Networking, Entrepreneurship and Productivity in Universities

Dr M. Mehdi Salaran

Australian Graduate School of Entrepreneurship, Swinburne University

msalaran@swin.edu.au

Dr P. Alex Maritz (corresponding author)

Australian Graduate School of Entrepreneurship, Swinburne University of Technology

amaritz@swin.edu.au
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ABSTRACT

The importance of networking in fostering entrepreneurial activities has been widely researched over the last decade. There is however limited evidence of the association between these two constructs in a knowledge based environment. As universities are under constant pressure to improve the productivity of academic staff, we examine the role of social interaction in fostering entrepreneurial activities. A web-based survey is implemented, facilitated by empirical analysis using correlation and multiple regression to probe the relationship between these constructs. Whilst in can be concluded that the constructs are all multidimensional, varying relationships were identified when statistically examining the interrelations. Overall, there is a significant relationship between networking and productivity. Entrepreneurship also portrays such significance, albeit varying between dimensions of autonomy, innovativeness, risk taking, proactiveness and competitive aggressiveness.

Keywords: networks, networking, social capital, entrepreneurship, productivity

INTRODUCTION

The role of social interactions and networking has been investigated increasingly in recent years as a useful resource in the form of cooperative behaviour that is engendered by the fabric of social relationships. This concept has been applied to solve many problems in societies since its appearance in the literature, with applications such as education, public health, economic development, community life, youth behaviour problems and general problems of collective actions (Fukuyama, 1995; Coleman, 1988; Loury, 1987; Portes & Sensenbrenner, 1993; Woolcock, 1998; Putnum, 1993; 1995; Zahra, Yavus & Ucbasaran 2006).

In this study, we examined the role of networking in fostering entrepreneurial activities in an academic context; more specifically, how social interactions and networking available to academics fosters entrepreneurial activities and therefore improves their productivity.
Appropriate to this study, we elaborate on networking and discuss how it encourages entrepreneurial activities of academic staff and their productivity. We formulated hypotheses around these research constructs and subjected the hypotheses to empirical testing based on a survey conducted in five Australian universities located in Metropolitan Melbourne. Our findings provide support for the association among appropriate networking, entrepreneurship and productivity.

This study has investigated the people base of entrepreneurship in academic institutions by focusing on social relationships. Thus, this research contributes to the advancement entrepreneurship literature by proposing that social interactions and networking may foster entrepreneurship. The study is hypothesis lead, being a result of gaps we identified in current literature and previous empirical studies. What follows is a summary of the construct literature, together with hypotheses developed around the integration of the constructs.

**LITERATURE REVIEW**

**Networking**

Networking refers to social interactions and the existence of network ties. Granovetter (1992) used the term “structural embeddedness” to refer to networks in social structures, which is concerned with the properties of the social system and the network of relations as a whole. In other words, structural dimension describes the impersonal configuration of linkages between people or social units through which participants can gain access to resources. Nahapiet and Ghoshal (1998) argued that social interactions have three facets, including network ties, which is the absence or presence of network ties; network
configuration, which describes the pattern of connections which can be measured by density of interactions, connectivity and hierarchy; and appropriable organization, being integration ties that can be used for different purposes. In the context of this study, social interactions and networking of academic staff is the time that they spend in social interactions with their contacts such as colleagues, business/industry contacts and various stakeholders.

**Entrepreneurship in Organizational Settings**

Entrepreneurial activities in organizational context has been widely touted by researchers as an effective means for revitalizing established organizations and improving their performance and enhancing nation’s competitiveness (Morris, Kurako & Covin, 2008; Covin and Slevin, 1991; Miller, 1983; Miller and Friesen, 1982; Zahra, 1993; Zahra & et al, 1999; Sathe, 2003; Kuratko & Welch, 2004). The implicit logic behind this pervasive belief is that the main characteristics of entrepreneurship include inclinations toward taking risk, preparedness to seize the opportunities in the market and innovating new products and services, would enable firms to respond to uncertainties in their environment (Morris et al, 2008; Miller, 1983; Zahra et al. 1999). Cognisance is taken of the term intrapreneurship, indicative of entrepreneurial personalities and orientation of employees within organizational settings. Limited to certain constraints, intrapreneurship leads to entrepreneurial activities within such settings (Morris et al, 2008).

**Productivity**

The increasing pressures on universities to extend their services have made them focus on improving performance. As the provider of research services, academic employees play an important role in enhancing the performance of academic institutions and contribute to the decrease of pressures on universities. In academic communities, the most critical indicator of
research productivity is publication. As the physical and conventional form of academia, publishing books and journal articles is the most fundamental social processes of communicating and exchanging research findings (Wood, 1990). In academic environments, publication brings precognition and promotion for both academics and their institutions. Also, as a unique criterion for obtaining competitive research funds, publishing is an evidence of institutional excellence. Leading universities are expending a lot of time and money in publicizing the quantity of their number of books and articles. To this extent, we do not negate research income from competitive grants, but place emphasis on the link between productivity and research.

**Association between Networks and Entrepreneurship**

Empirical studies indicate that social interaction plays an important role in facilitating innovation and creativity (Ruef, 2002; Tsai & Ghoshal, 1998; Gabby & Zuckerman, 1998; Hansen, 1998). Network theorists have examined the association between access to networks and developing new ideas and creativity. For example, Burt (2004) noted that good ideas or alternative ways of thinking and behaving are disproportionately in the hands of people whose networks span structural inadequacies. Ruef (2002) examined the role of network ties in inducing conformity and sustaining trust, as well as novel ideas. He argues that people that are connected to groups beyond their own can expect to find themselves delivering valuable ideas, seeming to be gifted with creativity. Generally speaking, the propensity among entrepreneurs toward innovation is seen to be a function of the types of social relationships that those entrepreneurs have. There are empirical and theoretical studies that indicate the association between of social interaction and risk taking (Ouchi, 1979; Nahapiet & Ghoshal, 1996; Ring & Van de Ven, 1992).

Social communication results in proactiveness by helping in the detection and identification of environmental threats and opportunities as well as in taking action to exploit or neutralize environmental uncertainty (Kohli & Jaworski, 1990). Social communication makes it easier for
organizational participants to transfer knowledge (Noanka, 1994). Utilizing social interaction within organizational contexts not only benefits participants but organizations will in addition gain advantage by reducing expenditure and timely response to environmental needs and demands. Our two hypotheses were developed around these constructs:

**H1:** There is a positive relationship between networking and entrepreneurship

**H2:** There is a positive relationship between innovation and productivity.

Theoretically, there have been extensive arguments about the relationship between performance and entrepreneurship in organizations (Zahra, 1991; Covin & Slevin, 1991). However, few scholars examined this association empirically (Covin, 1991; Covin & Slevin, 1989; Zahra; Covin & Zhara, 1998; Zahra, 1996; Zahra, 1993). Most of these studies examined the association between entrepreneurship and the financial aspects of performance in the private sector. There is limited research among these constructs in the non-profit and social entrepreneurship sectors. Intrapreneurship activities in academic institutions however do not infer that academics are entrepreneurial within the business sense.

**METHOD**

The sampling frame of this study consisted of full time academic staff at universities in metropolitan Melbourne. The statistic population of 5695 academic staff embraced various levels of academic positions, ranging from Lecturer to Professor. Data was collected via electronic media, whereby academic staff were encouraged to participate in an online questionnaire via an email hyperlink. The online and electronic media survey approach as amplified by Dillman (2000) was adapted for the study. The questionnaire was designed as an integration of the
constructs, using a variety of techniques and structures. We enhance the research methodology with a discussion of dependent and independent variables.

Dependant variables consisted of productivity and entrepreneurship. Since the purpose of the study was to decrease the output pressures on universities, productivity was the dependent variable. An index of research productivity (IP) was defined as the five sum of (3* the number of single or multi-author books) + (the number of papers published in refereed journals) + (the number of edited books) + (the number of chapters in refereed books). This index of productivity, like all others that attempt to provide a single measure of quantity of output that is applicable across different disciplines, is imperfect. It is, however, consistent with the more advanced measure reviewed by previous authors (Wood, 1990; Ramsden, 1994).

Independent variables consisted of networks and entrepreneurship. The network section comprised frequency of communications in a defined setting. The construct of entrepreneurship has been considered as a dependent and independent variable. The scale of entrepreneurship included operationalized innovativeness, risk-taking and proactiveness, self renewal. However, to adopt it into academic context, 18 items were developed and 7 items already in the literature were reconceptualised. Therefore, the questionnaire for the construct has 25 items. All questions measured these dimensions on a 5-point Likert scale.

The characteristics of the statistical sample such as gender, age, and experience in the field of study, experience in their institutions, function and position have served as control variables. One way analysis of variance (ANOVA) was used to examine statistically significant differences among groups classified by social interactions, entrepreneurship and productivity. Hierarchical and multiple regression techniques were implemented to test the hypotheses identified in the previous section.
RESULTS

To predict productivity, multiple regression analysis was undertaken. Two variables, including innovativeness and frequency of communication as independent variables and productivity as dependent variables are present in the model. This analysis has resulted in an equation with two independent variables and intercept. The other research constructs served as independent variables and productivity as a dependent variable. The beta coefficients in the model indicate that each independent variable contributes to a predicted variable.

A standard multiple regression was performed between productivity as the dependent variable and networking and innovativeness as independent variables. Table 1 indicates the correlation between the variables, the unstandardized regression coefficients (B) and intercept, the standardized regression coefficients (beta), sr square, R square and adjusted R square. R for regression was significantly different from zero, F (2, 206) = 20.523, p<0.001. For the two regression coefficients that differed significantly from zero, 95 % confidence intervals were calculated. The confidence limits for frequency of interactions (networking) were 0.221 to 1.692 and those limits for innovativeness were 1.046 to 2.262. These two independent variables contributed significantly to prediction of productivity as innovativeness 0.14 (sr Square) and frequency of interactions 0.027 (sr Square). The two variables in combination contributed another 0.113 in shared variability of the dependent variable. Altogether, 16.6 % of the variability of productivity was predicted by knowing the scores on these two variables.
Table 1 Predicting Productivity by Networking and Innovativeness

<table>
<thead>
<tr>
<th>Variables</th>
<th>Productivity</th>
<th>Frequency of communication</th>
<th>Innovativeness</th>
<th>B</th>
<th>Beta</th>
<th>sr(square)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Networking</td>
<td>0.223</td>
<td></td>
<td></td>
<td>0.957**</td>
<td>0.165</td>
<td>0.027</td>
</tr>
<tr>
<td>Innovativeness</td>
<td>0.374</td>
<td>0.167</td>
<td></td>
<td>1.654**</td>
<td>0.346</td>
<td>0.140</td>
</tr>
</tbody>
</table>

Intercept = - 31.9

Means

|             | 15.54        | 17.19                    | 18.74          |

Adjusted R Square = 0.158

R Square = 0.166

Standard Deviation

|             | 20.07        | 3.47                     | 4.20           |

**p<0.01

To determine which of the variables in the model contributed to the prediction of the dependent variable, beta coefficients were inspected. Beta coefficients in Table 1 provide information regarding the level of contribution of each independent variable in predicting dependent variable. As the standardized coefficients column portrays, the largest beta coefficient is 0.346 which is for innovativeness. This means that this variable makes the strongest unique contribution to explaining the dependent variable. The beta value for frequency of communication is (0.165) indicating that it made less of a contribution. These two values are coefficients for the variables in the equation. Therefore, there are two independent variables available to predict the dependent variable, productivity (PROD). To predict the academic staff productivity score, the available independent variable scores are multiplied by their respective regression coefficients. The coefficient-by-score products are summed and added to the intercept, or base line, value (A). Thus, the multivariate equation to predict productivity is as follows:
Predicted productivity \( (Z) = -31.9 + 0.346 (Z1) \) Innovativeness + 0.165 \( (Z2) \)

Hierarchical regression was employed to determine the combination effect of age, experience in the field of study, and experience in the institution.

**Table 2 Hierarchical Regression of Innovativeness and Networking on Productivity**

<table>
<thead>
<tr>
<th>Variables</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>SR (Square)</th>
<th>F</th>
<th>Sig.F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 1</td>
<td>0.170</td>
<td>0.029</td>
<td>0.015</td>
<td>0.029</td>
<td>2.026</td>
<td>0.111</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience (Field of Study)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience (Institution)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
<td>0.436</td>
<td>0.190</td>
<td>0.170</td>
<td>0.161</td>
<td>9.513</td>
<td>0.000</td>
</tr>
<tr>
<td>Beta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovativeness</td>
<td>0.352**</td>
<td>0.000</td>
<td>0.170</td>
<td>0.161</td>
<td>9.513</td>
<td>0.000</td>
</tr>
<tr>
<td>Networking</td>
<td>0.145*</td>
<td>0.027</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.55</td>
<td>0.604</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience (Field of Study)</td>
<td>0.119</td>
<td>0.260</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experience (Institution)</td>
<td>0.103</td>
<td>0.191</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p<0.01**

To determine the combined effect of age, experience in the field of study and experience in the institution on the equation, sequential regression was employed. As Table 2 indicates, there are two Models. Model 1 refers to the first block of variables that was entered (Age, Experience in the Field of Study and Experience in the Institution), while Model 2 includes all the variables that were entered in both blocks (Innovativeness, Networking Age, Experience in the Field of Study and Experience in the Institution). In Model 1, the R square value after all control variables have been entered, the overall
Model explains 3% of the variance. After block 2 also has been included, the Model as a whole explains 19% of the variance.

Furthermore, rs square value in Model 2 is 0.161 which explains 16% of variance in the performance even when the effect of age, experience in the field of study and experience in the institution is statistically controlled. This is a significant contribution as indicated by the Sig, F change for this Model, with F (5, 203) = 9.513. Scanning the Sig. column for all independent variables, there are two variables that make a statistically significant contribution (less that 0.01 and 0.05). In order of importance they are innovativeness (beta = 0.352) and networking (beta = 0.145). Therefore, age, experience in the field of study and the experience in the institution did not make a unique contribution.

**DISCUSSION**

The findings indicate a strong and significant relationship between networking with other research constructs. The results signify a significant relationship between frequency of interactions (networking) and innovativeness, renewal and entrepreneurship after controlling for possible effects from other variables. The role of networking in fostering innovation and developing new ideas has been the focus of study in recent times (Burt, 2004; Ruef, 2002) and findings support this notion.

The benefit of access to networks in utilizing opportunities toward enhancing linkages between performance and entrepreneurship has been reflected in the literature (Burt, 2000; Adler & Kwon, 2002; Zahra, 1996; Lumpkin & Dess, 1996; Kuratko, 2005). The results have confirmed that productivity has a positive and moderately strong relationship with intrapreneurship. In the
academic context, it indicates that those who have higher productivity scores have corresponding higher entrepreneurship scores. In general, consistent with literature in the field, strong relationships between entrepreneurship and performance have been acknowledged.

The results of regression analysis identified more parsimonies and complex conclusions. The predictability of productivity and entrepreneurship has been evaluated. Regarding the importance of improving the productivity of academic staff for academic institutions the equation for predicting productivity as dependent variables and independent variables was developed. Networking (frequency of communications) and innovativeness predict productivity as independent variables significantly. To make sure that these two variables still contribute significantly to predict productivity some variables such as age and experience in the field of study where controlled and the results indicate no change in the equation. Therefore, given the score of innovativeness and frequency of communication, productivity for each academic may be predicted by this equation.

Despite age and experience in the field of study not making a significant contribution, we accept H1 and H2. As such, there is a positive relationship between networking and entrepreneurship; together with a positive relationship between innovation and productivity.

**CONCLUSION AND LIMITATIONS**

This study examined the role of networking (frequency of communications) in fostering entrepreneurship and productivity. Particularly, the focus of the study was the question whether social interactions foster entrepreneurial activities and thereby improve the productivity of academic staff in universities. The results indicated that there is a positive relationship between these two research constructs. In addition a mathematical model was developed including two
variables; networking (frequency of communication) and innovativeness that can predict productivity of academic staff.

The literature on entrepreneurship in organizations suggests that it is in the infancy stage and many factors should be examined to foster entrepreneurial activities. This research provided evidence that these constructs should be studied in more depth, and a foundation set for further research about their relationship and many other factors that need be investigated to advance theories and concepts.

Limitations are primarily based on the sampling frame in metropolitan Victoria, which in itself identifies an opportunity to extend the study to a wider sampling frame. Similarly, opportunities to research cross-institutional differences may identify trends in individual institutions.
REFERENCES


