environment in which an individual innovator works. Supporting facilities and services which are provided for innovators was carefully considered and its outcome was evaluated and its feedback was used to correct the implementation of innovation supporting system to make this process productive.
Innovation center admits every individual with novel ideas. This center encourages individuals from university as well as markets and industry. Essence of this center shows that it has not been established based on linear link between ideas to markets. Ideas from market and industry help innovators to get feedbacks and improve the linear chain from idea to the market. Figure 4 shows the different steps of innovation process from idea to market formed by theoretical aspects and experiences. Dashed lines show the idea originated in the market or in industry and come to the innovation center and flow in the idea chain (Idea- innovation- Hi-Tech Product-Market/Industry). This idea is originated because of market pull, whereas the ideas come from universities will cause developing an innovative product or process based on knowledge push.

Based on our observation the best creative individuals leave innovation center after their accomplishment of their task to take higher academic degree or establish their own business rather than working for other companies. YSTP innovation center develop Hi-Tech SMEs by supporting creative individuals, potentially be able to become successful entrepreneurs.
Supportive Infrastructure for Fostering Innovative Creativity

Innovators pursue their creative innovation-as individual entrepreneurs; considered in addition to conventional focus on grants, awards and direct financial support. The most important key elements that make YSTP innovation center a place interesting for innovators and creative individuals are:

- Direct or indirect validation of innovation

Public recognition, attendance in events and participating in national and international innovation festivals and exhibitions, interaction with other innovators and media coverage which exposes innovators to general public are utilized to validate what innovators do.

- Technical and business training opportunities

Even though university-based technological programs come immediately to mind when thinking about innovation training, our research show that innovators also get important amounts and type training and professional development from a range of other sources, both formal and informal. Moreover it was experienced that training of business skills are not typically available in conventional university trainings.

- Access to financial resources, equipments and materials

Cost is the fundamental barrier to accessing equipment. Sharing equipment typically brings down the cost. Innovators get access to most equipments and laboratories devices by building networks and collaboration. Team work is another grouping format which enable them to use shared equipment more efficiently.

Data resources...
technology is only created by accessing to more advanced knowledge and the latest researches.

- Creating a market for innovative products

Innovation center has a remarkable duty in marketing the innovative products. In one hand innovation center joints with HI-Tech industries and government and on the other hand adjacent to multi tenant companies of YSTP cause creation of a hybrid market in which young innovators can involve by their projects and sell their innovations.

- Inward and outward connection to other innovators and non-innovators (network of innovation)

Communities and networks are vital to an innovators carrier. They facilitate access to training and professional development, material resources, information databases and IP registration. Networks can be both internal and external with national and international scope.

- Award and grants

Awards and grants, in addition to being important validation mechanisms, provide financial and/or in-kind resources (such as residency, new chance to involve in new project and etc). Even a small grant can have a large impact on an innovator ability to work.

- Physical environment

Innovators’ need for workspace must be distinguished with other groups. Creative space can have a great impact on the quality of innovation. Meanwhile it is so important factor in attracting young innovators. Through the use of light colors, soft textures and elements of nature, a sense of calm emerges in the great historical interesting room, and plenty of open space to encourage creativity.
Working Processes of Innovation Center

Working processes of YSTP innovation center is constructed on the basis of fostering creativity and needs of creative individuals stated here.

Admission

Admission process is commenced with admission of creative people with a brilliant idea and continued with training creativity among innovators. Admission process starts by filling application form and presenting a proposal. In most situations, assessment of creative proposals and ideas concerns applicability, usability, practicality, and cost of implementation. As we are aware of obstacles and barriers in front of applicants, admission criteria is not fixed to these factors.

Questions that are considered in interview session are as follows:

- Is it an improvement over what is presently done or used?
- Is it financially feasible?
- Is it only "cosmetic" and a "cover up" of the problem, or will it correct the difficulty or issue of concern in any field?
- How long will it take to implement?
- Does it have potential for sustained success or positive change in proposed field?
- Is it compatible with existing knowledge/technology?
- Is it in line with the context of any admitted SMEs?
- What is the potential market?
- Is it a Hi-tech innovation?
k is so crucial. Most of ideas which take long time will failure because lose their interest and disappointed easily. Sense of urgency was ted by following steps in YSTP innovation center:

1. Set goals: goal channel energy toward the target.
2. Set time line: time line create a healthy level of pleasure tha prompts people to act faster
3. Tie the reward to the outcome, no outcome no reward.
4. Frequently remind all involved that time is running out from minute you set your watch
5. Along the way the existing innovation process looking for w to create and even faster better one.

We don't want the young admitted individuals to be a Gutenberg or Edison to generate creative ideas. We want them to devote the time to creating innovations.

The other most frequently mentioned environmental factor associated with high creativity was freedom. It was "a sense of control over one's own work and own ideas. It has long been known that complete freedom is not likely to satisfactory outcomes (e.g., Andrews and Farris 1967)[25, 26].

Successful creative teams are characterized by high levels of trust, freedom for personality differences, tolerance of ambiguity and willingness. They also require low levels of direction, formal hierarchy and bureaucratic control. It was convinced that technological innovation in the years ahead will be dependent on the creativity of those working in the research laboratories around the world.

Creativity Training

ause today’s advanced nations depend heavily upon novel technologi
ything. Innovative people might not have a possible solution in mind when they go in search of an innovation, but they have an approach to look for a solution.

Leadership Training

Leaders are individuals who lead, as opposed to managers who manage. In the future, only leaders with a proven track record and clear vision will be responsible to lead teams developing novel technologies [27, 28]. A leader’s track record must provide evidence of individual creativity and sustained performance along with strong emphasis on delivery, or the ability to move from concept to successful implementation. These requirements are as strict if the individual is part of a team that has a leader who does not have the characteristics. One characteristic that is valuable for a team leader is the capability to encourage, enable and motivate the team members in their innovative efforts.

Helping to Form Multidisciplinary Teamwork and Hot Groups

Close cooperation and interaction among team members working on the development of novel concepts must take place from the very beginning of the project [29, 30]. Teams should be established early, so that each member has a chance to contribute to, and participate in, creating the invention. Early involvement of the entire team will help it to focus on simplicity and manufacturing. This will be extremely important, given that the complexity of the multifunctional products will increase over time.

Leavitt and Lipman-Blumen offer the following suggestions for creating hot groups [31]: “Make room for spontaneity; encourage intellectual intensity and exchange; value truth and the speaking of it; help break down barriers; select talented people and respect their self-motivation and ability; and use information technology to help build relationships. YSTP innovation center gather young talent around each other and try to encourage teamwork among them. These groups supported to get their goal.

Mentoring

Our field research in YSTP suggests that foremost innovators need training and technical skill development in general aspects of their innovations.
Meanwhile Mentoring is essential for young inventors to shorten their presence in innovation center successfully. Innovation center held various technical courses in different field such as IT & Computer, Electronic, otechnology, Robotics and etc.

Once a team or individual completed his innovation successfully he may continue his cooperation with innovation center. These technicians who are skillful in their field transfer their tacit knowledge to the new admitted innovator and help fruitfulness of their mind. Also these individuals can work on YSTP project.

Assessment

Creative innovation is evaluated by the committee of experts in companion with admission committee to see the result of admitted novel idea. This committee investigates the results and outcomes of creative individuals or teams and gives some comments about the failure or success of innovators. This comment is used as lessons for future admission and assessment.

Registration of Innovation

Finally their innovative products or services are supported to apply for registration in IP office. This helps to formalize the innovation and to present them in the potential market.

Conclusions

Innovation Center Model was depicted according to the experiences of sorting creative and innovative people in Yazd Science and Technology Park. They were based on international background as well as the psychological and cultural characteristics of young creative Iranian people. The main points that can be concluded are:
innovations more than university oriented innovations that are based on knowledge push.

Creativity among individuals or teams, working in particular fields, comes from a combination of ability, skill, and incentive/strong interest in those fields. To prevent fading novel ideas by young creative minds, a system must be developed to convert creativity into innovation. Fostering creativity, creative human resources and supportive structure are primitive needs of creative system. Systematic creativity cannot lead to innovative creativity without integration of these parts. These basic factors are extracted from creativity literature.

Supportive infrastructures for fostering innovative creativity are crucial in innovation process. They could comprise direct or indirect validation of innovation, conventional and lifelong training opportunity for young innovators, access to financial resources, equipments and materials innovators need for their work, data resources which they require to foster their innovation, creating a market for innovative products of innovators, encouraging business owners to use their products, inward and outward connection to other innovators and non-innovators, awards and grants, and appealing physical environment.

Although bureaucratic processes may hinder the flow of innovation, a clear and easy-going process is required to assure that innovation stages followed completely. Working process of an innovation center could involve admission, project control, making creativity atmosphere, leadership training, helping to form multidisciplinary team works, helping the creation of hot groups, mentoring, assessment, and registration of innovation.

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Investigating Entrepreneurship Capabilities among Agricultural Students of Tehran University

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ABSTRACT

The purpose of this study was to investigate entrepreneurship capabilities of agricultural students in the University College of Agriculture, University of Tehran. This study was performed in 2007-2008. Whole population was all agricultural students of B.Sc., M.Sc. and Ph.D. that were 2200 persons. By...
Using stratified proportional random sampling, 250 persons were selected for study. For data collection from students a structured questionnaire was used collected by use of questionnaire which its validity (Face validity) was verified by a panel of experts and university professors. Reliability assured by Cronbach-Alpha coefficient was tested and $\alpha=.82$ showed the reliability of the questionnaires. The criteria such as mean, standard deviation were calculated. In addition, Analysis of Variance (t Test) and (F test) in SPSS/win 13 software were used for data analyzing, and factor analysis method was employed this research were used for analyzing differences among groups. The findings indicated that it is disagreeing of studies, that risk taking capability of female students (B.Sc & M.Sc) is higher than male students. Instead, capabilities of creativity (M.Sc) and achievement motivation (Ph.D) of male students are higher than female students.

Key words: Achievement motivation, internal control, risk taking, independence, creativity.

INTRODUCTION

Since the mid-1970s, concerns have been rising over the socio-economic situation of young people in many countries and the prospects of creating livelihood opportunities for them (Mkandawire, 1996; 1997; Schnurr, 1998; Bennell, 2000; Curtain, 2000; Bakilana and de Waal, 2002; Temba and de Waal, 2002). The world contains approximately one billion women and men who are in youth ages. This represents about 18 percent of the world's population. Of these, the International Labor Organization (ILO) in its World Employment Report 1998-1999 Estimated 60 million are in search of work.
ent, notes the report. Even in Developed countries, the Organization for Economic Cooperation and Development (OECD) has observed that with exceptions, youth unemployment is in double Digits. However, the scenario regarding to unemployment especially in the agricultural sector in Iran. According to Iranian Islamic republic Administration and planning organization (AOP), unemployment rate has increased from 9.1% in 1996 to 14.2% in 2001 (APO, 2002). In fact, lack of balance between demand and supply is supposed to be the main reason. Labor supply increased during 1996 to 2001 in compare with 1.5 times long period of 1966-1996. Unemployment crisis will affect all economic, cultural and social aspects of a society and sometimes will be source of irremediable bad effects. Experiences have proved this crisis and its social effects neither don't have spontaneous, ideological and ethical solution, nor is it possible to eliminate it integrally and in a short time. Entrepreneurship has been announced as one of the solutions of this crisis by lots of countries (Mashayekh, 2002). Coming to English vocabulary by John Stewart Mill in 1848.

For the field of entrepreneurship, one of the important contributions is that of Mansfield, McClelland, Spencer & Santiago (1987). They sustain that identification of relevant Entrepreneurial capabilities should provide insight into the field of entrepreneurship, and such capabilities might predict business formation and success within and across cultures. Other studies on entrepreneurial capability have been conducted by Chandler & Jansen (2002), Chandler & Hanks (1994), and Man & Lau (2002) in order to identify which Capabilities are crucial in starting and maintaining a business. Ronstad (1985) suggested a set of fourteen skills to be developed through entrepreneurship education. Some of these skills included creativity, ambiguity tolerance, opportunity identification and venture evaluation, career assessment, deal making, networking, and ethical assessment. By examining six European entrepreneurship educations and training programs, Garavan and O'Cinneide (1997) indicated that there were some specific elements which formed part of the content of all programs. These elements included reality-testing skills, creativity, ambiguity tolerance and stress-coping mechanisms. They argued that the consideration of these elements recognizes the unique situations faced by entrepreneurs.
Hood & Young (1993) maintain that four primary areas must be developed for entrepreneurial success. These areas focus on content, skills and behaviors, mentality and personality. By asking 100 leading entrepreneurs and chief executive officers (CEOs) in America’s fastest-growing entrepreneurial firms, Hood & Young (1993) found that content areas of knowledge are those mainly addressed on business education, such as finance, cash management, accounting, and marketing. Leadership, oral and written communication, and human relations are the most important skills for successful entrepreneurship (Hood & Young, 1993).

Moreover, mentality factors include creativity, opportunistic thinking and so on. The fourth area refers to personality traits, which are usually believed to be more stable and therefore, less likely to be changed (Hood & Young, 1993). Brockhaus (1982) found that entrepreneurs have greater internal locus of control than the general population; therefore, entrepreneurs believe the outcome of a business venture will be influenced by their own efforts.

The result of research of Reynaldo et al. (2002) showed students were weakest in Opportunity Seeking, Risk Taking, and Self-Confidence. Practicing entrepreneurs were weakest in Risk Taking. Generally, capabilities of students do not significantly vary by school, age, gender, or level. Capabilities of practicing entrepreneurs considerably differ by location and age, but are not discriminated by gender, number of years in service, and product type. In this research of recently two decade of 20th century, five properties, Achievement motivation (Delmar, 1996; Johnson, 1990; Miner, 1994, 1992; Bellu et al., 1995), Risk taking (McClelland et al., 1969; Heath et al., 1991), creatively (Druker, 1986; Rissal, 1992), independence (Brockhaus, 1982; Vesper, 1990) and internal control (Williams, 1987; Perry et al., 1988; Hood et al., 1993; Gatewood et al., 1995) have attracted more attention. According to recently done research noting these properties will result in entrepreneurship capabilities.
ll business conducted in India and in the USA in 1969. The results showed evidence that Achievement Motivation Training significantly improves small business performance, provided that there is some minimum support from the economic infrastructure in the form of available loans, market opportunities and the labor force. The result of study accomplished by Reynaldo et al. (2002) showed the students were weakest in Opportunity Seeking, Risk Taking, and Self-Confidence. Practicing entrepreneurs were weakest in Risk Taking. Generally, capabilities of students do not significantly vary by school, age, gender, or year level. Capabilities of practicing entrepreneurs considerably differ by location and age, but are not discriminated by gender, number of years in service, and product type. The purpose of this study is to investigated Entrepreneurship capabilities of agricultural students, by focusing on 5 above named (Achievement, Risk taking, Creatively, Independence and Internal control) characteristics, been all agricultural students of B.Sc., M.Sc. and Ph.D university of ran.

Purposes and objectives

The main purpose of this study was Investigating Entrepreneurship capabilities among Agricultural Students of Tehran University. The specific objectives of the study were:

Identification of ranking Entrepreneurship capabilities among respondents;

Investigating of Entrepreneurship capabilities among respondents, from educational levels;

Gender Analysis of Entrepreneurship Capabilities among all the cultural students (B.Sc, M.Sc, and Ph.D);
Methodology

The purpose of this study was to investigate entrepreneurship capabilities among agricultural students in the University College of Agriculture, University of Tehran in Iran. This study was performed in 2007-2008. The population was all agricultural students of B.Sc, M.Sc and Ph.D totaling 2200 persons. By using stratified proportional random sampling 250 students were selected for study. For data collection from students a structured questionnaire was used. The questionnaire consisted of standardized tests of Hans risk taking, Torence creatively, Ratter internal control, Bahargava achievement motivation and Hisreach independency. (McClelland & winter, 1969; Johnson, 1990; Heath & A.Tuersky, 1991; u & Sherman, 1995; Galbraith, 2002; Howard, 2004). For data collection a structured questionnaire was used.

Data collected by use of questionnaire which its validity (Face validity) was verified by a panel of experts and university professors. Reliability ensured by Cronbach-Alpha coefficient was tested and (α=.82) showed reliability of the questionnaires. The criteria such as mean, standard deviation were calculated. In addition, Analysis of Variance (t Test) and (F test) in SPSS/win 13 software was used for data analyzing, and factor analysis method was employed this research were used for analyzing mean differences among groups.

Table (1). Reliability coefficient for the major variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of items</th>
<th>Items dropped</th>
<th>Cronbach α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement motivation</td>
<td>1-12</td>
<td>10</td>
<td>0.82</td>
</tr>
</tbody>
</table>
Results and discussion

Characteristics of the respondents

According to data collected in this study, statistical society was consisted of 52% B.Sc, 30% M.Sc and 18% Ph.D students from among all the agricultural students (B.Sc, M.Sc, and Ph.D) were consisted of 64%, 47% 28% female students and 34%, 53% and 72% male students. The majority of 17.2 percent of this society had studied "Agronomy and plant breeding" and the minority of 4.4 percent was "animal science" students. Other fields involved in this study were irrigation and drainage, food science industries, horticulture, extension, pedology, plant pathology and cultural machineries, respectively. 87.6% of study society had never passed any entrepreneurship educational levels, 6.4% had passed only one course and the remaining had participated in more than one course (table (2)).

<table>
<thead>
<tr>
<th>Training course gender</th>
<th>Frequency</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.Sc</td>
<td>85</td>
<td>male</td>
</tr>
<tr>
<td>female</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

Table (2). Frequency and frequency Percentage of respondents
To measure entrepreneurship capabilities of agriculture students of University of Tehran (UT), five variables Achievement motivation, Risk taking, Creativity, Independence and internal control were chosen. Criterion score was computed from average score of each variable in each questionnaire. As it can be seen from table (3), these five capabilities are internal control, risk taking, independence, creativity and achievement motivation, respectively. However, comparing criterion score, only risk taking and creativity of students were above criterion.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>C.V</th>
<th>Standard deviation</th>
<th>Mean</th>
<th>Entrepreneurship capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.241</td>
<td>0.878</td>
<td>43.02</td>
<td>Risk taking</td>
</tr>
<tr>
<td>2</td>
<td>0.251</td>
<td>0.942</td>
<td>37.50</td>
<td>Achievement motivation</td>
</tr>
</tbody>
</table>
entrepreneurship and educational levels

To identify the differences between entrepreneurship capabilities considering the education level (table (4)), F-test was used. It was found that there is not any significant difference between entrepreneurship capabilities among students (B.Sc., M.Sc. and Ph.D) and educational levels.

Table (4). Advertising of Entrepreneurship capabilities among all Agricultural Students, from of educational levels

<table>
<thead>
<tr>
<th>Entrepreneurship capabilities educational levels</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.Sc</td>
<td>39.6</td>
<td>0.870</td>
<td>1.035</td>
<td>0.312</td>
</tr>
<tr>
<td>M.Sc</td>
<td>35.9</td>
<td>0.971</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ph.D</td>
<td>36.9</td>
<td>0.987</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.Sc</td>
<td>25.92</td>
<td>0.969</td>
<td>0.416</td>
<td>0.52</td>
</tr>
<tr>
<td>M.Sc</td>
<td>45.48</td>
<td>1.030</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ph.D</td>
<td>44.88</td>
<td>1.050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk taking</td>
<td>46.44</td>
<td>0.867</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Gender Analysis on Entrepreneurship Capabilities of Agricultural Students

Entrepreneurship capabilities among Agricultural Students (all), from gender

The result of table (5) according to, in order to identify the differences between entrepreneurship capabilities considering the gender, T-test was used. Contrary to previous studies, this comparison revealed that female students showed a higher risk taking ability (p<0.01) and Achievement motivation (p<0.01).

<table>
<thead>
<tr>
<th>Level</th>
<th>Entrepreneurship Capabilities</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Independence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Sc</td>
<td></td>
<td>28.68</td>
<td>0.942</td>
<td>1.630</td>
<td>0.20</td>
</tr>
<tr>
<td>4. Sc</td>
<td></td>
<td>47.40</td>
<td>0.903</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sc</td>
<td></td>
<td>46.32</td>
<td>0.954</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creatively</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Sc</td>
<td></td>
<td>28.56</td>
<td>0.830</td>
<td>0.019</td>
<td>0.89</td>
</tr>
<tr>
<td>4. Sc</td>
<td></td>
<td>48.86</td>
<td>0.889</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sc</td>
<td></td>
<td>49.98</td>
<td>0.866</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
entrepreneurship capabilities among Agricultural Students (B.Sc), from gender.

The result of table (6) according to, this comparison revealed that female students (B.Sc), showed a higher risk taking ability (p<0.01) than male students (B.Sc).

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>T-value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal control</td>
<td>37.08</td>
<td>32.52</td>
<td>3.769</td>
<td>0.092</td>
</tr>
<tr>
<td>Risk taking</td>
<td>41.52</td>
<td>44.28</td>
<td><strong>3.241-</strong></td>
<td>0.002</td>
</tr>
<tr>
<td>Independence</td>
<td>40.32</td>
<td>35.28</td>
<td>3.654</td>
<td>0.220</td>
</tr>
<tr>
<td>Creatively</td>
<td>36.54</td>
<td>31.22</td>
<td>*4.355</td>
<td>0.003</td>
</tr>
<tr>
<td>Sig.</td>
<td>T</td>
<td>Standard deviation</td>
<td>Mean</td>
<td>Entrepreneurship capabilities gender</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>--------------------</td>
<td>------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>0.242</td>
<td>-2.330</td>
<td>0.970</td>
<td>35.70</td>
<td>Achievement motivation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.989</td>
<td>37.00</td>
<td>male</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>female</td>
</tr>
<tr>
<td>0.103</td>
<td>-1.380</td>
<td>1.080</td>
<td>44.52</td>
<td>Internal control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.964</td>
<td>46.32</td>
<td>male</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>female</td>
</tr>
<tr>
<td>0.006</td>
<td>-2.773**</td>
<td>0.895</td>
<td>39.12</td>
<td>Risk taking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.855</td>
<td>42.12</td>
<td>male</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>female</td>
</tr>
<tr>
<td>0.318</td>
<td>-1.003</td>
<td>0.933</td>
<td>49.56</td>
<td>Independence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.910</td>
<td>35.28</td>
<td>male</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>0.853</td>
<td>-0.185</td>
<td>0.806</td>
<td>49.28</td>
<td>Creatively</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.840</td>
<td>49.56</td>
<td>male</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>female</td>
</tr>
</tbody>
</table>
ents (M.Sc). Versus male students (M.Sc), showed a higher creativity (p<0.05) than female students (M.Sc).

Table (7). Entrepreneurship capabilities Comparison of male and female students (M.Sc).

<table>
<thead>
<tr>
<th>.</th>
<th>T</th>
<th>Standard deviation</th>
<th>Mean</th>
<th>Entrepreneurship capabilities gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>76</td>
<td>0.563</td>
<td>0.649</td>
<td>35.90</td>
<td>Achievement motivation male</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.596</td>
<td>34.60</td>
<td>female</td>
</tr>
<tr>
<td>25</td>
<td>-0.525</td>
<td>0.564</td>
<td>45.00</td>
<td>Internal control male</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.528</td>
<td>45.72</td>
<td>female</td>
</tr>
<tr>
<td>01</td>
<td>-1.550**</td>
<td>0.725</td>
<td>38.04</td>
<td>Risk taking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.354</td>
<td>40.68</td>
<td>male</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>female</td>
</tr>
<tr>
<td>13</td>
<td>-0.901</td>
<td>0.606</td>
<td>46.44</td>
<td>Independence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.495</td>
<td>47.76</td>
<td>male</td>
</tr>
</tbody>
</table>

Female
entrepreneurship capabilities among Agricultural Students (Ph.D), frontier

Because the number of male students (Ph.D) is lower than 30, therefore at first One-Sample Kolmogorov-Smirnov Test; That Test distribution to become Normal. Then T-test was used. The result of Table (8) according to, male students (Ph.D), showed an Achievement motivation ability (p<0.01) than female students (Ph.D).

Table (8). Entrepreneurship capabilities Comparison of male and female students (Ph.D).

<table>
<thead>
<tr>
<th>Sig.</th>
<th>T</th>
<th>Standard deviation</th>
<th>Mean</th>
<th>Entrepreneurship capabilities gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.005</td>
<td>-0.742**</td>
<td>0.680</td>
<td>37.60</td>
<td>Achievement motivation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.657</td>
<td></td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35.90</td>
<td>female</td>
</tr>
<tr>
<td>0.117</td>
<td>0.413</td>
<td>0.755</td>
<td>44.76</td>
<td>Internal control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.622</td>
<td>43.56</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>female</td>
</tr>
<tr>
<td>0.756</td>
<td>0.222</td>
<td>0.594</td>
<td>38.64</td>
<td>Risk taking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Male</td>
</tr>
</tbody>
</table>
Conclusions and recommendations

The results of tables (3, 5 & 8) according to, factors of risk taking and achievement motivation, had explained the highest factors of entrepreneurship capabilities among agricultural students of Tehran University. Therefore, seem that there are leisure crisis in agricultural field of security of occupation, variety and spreading activity fields in cultural sector, the proximity of agricultural colleges of Tehran University to the ministry, organizations, business companies of agricultural cooperatives and agricultural major centers of the country that to be realized in Tehran, there was possibility of a facile access and also students to refer to obtain information for this organizations, to be existing entrepreneurship center in Tehran University and purposeful visits from successful entrepreneurship projects entrepreneur in to increase of tender students to risk taking and achievement motivation are affecting to others other.

The findings (table (4)) indicated that in according to educational levels we weren’t significant different among students (all) in entrepreneurship
ent to promoting fields appearing entrepreneurship and encouragement support of scientific and research plans of students more than before's. For the appearing entrepreneurship capabilities among all the cultural students, requires basic review in content of present courses, hinging methods, more cooperation between universities and ETC and directed educational programs all the agricultural courses in to trained entrepreneurship capabilities among students.

e results of tables (5, 6 & 7) according to, in contrary to previous ies, such as Galbrit (2002) and Agha (2002), this study revealed that ale students of UT Agriculture College showed a higher risk taking a iement motivation abilities than male students. It seems that since ales have a lower chance of finding job in governmental sectors and sidered increasing women unemployment rate and job insecurity, ferr ents showed a higher risk taking tendency. This problem to cause raring of risk taking and achievement motivation (table (8)) in female ents to male students. Therefore there were factors affecting in femal ents' entrepreneurship capabilities, such as: celebrate entrepreneurshi ing shops and to get accustomed with women self-employment egies, training courses of business products cultivation and conferenc o get accustomed with obtained conditions of self- employment loan culture, rules of supported related to increasing female students' rneurship capabilities.

according to (table 4), in doctoral course achievement motivation ibility male students the more than female students. the proximity of cultural colleges of Tehran University to the ministry, organizations, ness companies of agricultural, cooperatives and agricultural major urs of the country that to be centralized in Tehran, there was possibili
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A Discriminant Model for Assessment of Prospective Entrepreneurs for Financing and Success of Entrepreneurial Venture

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Entrepreneurial quality and management competence of the entrepreneur plays an important role in the success of an enterprise. The evaluation of the entrepreneur is therefore a prerequisite while appraising a project for financing. Banks and financial institutions in India are in
The eastern part of India have been used to develop the Discriminant Model. It has been postulated in the research that entrepreneurial success is a function of entrepreneurial traits, attitude and business skills. The Discriminant Model obtained by the use of SPSS package was able to classify 96.2% of the entrepreneurs correctly as “successful” or “unsuccessful” entrepreneurs. The value of Wilk’s Lambda (0.176) suggests good discriminating power of the model. The Standardized canonical Discriminant Function Coefficients for entrepreneurial traits (0.751), attitude (-0.059) and business skills (0.647) suggests that entrepreneurial traits and business skills are better predictor between “successful” and “unsuccessful” entrepreneurs. The Discriminant Model developed herein can be used as a quantitative tool to assess entrepreneurs, provide financial assistance to the right kind of entrepreneurs and thereby reduce the chances of loans becoming Non Performing Assets.

**Words**

Performing Asset (NPA): A loan or lease that is not meeting its principal and interest payments. Banks usually classify as nonperforming assets, any commercial loans which are more than 90 days overdue and consumer loans which are more than 180 days overdue and generally, an asset which is not producing income.

Reserve Bank of India (RBI) is the central bank of India, and was established on April 1, 1935 in accordance with the provisions of the Reserve Bank of India Act, 1934. The main objectives of RBI are to function as monetary authority, regulator and supervisor of the financial system, manager of exchange control, issuer of currency, developmental role and related functions.

SSI units: A small scale unit is considered as sick when (a) if any of
accumulated losses to the extent of 50 per cent of its net worth during the previous accounting year, and (c) the unit has been in commercial operation for at least two years.

Small Scale Industries: Industrial undertaking in which the investment in fixed assets in plant and machinery, excluding land whether held on ownership terms or on lease or on hire purchase, does not exceed Rs. 10 million.

SME (Small & Medium Enterprises): As per the Micro, Small and Medium Enterprises Development Act of 2006, the government of India has defined SMEs as entities that have an investment of above Rs 10 million and below Rs 100 million in plant and machinery.

Introduction

Small Scale Industries (SSI) occupies a place of strategic importance in the Indian economy in view of its considerable contribution to employment, production and exports. They are extremely important for the health of an economy. In most developed and developing countries, the small scale industries have played a critical role in industrialization and economic development. They are the major contributors to the social and economic benefits for any country. Today, governments worldwide recognize the importance of Small & Medium Enterprises (SMEs) and their contribution to economic growth, social cohesion, employment and local development. SMEs account for over 95% of enterprises and 60-70% of employment and generate a large share of new jobs worldwide (www.oecd.org).

Small firms are seen as vehicles for employment generation in most countries. The small-scale sector in India has now been identified by
Nearly 40% of gross value of output in the manufacturing sector and 35% of total exports from the country. The SSI sector comprising of 3.20 million units has provided employment to about 18 million people (www.smallindustryindia.com).

Despite all the initiatives taken by the government and support institutions to promote the entrepreneurs, the sickness in the SSI sector in India has been gradually increasing and it is a matter of concern and debate. Large numbers of SSI units are sick with little scope for any improvement in the near future. Sickness in the industrial sector results in locking up of resources, wastage of capital assets, loss of production and rising unemployment in the country.

According to the information compiled by Reserve Bank of India (RBI) from scheduled commercial banks, as of 31st March 1999, there were 3013 sick/weak units consisting of 306221 units in the SSI sector and 2792 units in the non-SSI sector. The number of total sick SSI units has increased from 221536 units in 1998 to 306221 units in 1999. There is an overall increase of 38% in the total number of sick/weak SSI units. The total bank credit blocked in the sick units has increased from Rs. 156.82 billion (as of March 31, 1998) to Rs. 194.64 billion (as of March 31, 1999). The small-scale sector has Rs. 43.13 billion (22.20%) blocked in its units (www.indiabudget.nic.in).

There has been a gradual increase in the number of sick units and Non Performing Assets of banks and financial institutions. The Non Performing Assets of banks blocked in the SSI sector was Rs. 102.85 billion as of March 31, 2001 and it is 18.78% of the gross NPA. There have been noticeable improvements in the financial health of banks in terms of asset quality. The net NPAs have continually declined from 14.46% in 1993-94 to 6.74% in 2000-01 due to the tightening of prudential norms in the classification of NPAs by banks (Reddy, 2002).
ed at 25 – 30% of the outstanding dues and the paying capacity of th
ower.

has been postulated in the research that effectiveness of entrepreneur
action of entrepreneurial traits, attitude, business skills and the ronmental forces affecting business success. Assuming that governm
promoting the entrepreneurs by providing the requisite support facilitie in spite of that sickness is increasing in the SSI sector. It becomes erative to probe whether the entrepreneurs possess the requisite preneurial traits, attitude and business skills required for business ess? Therefore it is of utmost importance to assess the entrepreneur i is of his/her entrepreneurial traits, attitude and business skills to ensu ness success, prevent financial resources getting converted into Non orming Assets and providing financial support to those entrepreneurs posess the requisite entrepreneurial traits, attitude and managemen petence required for business success.

even the best formulated project or evaluation can ensure the success of ject without adequate management expertise and entrepreneurship of project proponents. The management competence and the entreprenerial ty have to be assessed properly and a judgment be rendered whether ect proponents indeed have the competence to run the enterprises othly and efficiently. Evaluation of entrepreneurs is the most vital in he success of business enterprise. It is the backbone of a project fron raisal stage to successful implementation and future growth. It is the agerial skills and entrepreneurial qualities that make the difference een success and failure of an enterprise. A good promoter or manage improve the prospects of a project and may show excellent results. ever, in the hands of a weak entrepreneur even a sound project migh er badly.

erefore, crucial importance is attached to the individuals behind the ut. The evaluation of the entrepreneur and his/her management style.
From security oriented lending, the importance for application of appraisal techniques has increased.

While evaluating loans, most banks employ purely judgmental appraisal procedures. A banker collects information regarding the borrower’s capacity, character and collateral being provided by the entrepreneur for the loan being sought. However, in pure judgmental analysis, the banker subjectively interprets the information in the light of the bank’s lending guidelines and accepts or rejects the loan. Up-till now no quantitative methods for appraisal of entrepreneurs for financing is being used especially in India. Most Indian banks do a qualitative assessment of the entrepreneur based on their interaction. A quantitative approach for evaluation of the entrepreneurial quality and managerial style of the entrepreneur is therefore a fundamental requisite in the appraisal of a project for financial assistance.

As a part of the research study on the influencing factors on effectiveness of entrepreneurs, research data pertaining to some “successful” and “unsuccessful” entrepreneurs of Jharkhand state situated in the eastern part of India has been used to develop the Discriminant Model. It has been postulated in the study that success is a function of entrepreneurial traits, attitude and business skills. Three predictor variables namely entrepreneurial traits, attitude and business skill were taken in the study to develop the Discriminant Model to classify the entrepreneurs under the category of “successful” or “unsuccessful” for financing decisions.

Literature Review

Dealing with the review of literature for development of the Discriminant Model for assessment of prospective entrepreneurs for financing and ensuring success of the entrepreneurial venture, the present exercise draws attention in the areas of understanding the entrepreneur and identifying attributes under entrepreneurial traits, attitude and business skills which contribute to business success.
Entrepreneurs have strong beliefs about a market opportunity and are willing to accept a high level of personal, professional, or financial risk to pursue that opportunity and offer a new or existing product or service into an existing or a new untapped market. The prime motive is to create wealth and provide employment opportunities in the vicinity. An entrepreneur is also someone who is willing and able to convert a new idea or invention into a successful innovation (Schumpeter, 1950).

Entrepreneurs are tough, pragmatic people driven by the need for independence and have a high need for achievement and they believe in self-employment and do not submit themselves to authority (Collins & Moore, 1970). To others, entrepreneurship is all about taking risks and putting one's career and financial resources on the line of the idea being pursued by the entrepreneur and spending his/her time in an uncertain venture (Drucker, 1970; Knight, 1967).

Several researchers have focused on the personal characteristics and traits of the individual. The traits of the entrepreneur have been classified into psychological factors such as need for achievement, locus of control, sensitivity for risk and tolerance for ambiguity, and personality factors such as self-confidence, opportunism and ambition (Jennings, 1994). Several authors have classified entrepreneurs based on important traits such as desire to achieve, hardworking, nurturing quality, accepting responsibility, reward-orientedness and optimism (Burch, 1986).

Growth-oriented firms are established by educated, bold and socially aware entrepreneurs who are adaptive, alert to environmental opportunities and quickly achieve improvements in market size, product mix and production methods (Smith, 1967). A vast literature studying the entrepreneurial personality has found that certain traits seem to dominate in the case of entrepreneurs. The entrepreneur is primarily motivated by an overwhelming need for achievement and has a strong urge to build (McClelland, 1961).
ning, and the social awareness of the entrepreneurial ventures (Nwachukwu, 1990).

The second approach to entrepreneurship study is focusing on the attitude of the entrepreneur. Attitude is a persistent tendency to feel and behave in a particular way towards some object. Attitudes are characterized in three ways: firstly, they tend to persist unless something is done to change them; secondly, attitudes can fall anywhere along a continuum from very favorable to unfavorable; and thirdly, attitudes are directed towards some object about which a person has feelings and beliefs.

Personality and attitudes are complex cognitive processes. The main difference is that personality is usually thought of as the whole person, whereas attitudes may make up the personality. In the entrepreneurial context, our attitude determines how we look at setbacks. To a positive thinker, it can be a stepping stone to success and to a negative thinker; it can be a stumbling block (Luthans, 2002).

Three factors which determine the attitude of an individual are environment and experience known as the triple Es (3Es) of attitude. The environment consists of home, school, work, cultural, religious backgrounds, beliefs, social environment and political environment. All of these have a direct bearing in the entrepreneurial context. In a positive environment, a marginal performer’s output goes up. In a negative environment, a good performer’s output goes down (Khera, 1998).

Results of a survey on entrepreneurial traits found that varying degrees of drive & energy, responsibility and optimism are required by the SSI entrepreneurs to develop a competitive edge and survive in the marketplace. Particularly the attitude was also studied and it was found that to be successful, SSI entrepreneurs must possess, a high level of persistence in problem solving, need for achievement, moderate risk taking attitude, must deal with failure in a proactive manner and they should not come under the negative influence of co-entrepreneurs (Shaw, Prasad & Haran, 2003).
Performances of the SSI units may be related to the business skills of the entrepreneurs: under and/or mismanagement, one man show, no competent professionals, informal procedures, weak reporting system, no planning and control and lack of marketing skills. Small business owner managers require a diverse range of skills. These include functional or task-based skills (such as marketing, accounts and administration abilities); strategic, analytical thinking and planning abilities; and people skills, both within and beyond business.

Good management techniques, financial management, marketing strategic and tactical strategies for stakeholders and hiring the best are some of the tools for business success (Filey & Pricer, 1991). Strategic planning contributes to long running success for businesses (Costa, 1994).

Authors Dyke, Fisher and Reuben are of the opinion that management experience may be a significant factor in achieving success in the small business sector (as cited by Shonsey & Gulbro, 1998). Key success factors are managerial competence, innovation and creativity which were found in owner managers/entrepreneurs (Chagnati, 1987).

According to Zetlin (as cited by Shonsey & Gulbro, 1998) there is a general feeling among the entrepreneurs that having a good product is the most important factor for success but other means of achieving success is commitment to quality, being a customer centric organization, innovation and creativity in marketing strategies, maintaining good relationship with the customers, suppliers and hiring people who can be empowered.

A study by Lussier and Corman (as cited by Shonsey & Gulbro, 1998) had that successful firms used better professional advisors than non-successful ones. Variables used in their study were capital, recordkeeping, financial control, industry experience, planning, professional advisors, education, staffing, product/service timing, economic timing, age, partnership and minority ownership.
The firm will survive. Also, dependency on a single customer or only a few customers is a major factor affecting firm failure.

According to Sommers & Koc, Boyle & Desai and Lussier (as cited by Pasanen, 2005), the small business entrepreneurs were unable to attract and retain competent people and this may be one of the major reasons of failure associated with the small business sector. Other factors not identified by many researchers were procrastination, negative influence, stressed life, and ethical competition.

Research Design

The study is empirical in nature and information has been gathered across study locations namely Ranchi, Jamshedpur and Bokaro districts of Jharkhand state to understand the different unresolved riddles in connection with the factors influencing business success and failures. Jharkhand is a state in eastern India. It was carved out of the southern part of Bihar state on 15 November, 2000 and there are twenty two districts. Jharkhand is famed for its mineral wealth and forestry products. The industrial city of Ranchi is its capital. Some of the other major cities and industrial centers are Jamshedpur, Bokaro, and Dhanbad that was once a part of West Bengal. These cities were selected because most of the small scale industries of Jharkhand state are highly concentrated in these regions. In choosing the small scale units under this exercise, the consideration has been made on SSI units where the government is encouraging, promoting and assisting their growth and viability.

Sampling Plan

While choosing the sample, a list of industries was prepared from the exhaustive list of the total number of SSI units existing in the study locations Ranchi, Jamshedpur and Bokaro. The list of the SSI units operating in the
Figure 1: Distribution of samples across the study locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Operating units</th>
<th>Sample size</th>
<th>( n )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranchi</td>
<td>346</td>
<td>69</td>
<td>20%</td>
</tr>
<tr>
<td>Jamshedpur</td>
<td>535</td>
<td>107</td>
<td>20%</td>
</tr>
<tr>
<td>Bokaro</td>
<td>256</td>
<td>51</td>
<td>20%</td>
</tr>
</tbody>
</table>

\[ n = 227 \]

In Ranchi district the number of operating SSI units was 346, in Jamshedpur it was 535 and in Bokaro district it was 256 respectively. The total number of SSI units in these industrial areas was 1137 which constituted the total population under the study. A sample has been drawn from each study location namely Ranchi, Jamshedpur and Bokaro which constitutes about 20% of the total population. Thereby a total number of 227 sample SSI units were chosen under the study by adopting ‘Simple Random Sampling’ technique.
business skills of the entrepreneurs that were influencing the success or failure of the sample business enterprises. In gathering the information under different heads and sub heads of the questionnaire, the statements have been arranged on a 5-point “Likert Scale”. After finalization of the questionnaire, a pilot study was undertaken to test the appropriateness and standard of the questions brought under the data gathering tools. As per the field reality, the questionnaire was redesigned and finalized for the study. The comments and suggestions of the respondents were incorporated in the final questionnaire.

Secondary data were also taken from brochures, pamphlets, reports, magazines and other government publications. These multiple sources of collection were resorted to increase the validity and reliability of the study. The detailed description of the different heads under the final questionnaire has been mentioned here as follows:

Ten variables analyzed under entrepreneurial traits were: drive and energy, responsibility, persistence, self confidence, initiative, need for independence, tolerance for uncertainty, optimism, innovativeness & creativity and perseverance.

Thirteen variables analyzed under attitude were: long term commitment in problem solving, attitude to risk taking, dealing with failure of feedback, seeking assistance, flexibility, need for achievement, proficientedness, integrity, resolving issues without procrastination, positive influence and self resolution of entrepreneurial stress.

Twelve variables chosen for analysis under business skills were: setting goals, developing business plans, delegating, dealing with work disputes, training subordinates, dealing with customers, dealing with government officials, keeping financial records, talent acquisition, marketing skills, catering to multiple customers and ethical competition.
Statistical Tools

Advanced statistical tools ANOVA, Multiple Regression and Discrimination were used in the present study. In calculating ANOVA, Multiple Regression and to develop the Discriminant Model, SPSS 12.0 package was used. Simple descriptive statistical tools like percentages and means were used to compare the variables selected under entrepreneurial traits, attitude and business skills were also used.

Analysis and Interpretation

The health of the SSI enterprises was categorized under the heads: “Closed”, “Not Viable”, “Average”, “Good” and “Very Good” on a scale of 1 – 5. Those entrepreneurs who had cited the health of their enterprises as “Very Good” and “Good” were classified as “successful” entrepreneurs in the study whereas those entrepreneurs who were of the opinion that their performances were “Average” were classified under the category of “not so successful” entrepreneurs. Those SSI entrepreneurs who were of the opinion that their enterprises were “Not Viable” were considered as “unsuccessful” entrepreneurs in the study. The closed SSI units were not considered in the study.

Table: 1 Health of the sample enterprises in the study locations

<table>
<thead>
<tr>
<th>Health of the Unit</th>
<th>Ranchi</th>
<th>Jamshedpur</th>
<th>Bokaro</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>d (Successful)</td>
<td>21</td>
<td>71</td>
<td>13</td>
<td>105</td>
</tr>
<tr>
<td>% (30.43%)</td>
<td>(66.35%)</td>
<td>(25.49%)</td>
<td></td>
<td>(46.25%)</td>
</tr>
<tr>
<td>dage (Not so successful)</td>
<td>43</td>
<td>27</td>
<td>26</td>
<td>96</td>
</tr>
<tr>
<td>% (62.32%)</td>
<td>(25.24%)</td>
<td>(50.98%)</td>
<td></td>
<td>(42.29%)</td>
</tr>
<tr>
<td>Viable successful</td>
<td>05</td>
<td>09</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>% (7.25%)</td>
<td>(8.41%)</td>
<td>(23.53%)</td>
<td></td>
<td>(11.46%)</td>
</tr>
<tr>
<td>Total</td>
<td>69</td>
<td>107</td>
<td>51</td>
<td>227</td>
</tr>
</tbody>
</table>
The data in Table 1 shows that there are 105 SSI units whose health has been cited as “good”, 96 of the SSI units are “average” performers whereas 26 SSI units are “not viable”. The data pertaining to 26 “successful” and “successful” entrepreneurs have been taken in the study to develop the Discriminant Model. For classification purposes “successful” entrepreneurs have been put under category 1 and the “unsuccessful” entrepreneurs have been put under category 2. Three predictor variables namely entrepreneurs, attitude and business skills of the entrepreneurs have been taken in the study to classify the entrepreneurs under these two categories.

<table>
<thead>
<tr>
<th>Category</th>
<th>Predicted Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Original Count</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>2.00</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>%</td>
<td>96.2</td>
<td>3.8</td>
</tr>
<tr>
<td>2.00</td>
<td>3.8</td>
<td>96.2</td>
</tr>
</tbody>
</table>

From the classification matrix as represented by Table 2, it can be inferred that the Discriminant Function obtained from the study was able to classify 96.2% of the 52 objects correctly. It also shows that out of 26 cases predicted to be in Group -1, 25 were observed to be Group I and 1 in Group -2. Similarly for Group -2, out of 26 cases predicted to be in Group -2, 25 were found to be in Group -2 and 1 in Group -1. Thus on the whole 2 cases of 52 cases were misclassified by the Discriminant Model, thus giving classification (or prediction) accuracy level of 96.2%.
Table: 3 Statistical Significance of the Model

<table>
<thead>
<tr>
<th>Wilk’s Lambda</th>
<th>Chi Square</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.176</td>
<td>84.370</td>
<td>3</td>
<td>.000</td>
</tr>
</tbody>
</table>

The value of Wilk’s Lambda ranges between 0 and 1 with a lower value indicating better discriminating power of the model. The magnitude of Wilk’s Lambda as observed from Table 3 stands at 0.176 which is very low; being close to 0 and less than 0.5 suggests that the Discriminant Model has very good discriminating power. The probability value $p = 0.000$ of Chi Square test is less than the value of $\alpha = 0.05$ which again reinforces the good discriminating power of the model.

Table: 4 Standardized Canonical Discriminant Function Coefficients

<table>
<thead>
<tr>
<th>Function</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_Traits</td>
<td>0.751</td>
</tr>
<tr>
<td>Attitude</td>
<td>-0.059</td>
</tr>
<tr>
<td>B_Skills</td>
<td>0.647</td>
</tr>
</tbody>
</table>

The values of the Standardized Canonical Discriminant Function Coefficients as observed from Table 4, for the three predictor variables were: entrepreneurial traits (0.751) followed by business skills (0.647) and attitude (-0.059). The Standardized Canonical Discriminant Function Coefficients suggests that the variables entrepreneurial traits (0.751) and business skills (0.647) are better predictor between “successful” and
Table: 5 Canonical Discriminant Function Coefficients

<table>
<thead>
<tr>
<th></th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traits</td>
<td>1.856</td>
</tr>
<tr>
<td>Attitude</td>
<td>-.124</td>
</tr>
<tr>
<td>B_Skills</td>
<td>1.821</td>
</tr>
<tr>
<td>(Constant)</td>
<td>-12.140</td>
</tr>
</tbody>
</table>

To classify a prospective entrepreneur under the two categories, data pertaining to Un-standardized Canonical Discriminant Function (Table 5) was used. The Discriminant Function obtained was $D = -12.14 + 6X_{traits} - 0.124X_{attitude} + 1.821X_{businessskills}$. “Successful” entrepreneurs were classified under category 1.00 and “Unsuccessful” entrepreneurs were classified under category 2.00. The Discriminant Score (D) for a prospective entrepreneur can be obtained by inputting data from the Self Rating Form designed for the Discriminant Model.

Self Rating Form measures the perception of the entrepreneur on the three predictor variables namely entrepreneurial traits (10 variables), attitude variables) and business skills (12 variables).

Table: 6 Functions at Group

<table>
<thead>
<tr>
<th>Category</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>2.125</td>
</tr>
<tr>
<td>2.00</td>
<td>-2.125</td>
</tr>
</tbody>
</table>
From Table 6, the Functions at Group Centroids for category 1.00 was + 2.125 and for category 2.00 it was – 2.125. “Successful” entrepreneurs have been classified under category 1.00 and “Unsuccessful” entrepreneurs under category 2.00.

2 Decision rule for classifying prospective entrepreneurs

The discriminant score of any potential entrepreneur falls to the right of the midpoint, he/she will be classified as a “successful” entrepreneur and if it falls to the left of the midpoint, he/she will be classified as an “unsuccessful” entrepreneur.

Conclusion

The Discriminant Model developed herein can be used by banks, financial institutions and sponsoring agencies for screening potential entrepreneurs. It will help banks, financial institutions and sponsoring agencies to classify the entrepreneur in terms of his/her inherent entrepreneurial traits, attitude and business skills under two categories namely “successful” and “unsuccessful” entrepreneur. This assessment will help the banks and financial institutions to get a fair picture whether the prospective entrepreneur will be successful in his/her venture or not?

The application of the Discriminant Model implies that the prospective entrepreneur will have to fill a Self Rating Form which has been designed based on literature review for the three predictor variables namely
A prospective entrepreneur gets classified under the category of "successful" entrepreneur, an analysis of the predictor variables is desired to identify the serious deficiencies in his/her entrepreneurial traits, attitudes and business skills. An analysis of the deficiencies will help the banks, financial institutions and sponsoring agencies to assess whether the deficiencies can be removed through training or some other intervention. If the deficiencies are found to be very serious in nature then these agencies will be in a position to decide not to finance the entrepreneur. It will help banks and financial institutions to finance the right kind of entrepreneurs who have the potential for success and thereby reducing the chance of loans becoming Non Performing Assets.

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Do Human Capitals make Entrepreneur more entrepreneurial? An Empirical Data from Small and Medium Enterprises in Malaysia

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Abstract

Human capital theory has gained attention in entrepreneurship study. Recently, Westhead, Ucbasaran, and associates’ works have enhanced the interest on the effect of human capitals on entrepreneurialism of the entrepreneurs. However, as exploratory efforts, their studies seem to be covering limited dimensions of human capitals and entrepreneurship. Building on their works, this study looks into entrepreneurial experience, industrial experience, managerial experience, and education level of the entrepreneurs, as well as differences among novice, serial, and portfolio.
Entrepreneurs in terms of their entrepreneurship. Entrepreneurship in this study includes personality traits, social competence, cognitive traits, and the strategic capabilities of small and medium enterprises (SMEs). Primary responses from the entrepreneurs in SMEs are collected through questionnaire. 365 usable responses were obtained. Analysis of the data using SPSS version 15 indicated that education level of the entrepreneurs rather than experiences are the critical factor in determining the level of entrepreneurship. From the findings, policy makers are recommended to strengthen the education level of entrepreneurs in order to strengthen the entrepreneurship development in the country to ensure sustainable future development of SMEs.

Introduction

Recently, human capitals, which measure the experiences and education level of the entrepreneurs (Rauch & Frese, 2000) have captured research attention, especially after the publishing of a series of papers by Westhead, Ucbasaran, and their associates (Ucbasaran, Westhead & Wright, 2003; Ucbasaran, Westhead, Wright & Bink, 2003; Westhead, Ucbasaran & Wright, 2005; Westhead, Ucbasaran, Wright & Bink, 2005). Rather than focusing on the impact of the human capitals of entrepreneurs on performance of the firm, they distinguished their works by focusing on the effect of human capitals on the behaviour of the entrepreneurs. The approach of this group of researchers has given the solution to the problem on level of analysis. In previous approach, independent variable that is the human capitals of the entrepreneur focus on individual as level of analysis while dependent variable that is the performance of the firm has taken the organisational level as level of analysis. Although this might be the common approach in entrepreneurship studies (e.g. Dyke, Fischer & Reuber, 1992
asaran and associates might have opened a new direction to study the role of entrepreneur’s human capitals in entrepreneurship stream of research.

A closer review on the four papers published by Westhead, asaran, and associates indicates a wide area for extending the idea into a new area of interest. Previous studies have highlighted the background experiences of the entrepreneurs as influential factors to determine the entrepreneurialism of the entrepreneurs (Rauch & Frese, 2000; Llewellyson, 2003). However, in Westhead, Ucbasaran, and associates studies, only focused on entrepreneurial experience that is to categorised the entrepreneurs into novice entrepreneur, serial entrepreneur, and portfolio entrepreneur to analysed the significant of differences among them towards entrepreneurship dimensions (see for Ucbasaran, Westhead & ght, 2003; Ucbasaran, Westhead, Wright & Bink, 2003; Westhead, asaran & Wright, 2005; Westhead, Ucbasaran, Wright & Bink, 2005). Critical dimensions in measuring the human capitals of the entrepreneurs such as industrial experience, managerial experience, and education level of the entrepreneurs (Dyke et al., 1992; Lee & Tsang, 2001; Haynes, 2003) have yet to be analysed. In addition, these studies have on red mainly the opportunity identification, development, and organisational capabilities of the entrepreneurs as measure for entrepreneurship. Even opportunity has been a very crucial part of entrepreneurship (Venkataraman, 1997; Shane & Venkataraman, 2000; Ichvili & Cardozo, 2000; Alvarez & Busenitz, 2001; Dimov, 2003;hardt & Shane, 2003; Alsos & Kaikkonen, 2004; Baron, 2004; Van leren, 2004; Liu, 2006; Sanz-Velasco, 2006), entrepreneurship means more than that. This study in extra looks into personality traits (Green, id, Dent & Tyshkovsky, 1996; Littunen, 2000; Littunen & Storhamr); Rauch & Frese, 2000; Korunka, Frank, Lueger & Mugler, 2003; gelsdijk, 2007), social skill (Baron, 2000; Baron & Markman, 2000, 3), and ability of firm in capitalising the flexibility and adaptability to adapt from accidental discovery within the firm and changes in the
Review of Literature

Entrepreneurship stream of research has developed significantly over the years, but, thus far, there have been no generally acceptable definitions of the term entrepreneurship itself (see Cunningham & Lischeron, 1991; Venkataraman, 1997; Green et al., 1996; Shane & Venkataraman, 2000; Llewellyn & Wilson, 2003). In view of this, Gartner (1989) requested researchers to provide their own definition of entrepreneurship in respective studies. This study defines entrepreneurship as the examination of the quality of the owner-manager in becoming the strategic resource of the firm thus generating strategic capabilities for improving the competitiveness of the firm. This definition is broader than Venkataraman (1997) and Shane and Venkataraman (2000) definitions of entrepreneurship.

In distinguishing entrepreneurs from small business owners, Carland J. W. Hoy, Boultan, and Carland J. A. C. (1984) highlighted innovation, need for achievement, internal locus of control, need for independence, need for responsibility, and need for power as crucial characteristics associated with entrepreneurs. Following the bubbled of personality traits in entrepreneurship study (Llewellyn & Wilson, 2003), only need for achievement, internal locus of control, and risk taking propensity survive as entrepreneurial traits (Littunen, 2000; Rauch & Frese, 2000; Korunka et al., 2003; Beugelsdijk, 2007). However, previous studies argued risk propensity as more associated with ownership of the business rather than entrepreneurship (e.g. Schumpeter, 1934; Brockhaus, 1980; Carland et al., 1984). Recently, cognitive approach (Venkataraman, 1997; Shane & Venkataraman, 2000; Alvarez & Busenitz, 2001) and social competence (Baron, 2000; Baron & Markman, 2000; 2003) emerged as another promising stream of entrepreneurial traits (Baron, 2000). In addition to these...
Need for Achievement

Need for achievement is developed by McClelland (1961) to study motivational bases of human behaviour (Spangler, 1992). Persons with a need for achievement tend to set demanding targets for themselves and are proactive and bold in setting about accomplishing objective (Beugelsdijk, 2007; Cromie, 2000; McClelland, 1961). They tend to have preference over challenging tasks of moderating difficulty rather than taking responsibility for one performance, seek feedback on performance, look for new and better ways to improve their performance (Rauch & Frese, 2000). Thus, need for achievement is always been associated with entrepreneurship (Lee, 1997; Littunen, 2000; Rauch & Frese, 2000; Gürcan, 2006).

Internal Locus of Control

Locus of control developed by Rotter (1966), on the other hand, measures extend to which people feel in charge (Beugelsdijk, 2007). Individuals who believe in control over one’s own life by influencing outcomes through one’s behaviour, permanent characteristics, skills, effort is said to have internal locus of control (Kaufmann, Welsh & hmarin., 1996; Littunen, 2000; Littunen & Storhammar, 2000; Tweng, & Im, 2004). Individuals with an external locus of control are said to believe in external forces such as actions of others, fate, luck, chance or factors that are beyond their control to have control over the outcome (Kaufmann et al., 1996; Dollinger, 1999; Littunen, 2000; Littunen &
Social Competence

Social competence is a crucial element in running a business (see Bech, Huse & Senneseth, 1999; Park & Luo, 2001; Greve & Salaff, 2003; Ar & Abdul-Aziz, 2004), especially for SMEs (Jones, 2003). Thus, the social network and capability of the entrepreneur in forming and managing network relationship is crucial (Taylor & Pandza, 2003). In fact, the social network for SMEs is highly depending on the personal network of the entrepreneur (Dollinger, 1999; O’Donnell, Gilmore, Carson & Cummins, 2002; Taylor & Pandza, 2006). Therefore, social competence of the entrepreneur, which measure effectiveness of the entrepreneur in interacting with others is important in predicting the long term success of the firm (von & Markman, 2000) since the social network required by firm changes over time (Greve & Salaff, 2003). Thus, the capability to build and manage social capital of the firm determines the quality of entrepreneur to be a strategic resource for the firm.

Opportunity Sensitivity

Venkataraman (1997) and Shane and Venkataraman (2000) defined entrepreneurship as the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited, has strengthened the cognitive trait in entrepreneurship study. The development of this stream of study can be traced back to the Austrian Market Process (e.g. Schumpeter, 1934; Kirzner, 1973). Scholars in resource-based view have mainly focused on
ure the sensitivity of the entrepreneur in identifying, evaluating and developing the opportunity. Thus, opportunity sensitivity is a process of innovation, which has been listed as the first factor to distinguish entrepreneur from small business owner by Carland et al., 1984).

Flexibility and adaptability of SMEs has been identified as the strength of the firm (Yu, 1999; Fiegenbaum & Karnani, 1991; Wicks, 2002). In static environment, firm will gain from efficiency of operation to trade off with the flexibility (Grant, 1991) in order to be benefited from economic of scale. This is because stability in the environment does not require firm to respond to uncertainty. Oppositely, in the dynamic environment, where the environment is more uncertain, flexibility and adaptability of the firm are important (Fiegenbaum & Karnani, 1991; Pil, 2003; Wicks, 2005). These strategic capabilities give SMEs greater ability to respond to environment and organisation routine (Wicks, 2005) to respond to environment and organisation routine (Wicks, 2005) to match the fluctuation in demand (Fiegenbaum & Karnani, 1991), and spot and respond to new customer’s demand. Therefore, it is logic to conclude that flexibility and adaptability can only be turned into the organisation strength under uncertainty. Since uncertainty is unpredictable, thus the concept of luck or serendipity is very much applicable (Ma, 2002).

For clarification, luck in this study does not referring to purely luck events. Rather, luck is defined as the capability of the firm to gain benefit from unpredicted events due to greater alertness, flexibility, and adaptability of the firm. Therefore, this study examine characteristic of the firm to determine the likelihood for firm to gain luck from the perspective of flexibility, alertness, adaptability, and rewarding creativity (Fine & Deegan, 1996; Koening, 2000; Ma, 2002; Denrell, Fang, & Winter, 2003; Foster & Ford, 2003; Cunha, 2005).
According to the framework developed by Ma (2002), can be resultant from internal accidental discovery within the organisation or from uncertainty in the environment in which firm operates. Internally, firm can potentially gain from useful weeds and skunk works (Ma, 2002). To do this, a firm has to encourage innovation and creative works that can possibly create luck for the firm by maintaining flexibility in organisational structure that allow employees for self-initiated actions, experimentations, encouragement for employees to take risk, tolerating mistakes and errors, and rewarding employees for their creativity. To be benefited from these activities, the firm has to be proactively alert on the potential lucks and seek opportunity to commercialise them (Ma, 2002).

Entrepreneur’s Human Capital

Human capital measure individuals’ knowledge and experiences (Rauch & Frese, 2000). Human capital can determine the quality of an entrepreneur (Dollinger, 1999) and make individual more efficient in organising processes and in attracting customers and investors (Rauch & Frese, 2000). In this study, the interest of entrepreneur’s human capital is education and experiences. Education level measures academic qualifications of the entrepreneurs. Various scholars such as Praag (1996), Lee and Chan (1998), Lee and Tsang (2001), and Casson (2005) have discussed the important of the education background towards entrepreneurship. Experiences of the entrepreneurs can be segregated mainly into managerial experience, industrial experience, and entrepreneurial experience (Lee & Tsang, 2001).
have extended the entrepreneurial experience to examine the differences between novice, serial, and portfolio entrepreneurs.

Experience can generally be defined as events that occur in an individual’s life that are perceived by the individual (Quiñones, Ford & Chout, 1995). In the perspective of entrepreneur, experience is mainly made up of entrepreneurial experience, managerial experience, and industrial experience (Lee & Tsang, 2001). Entrepreneurial experiences concerns about the number of previous start-up and the management role played in such ventures (Stuart & Abetti, 1990; Lee & Tsang, 2001; Hay 3). Industrial experience refers to the experience in the same industry current business venture. Managerial experience, on the other hand, is total experience in holding managerial position regardless of the industry in which the experiences are gained (Lee & Tsang, 2001).

Extending on the entrepreneurial experience, studies have been focusing on novice, serial, portfolio, and habitual entrepreneurs (Ucbasaran, Westhead & Wright, 2003; Ucbasaran, Westhead, Wright & Bink, 2003; Westhead, Ucbasaran & Wright, 2005; Westhead, Ucbasaran, Wright & τ, 2005). Novice entrepreneur refers to self-employed individual with entrepreneurial experience while those with experience are known as habitual entrepreneur. Habitual entrepreneur can be further segregated into serial entrepreneur, who are self-employed individual with entrepreneurial experience but has ceased from the previous business, and portfolio entrepreneur, self-employed individual owning a stake in more than one business ventures. Business ownership can be acquired through founding or purchasing majority or minority stake in a business venture (Westhead, Ucbasaran & Wright, 2005; Westhead, Ucbasaran, Wright & τ, 2005).

Effects of Entrepreneur’s Human Capital on Entrepreneurship
egic resources according to the framework of resource-based view (Barney, 1991; Peteraf, 1993), Alvarez and Busenitz (2001) have recognised the importance of the entrepreneur’s previous learning and knowledge in enabling the entrepreneur to generate heterogeneity in the firm through converting homogenous input resources into heterogeneous output, ability to be an opportunity exploiter in acquiring resources (Alvarez & Busenitz, 2001), and ability to arrange the resources into a coherent action (Akio, 2005). Previous learning and knowledge are acquired through either experiences or education of the entrepreneurs.

Association between education and entrepreneurship is inconclusive. Level of education of individual is found to be positively correlated with entrepreneurship and success (Lee, 1997; Casson, 2005). According to Lee (1997), university level of education affects need for achievement since success in university level of education enhances confidence of the individual to seek greater challenges and recognitions. However, the relationship between entrepreneurial talent and year of schooling is not linear. An intermediate level of education in vocational school with higher education in science stream appears to build most entrepreneurial talent (Praag, 1996). A contradictory finding suggests that university graduates are less likely to venture into entrepreneurship career compared to those secondary school drop-outs (Lee & Chan, 1998). Lee and Tsang (2001) finding indicate that education level of the entrepreneur is crucial in situations of high complexity and greater need for planning and knowledge.

Experience with previous firms can be in term of industrial experience and managerial experience (Dyke et al., 1992). Both industrial experience and managerial experience can enhance an individual’s capability to identify and exploit opportunity (Haynes, 2003; Casson, 2005). Besides, industrial experience would strengthen the entrepreneur’s decision in selecting resources (Hart, Stevenson & Dial, 1995) to build the core competency for the firm (Haynes, 2003). All these will potentially make entrepreneur more entrepreneurial and more strategic in making decision. However, the risk
Entrepreneurial experience has been highly discussed in previous literature in entrepreneurship in its contribution towards entrepreneurialism of the individual entrepreneur (e.g. Stuart & Abetti, 1990; Lee & Tsang, 2001; Haynes, 2003; Ucbasaran, Westhead & Wright, 2003; Ucbasaran, Westhead, Wright & Bink, 2003; Westhead, Ucbasaran & Wright, 2005; Westhead, Ucbasaran, Wright & Bink, 2005). Evident from previous studies have shown the differences among entrepreneurs with different level of entrepreneurial experience. Entrepreneurial experience can affect the behaviour in searching and developing opportunity and resources owned entrepreneur (Ucbasaran, Westhead & Wright, 2003; Ucbasaran, Westhead, Wright & Bink, 2003; Westhead, Ucbasaran & Wright, 2005; Westhead, Ucbasaran, Wright & Bink, 2005). Habitual entrepreneur, especially portfolio entrepreneurs with accumulated entrepreneurial experiences in terms of skills, competencies, and resources are better able in equity stake in subsequent ventures because they are more optimistic and opportunistic (Ucbasaran, Westhead & Wright, 2003; Ucbasaran, Westhead, Wright & Bink, 2003). Thus, greater level of entrepreneurial experience make entrepreneur more entrepreneurial.

From the arguments above, the following research framework is formulated to testify the effect of entrepreneur’s human capitals on entrepreneurship.

![Research Framework](image-url)
Questionnaire Development

Questionnaire is developed to empirically examine the research framework and thus to provide an answer to the research question. Table 1 indicates the variables in entrepreneurship. Questionnaire for need for achievement, locus of control, and social competence are adapted from previous studies as indicated in the table. The instrument for opportunity sensitivity and luck are self-developed since the available published instrument does not fully fit the concept intended to be measured in this study. Thus, the instrument is constructed by referring to the sources of literatures as indicated in the table 1. All the items in these concepts are measured using a 6-point Likert Scale ranging from strongly disagree to strongly agree.

<table>
<thead>
<tr>
<th>Concepts / Concepts</th>
<th>Operational Definition</th>
<th>Sources of questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for achievement</td>
<td>Reflects a person’s need to strive hard to attain success</td>
<td>Green (1973).</td>
</tr>
<tr>
<td>Locus of control</td>
<td>Measures the extent to which people feel in charge and able to influence over the outcome</td>
<td>Kaufmann et al (1996); Levenson (1974, 1981).</td>
</tr>
<tr>
<td>Social</td>
<td>Measures individual social</td>
<td>Baron and Markman (20...</td>
</tr>
<tr>
<td>Sensitivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in identifying, evaluating, and exploiting an opportunity</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(2000); Ardichvili, Cardo & Ray (2003), Eckhardt Shane (2003); Pech & Cameron (2005); Sanz-Velasco (2006); Schwart Teach, & Birch (2005); Shane & Venkataraman (2000); Stevenson & Jari (1990); Ucbasaran, Westhead, Wright, & Bi (2003); Ucbasaran, Wrig & Westhead (2003); Westhead, Ucbasaran, & Wright (2005); Westhead; Ucbasaran, Wright, & Bi (2005).

| Luck |
| capability of the firm to gain benefit from unpredicted events due to greater alertness, flexibility, and adaptability of the firm |

Cunha (2005); Fine & Deegan (1996); Ma (2000).

Table 1: Sources of questionnaire for entrepreneurship

The instrument for the independent variables that is entrepreneur’s human capital is measured using nominal scale. Instrument for education level of the entrepreneur measures require the entrepreneur to select their highest level of education. The choices include no formal education, primary and secondary level, professional certification, diploma and degree, and postgraduate. For managerial experience, industrial experience, and entrepreneurial experience, the entrepreneurs need to indicate whether they have the relevant experience. Therefore, the nominal scale is used to segregate the entrepreneurs into the group with and without the relevant experience. Lastly, following the approach of Westhead, Ucbasaran, and associates (Ucbasaran, Westhead & Wright, 2003; Ucbasaran, Westhead, Ucbasaran, & Wright (2005); Westhead, Ucbasaran, Wright, & Binks (2005).
Wright & Bink, 2003; Westhead, Ucbasaran & Wright, 2005; Westhead, asaran, Wright & Bink, 2005), the entrepreneurs are segregated into novice, serial, and portfolio entrepreneurs according to their entrepreneurial experience and number of business currently owned. Novice entrepreneur is an entrepreneur without previous business ownership experience and currently only own one business. Serial entrepreneur is individual with previous entrepreneurial experience but has ceased from previous venture and currently only own one business. Portfolio entrepreneur is the entrepreneur who has ownership in more than one business currently.

Measure of goodness for the instrument

The instrument developed is sent for expert review for face validity. The experts are made up of Doctorate degree holders and Doctorate degree students in the related field of research interest. Expert review is very important for initial validity of the instrument especially for the self-developed instrument. Then, the questionnaire is sent for pilot study. The questionnaire is sent to entrepreneurs funded by Centre of Commercialisation and Entrepreneur Development (CCTD) of Multimedia University and entrepreneurs parked under Incubator of Knowledge Economy, Malacca. 22 responses were collected and analysis of internal consistency indicated the reliability of the instrument for each of the variable as the Cronbach’s Alpha for all the concepts is higher than 0.70 (Llewellyn & Wilson, 2003).

Sampling Plan and Data Collection Method

The unit of analysis in this study is the individual entrepreneur.
y is mainly drawn from SMEs in Klang Valley, participants in trade exhibitions, and listed enterprises in the Multimedia Development Corporation Sdn. Bhd. (MDeC) database.

In view of the low response rate from previous studies in Asia countries, non-probability sampling is preferable over probability sampling in study of SMEs. It is hard to obtain a truly representative, up-to-date, and comprehensive sample of SMEs in Malaysia (Sulaiman & Hashim, n.d.). Using the list for sampling from government associations like SMIDEC, Department of Statistics, Ministry of International Trade and Industry, and Federation of Malaysian Manufacturers represents bias to the other SMEs that are not registered with these associations (Sulaiman & Hashim, n.d.) or are not registered with those bodies might have different characteristics.

The primary responses from the entrepreneurs in SMEs are obtained through several methods. First, email is used to contact the Malaysian independent entrepreneurs in MDeC database with contact information. A total of 2572 entrepreneurs were contacted through personal email with 1575 of the emails have successfully reached the targeted responder. After a follow up email, 152 usable responses were collected, which represents about 10% effective response rates. Approximately another 500 entrepreneurs were approached face-to-face through personal visit to their business premises in Klang Valley and various trade exhibitions. Through these methods, another 204 usable responses or about 40% response rate were elicited. This make up the final usable responses to 365.

Data Analysis

The primary data collected is analysed using SPSS version 15.
entrepreneurs with and without managerial experience, industrial experience, and entrepreneurial experience is tested through independent sample t-test. Independent sample t-test enables empirical comparison between entrepreneurs with and without the relevant experience on the degree of entrepreneurialism of the entrepreneurs themselves as well as the entrepreneurship of the firm. Finally, entrepreneurs are segregated into the group of novice entrepreneur, serial entrepreneur, and portfolio entrepreneur according to their entrepreneurial experience and number of businesses currently own.

Frequency analysis is conducted to study the background of the respondents in this study. Table 2 indicates the profile of the respondents according to respective type of human capital. Table 3, table 4, and table 5 indicate the statistical analysis of the impact of human capitals on entrepreneurship.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial experience</td>
<td>Yes</td>
<td>319</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>43</td>
</tr>
<tr>
<td>Managerial experience</td>
<td>Yes</td>
<td>278</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>84</td>
</tr>
<tr>
<td>Entrepreneurial experience</td>
<td>Yes</td>
<td>142</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>217</td>
</tr>
<tr>
<td></td>
<td>Novice</td>
<td>53</td>
</tr>
</tbody>
</table>
Table 2: Background information on human capitals of the respondents

<table>
<thead>
<tr>
<th>Education Level</th>
<th>No Formal Education</th>
<th>Primary or Secondary</th>
<th>Professional Certification</th>
<th>Diploma or Degree</th>
<th>Post-graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>83</td>
<td>33</td>
<td>188</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>1.4</td>
<td>22.8</td>
<td>9.1</td>
<td>51.5</td>
<td>15.1</td>
</tr>
</tbody>
</table>

From the frequency analysis on the background of the entrepreneurs, the majority of the respondents have work in related industry as their current business venture (88.1%) and holding managerial role in their previous job (76.8%). However, only 39.6 percent of the respondents have entrepreneurial experience. Further segregation of the entrepreneurs into novice, serial and portfolio entrepreneurs found that 14.8 percent of them are novice entrepreneurs (no entrepreneurial experience and currently own only one business), 34.9 percent of them are in the category of serial entrepreneurs (with entrepreneurial experience and currently own only one business), while another 49.3 percent are portfolio entrepreneurs (currently own more than one business). From their level of education, majority of the respondents are found to have high level of education with 51.5 percent of them have diploma or degree, 15.1 percent with post-graduate qualification, another 9.1 percent have professional qualification.
<table>
<thead>
<tr>
<th>d for achievement</th>
<th>1.074</th>
<th>0.282</th>
<th>-</th>
<th>0.352</th>
<th>0.725</th>
<th>2.064</th>
<th>0.040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Locus of Control</td>
<td>2.657</td>
<td>0.008</td>
<td>0.898</td>
<td>0.370</td>
<td>0.984</td>
<td>0.326</td>
<td></td>
</tr>
<tr>
<td>Identification</td>
<td>2.102</td>
<td>0.036</td>
<td>0.259</td>
<td>0.796</td>
<td>0.560</td>
<td>0.576</td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>0.667</td>
<td>0.505</td>
<td>-</td>
<td>0.416</td>
<td>0.678</td>
<td>1.868</td>
<td>0.063</td>
</tr>
<tr>
<td>Development</td>
<td>0.723</td>
<td>0.470</td>
<td>-</td>
<td>1.232</td>
<td>0.219</td>
<td>0.727</td>
<td>0.467</td>
</tr>
<tr>
<td>Perception</td>
<td>0.608</td>
<td>0.544</td>
<td>0.897</td>
<td>0.370</td>
<td>-</td>
<td>0.141</td>
<td>0.888</td>
</tr>
<tr>
<td>Adaptability</td>
<td>1.078</td>
<td>0.283</td>
<td>-</td>
<td>0.807</td>
<td>0.420</td>
<td>1.119</td>
<td>0.264</td>
</tr>
<tr>
<td>Expressiveness</td>
<td>-</td>
<td>1.403</td>
<td>0.162</td>
<td>-</td>
<td>0.354</td>
<td>0.725</td>
<td>0.184</td>
</tr>
<tr>
<td>Endogenous Luck</td>
<td>1.332</td>
<td>0.184</td>
<td>-</td>
<td>1.237</td>
<td>0.217</td>
<td>-</td>
<td>0.823</td>
</tr>
<tr>
<td>Exogenous Luck</td>
<td>1.623</td>
<td>0.105</td>
<td>-</td>
<td>0.960</td>
<td>0.338</td>
<td>-</td>
<td>0.367</td>
</tr>
</tbody>
</table>

Table 3: Independent sample t-test for impact of experiences on entrepreneurship

Table 3 shows the results of independent sample t-test for the impact of experiences on entrepreneurship.
the significance difference between these two categories of entrepreneurs in term of entrepreneurship.

From the results, managerial experience is found to have significant impact on internal locus of control \( (t=2.657; \ p<0.05) \) and opportunity identification \( (t=2.102; \ p<0.05) \). Entrepreneurs with experience in holding managerial position are more confident with their own capabilities in influencing the outcome of their efforts and are stronger in identifying opportunity around them. Entrepreneurs with managerial experience also tend to have higher mean score in all the dimensions in entrepreneurship except for expressiveness in social competence. However, the differences are not statistically significant.

Industrial experience seems to have negative impact on entrepreneurship. Although not statistically significant, entrepreneurs with experience working in the similar industry as their current business venture found to be weaker in need for achievement, opportunity identification, opportunity evaluation, opportunity development, social adaptability, expressiveness, endogenous luck, and exogenous luck. They are only found to score higher in internal locus of control and social perception but not statistically significant.

On the other hand, experience as entrepreneur prior to current business venture is found to have strengthened the achievement need of entrepreneurs \( (t=2.064; \ p<0.05) \). Entrepreneurial experience has also existed to build stronger internal locus of control, opportunity identification, opportunity evaluation, opportunity development, social adaptability, and expressiveness but not statistically significant. However, not statistically...
### Table 4: ANOVA for impact of type of entrepreneurs on entrepreneurship

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>Sig.</th>
<th>Type of Entrepreneurs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Novice</td>
</tr>
<tr>
<td><strong>Need for Achievement</strong></td>
<td>0.78</td>
<td>0.45</td>
<td>4.869</td>
</tr>
<tr>
<td><strong>Internal Locus of Control</strong></td>
<td>1.08</td>
<td>0.33</td>
<td>5.113</td>
</tr>
<tr>
<td><strong>Identification</strong></td>
<td>0.46</td>
<td>0.63</td>
<td>5.119</td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td>1.03</td>
<td>0.35</td>
<td>5.094</td>
</tr>
<tr>
<td><strong>Development</strong></td>
<td>0.26</td>
<td>0.76</td>
<td>4.948</td>
</tr>
<tr>
<td><strong>Perception</strong></td>
<td>0.20</td>
<td>0.81</td>
<td>4.400</td>
</tr>
<tr>
<td><strong>Adaptability</strong></td>
<td>0.70</td>
<td>0.49</td>
<td>4.524</td>
</tr>
<tr>
<td><strong>Expressiveness</strong></td>
<td>0.22</td>
<td>0.79</td>
<td>3.877</td>
</tr>
<tr>
<td><strong>Endogenous Luck</strong></td>
<td>0.31</td>
<td>0.73</td>
<td>4.664</td>
</tr>
<tr>
<td><strong>Exogenous Luck</strong></td>
<td>0.49</td>
<td>0.60</td>
<td>4.535</td>
</tr>
</tbody>
</table>

Table 4 indicates the results of ANOVA for the differences among the three types of entrepreneurs; novice, serial, and portfolio on the need for achievement and the different sub-dimensions of their traits.
Entrepreneurs are divided into three categories according to their entrepreneurial experience and number of venture currently owned. Results of ANOVA do not indicate significant differences among the three groups of entrepreneurs on any of the dimension in entrepreneurship. Referring to the mean values alone also does not reveal any indication that portfolio entrepreneurs are more entrepreneurial than serial and novice entrepreneurs. However, novice entrepreneurs are found to score highest in terms of need for achievement, internal locus of control, opportunity evaluation, opportunity development, social perception, and expressiveness. Portfolio entrepreneurs on the other hand are found to score highest in terms of opportunity identification, social adaptability, endogenous luck, and exogenous luck. Serial entrepreneurs are not found to score highest in any category in assessing the entrepreneurialism.

Although not statistically significant, the findings above are surprising showing the signal that novice entrepreneurs to some extent are more entrepreneurial than serial and portfolio entrepreneurs, especially in terms of personality. One possibility is this group of “new” entrepreneurs are more ambitious and might be too optimistic towards their entrepreneurship career, since they are new to the entrepreneurship career, with relatively limited resources they have (Ucbasaran, Westhead & Wright, 2003; asaran, Westhead, Wright & Bink, 2003; Westhead, Ucbasaran & ght, 2005; Westhead, Ucbasaran, Wright & Bink, 2005), they are required to evaluate and execute the opportunities they foresee. Thus, this might lead them to score highest in terms of opportunity evaluation and opportunity development. Compare with the entrepreneurs at another extreme, portfolio entrepreneurs, the latter are shown to be less entrepreneurial in terms of personality but are found to be stronger on developing the strategic capability for their firms and also more adaptive to current social situations. This might be due to their experience as
perience to serial entrepreneurs thus making them less entrepreneurial pare with either extreme of the entrepreneurs.

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>Sig.</th>
<th>Education Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Need for Achievement</td>
<td>4.61</td>
<td>0.00</td>
<td>4.533¹</td>
</tr>
<tr>
<td>Internal Locus of Control</td>
<td>2.13</td>
<td>0.07</td>
<td>4.600</td>
</tr>
<tr>
<td>Identification</td>
<td>4.48</td>
<td>0.00</td>
<td>4.567¹</td>
</tr>
<tr>
<td>Evaluation</td>
<td>2.01</td>
<td>0.09</td>
<td>4.400</td>
</tr>
<tr>
<td>Development</td>
<td>2.32</td>
<td>0.05</td>
<td>4.280</td>
</tr>
<tr>
<td>Perception</td>
<td>2.57</td>
<td>0.03</td>
<td>3.760¹</td>
</tr>
<tr>
<td>Adaptability</td>
<td>3.91</td>
<td>0.00</td>
<td>4.000¹</td>
</tr>
<tr>
<td>Expressiveness</td>
<td>1.63</td>
<td>0.16</td>
<td>3.720</td>
</tr>
<tr>
<td>Endogeneity</td>
<td>7.20</td>
<td>0.00</td>
<td>4.733¹</td>
</tr>
</tbody>
</table>
Table 5: ANOVA for impact of education level on entrepreneurship

The effect of education level of the entrepreneurs on entrepreneurship is examined using ANOVA. Entrepreneurs are grouped into with no formal education, primary or secondary level of education, professional qualification, diploma or degree level of education, and postgraduate level of education. ANOVA is used to test for significance of different among the groups in term of entrepreneurship. Results from the ANOVA reveal that education level of the entrepreneurs to have significant effect on need for achievement (F=4.611; p<0.05), opportunity identification (F=4.486; p<0.05), social perception (F=2.573; p<0.05), opportunity adaptability (F=3.918; p<0.05), endogenous luck (F=7.207; p<0.05), and exogenous luck (F=9.287; p<0.05). Further more, the effect of entrepreneurs’ education level on internal locus of control (F=2.132; p=0.076), opportunity evaluation (F=2.012; p=0.092), and opportunity development (F=2.329; p=0.056) a id to be crucial even not statistically significant at 95 percent confidence level. For the results with significant different, follow up pos hoc test is conducted using Duncan test. Overview of the pos hoc results indicates that entrepreneurs with higher level of education are found to be significantly more entrepreneurial than entrepreneurs with lower level of education. From the general trend of the findings, entrepreneurs with tertiary level of education; professional certification, diploma or degree, or postgraduate qualification, are significantly more entrepreneurial than entrepreneurs with only primary or secondary level of education.

Discussion of the Findings
experience does indicate the sign that industrial experience has actually weakened the entrepreneurialism of the entrepreneurs. This might show the worry of Haynes (2003) on the possibility for industrial experience to create rigidity for entrepreneurs whereby the entrepreneur tends to follow known models in problem solving and are less adaptive to new environment (Haynes, 2003). Thus, this has made them less entrepreneurial as well in their own personality and in managing the firm. Besides that, entrepreneurial experience has also found to have negative impact on endogenous luck and exogenous luck, the two dimensions measuring the flexibility and adaptability of the firm. This can be explained by their previous entrepreneurial experience, especially the "unhappy experience" leads to the ending of previous venture, might has made the entrepreneurs more cautious thus impose greater control to ensure that everything is in order. This might eventually sacrifice the most valuable strategic capability of SMEs. Managerial experience might be the most promising type of experience among the three types of experience investigated in this study in making the entrepreneurs more entrepreneurial.

Categorising of entrepreneurs into novice, serial, and portfolio to examine the impact on entrepreneurship does not found to be conclusive. None of the category is found to be significantly different from the others in the level of entrepreneurialism. This finding is obviously contrary to UcBasaran, Westhead and Wright (2003), UcBasaran, Westhead, and Bink (2003), Westhead, UcBasaran, and Wright (2005), and Westhead, UcBasaran, Wright, and Bink (2005). A closer review on Westhead, UcBasaran and associates papers found that they are studying the impact on the type of entrepreneurs with each of the items in a variable rather than the variable as a whole. Thus, data revealed in this study is suspected to be insufficient to conclude that habitual entrepreneurs, which made up of serial and portfolio entrepreneurs, are more entrepreneurial that novice.
Education level of the entrepreneurs is found to be significance in explaining the entrepreneurialism of the entrepreneurs. The general trend results indicates that entrepreneurs with higher level of education are entrepreneurial. This finding has supported Lee (1997) argument that success in school will enhance the confidence of the students in facing challenges in their entrepreneurship career. In addition, the analytical and technical skills of the entrepreneurs that are enhanced through education (Lee & Tsang, 2001) might also improve their capabilities in decision making thus boosting the confidence of them to manage a more flexible and adaptable organisational culture. Furthermore, the liberalisation and globalisation of the world economy might have increase the complexity of the environment. Information and technology communication has also made the customer to be more demanding thus impose greater requirement for a firm to stay competitive (Wee, 2003). All these factors might make education a critical factor in determining the success of the firm resulting from increasing complexity that required greater competence and greater entrepreneurialism from the entrepreneurs (Lee & Tsang, 2001).

Policy Implications

This study is to assist government in encouraging more entrepreneurs in the country and directing the right person into the entrepreneurship career. The results of this study indicates that previous experience working in a similar industry, experience in holding managerial position, and experience as entrepreneur do not show to be relevant towards enhancing the entrepreneurialism of individuals. Analysis of data collected also does not reveal significance of difference among novice, serial, and portfolio entrepreneurs in their level of entrepreneurialism. The experience
ince they are lacking in social network during the start-up process is because directing the funds to this group of individual will better the objective of the government in balancing the wealth distributions in the country. Moreover, providing assistant to those with good track records do not guarantee greater chances of success as these track records do not make them more entrepreneurial.

The significance of education level of the individual towards level entrepreneurialism might be good news to the government as Malaysia is facing the problem with unemployed graduate. Government might take initiative to push this group of individuals into entrepreneurship career. However, government is still advised to take initiative to provide additional training to them before approving the financial assistance. This is because one of the possible reasons for these graduates to remain unemployed is lacking of competency. Thus, they may not be as competent as entrepreneurial as the respondents in this study who might be pull into entrepreneurship career due to the opportunity they have perceived. Policy might solve the problem with unemployed graduates but in term of wealth distribution, this policy might improve the well being of middle class rather than the lower class income residents. Therefore, the author urges government to take into consideration of establishing an Entrepreneurship College for school dropout to learn technical skills and managerial skills at the same time. This will help in building entrepreneurs and in transforming craftsmen into entrepreneurs. Furthermore, assisting the school dropout may balance the wealth distribution of the country since this group of individuals are more likely to struggle for a living in this increasingly knowledge based economy if no assistance is provided. In addition, the Entrepreneurship College also provides the second opportunity for the school dropout to further their study to improve their entrepreneurialism. However, the Entrepreneurship College should be designed in the way that focuses more on practical knowledge rather than theoretical knowledge.
This study builds on the works of Westhead, Ucbasaran, and associates (Ucbasaran, Westhead & Wright, 2003; Ucbasaran, Westhead, Wright & Bink, 2003; Westhead, Ucbasaran & Wright, 2005; Westhead, Ucbasaran, Wright & Bink, 2005) with more comprehensive reviews focusing on the dimensions of human capitals and entrepreneurship. Results from the multiple analyses do not give any obvious indications of the effect of various experiences on entrepreneurialism of the entrepreneurs. Furthermore, it is surprising to observe that industrial experience might have negative impact on entrepreneurship. Besides, categorising the entrepreneurs into novice, serial, and portfolio entrepreneurs (Ucbasaran, Westhead & Wright, 2003; Ucbasaran, Westhead, Wright & Bink, 2003; Westhead, Ucbasaran & Wright, 2005; Westhead, Ucbasaran, Wright & Bink, 2005) does not yield the expected results. No significant differences have been detected among the three groups of entrepreneurs. However, higher level of education has proven to be crucial in building the elements of entrepreneurship on the individual entrepreneurs. Thus, policy makers should try to enhance the education level of the citizens as long term policy to strengthen the entrepreneurship in the country. This will likely to ensure a sustainable future and development of entrepreneurship especially in the context of Malaysian SMEs.

Reference:


