International Journal of Business Science and Applied Management

A fresh approach to business and management research

www.business-and-management.org

ISSN 1753-0296
Editorial:

IJBASAM: The first steps

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Abstract

This is the first ‘Editorial’ of the International Journal of Business Science and Applied Management. The journal was launched in summer 2006 and since then we have published three volumes, seven issues and more than 25 papers. In most occasions, each issue of the journal is accompanied by a book review relating to business and management topics.

Keywords: international journal of business science and applied management
EDITORIAL

I am pleased to provide the first ‘Editorial’ of the International Journal of Business Science and Applied Management. The journal was launched in summer 2006 and since then we have published three volumes, seven issues and more than 25 papers. In most occasions, each issue of the journal is accompanied by a book review relating to business and management topics.

Our aim is to review papers in an efficient manner knowing how important these publications are in the academic profession. Therefore, we aim to have a decision within 10 weeks from the submission date to the journal and so far, we have managed to keep to this deadline on most occasions. Surely, this would have not been possible without the help and support of the Editorial Board team which consists of academic experts from a wide range of business and management scientific fields. Special thanks should be given to Dr Papagiannidis, the Production Editor of the journal, for his continuous and speedy efforts to improve and update the journal website. Finally, before discussing the academic papers published in this issue, I would like to invite academic proposals for any Special Issues with topics related to the business and management fields. In 2007, the journal published two Special Issues examining the e-business phenomenon with Professor Feng Li acting as the principal Special Issue editor.

The current issue (Vol.3, Issue 3) includes three papers written by academics based in Europe and North America. Specifically, the first paper written by Professor Teemu Kautonen is entitled “Understanding the older entrepreneur: Comparing third age and prime age entrepreneurs in Finland”. It examines a topical issue, older entrepreneurship, and based on systematic research, the author provides a range of insightful findings. The second paper brings together academics from North American universities examining “Mobile technology and the value chain: Participants, activities and value creation”. The authors analyse the mobile technologies related to a company’s value chain and provide benefits and concerns following the usage of these technologies. The third and final paper of this issue is entitled “Turnover and heterogeneity in top management networks – A demographic analysis of two Swedish business groups” and is written by two academics located in Swedish universities. The paper examines membership turnover for two Swedish business groups and following the application of relevant theories, a range of recommendations are illustrated.

This issue concludes with a review for a strategic management book (Strategic Management and Competitive Advantage: Concepts and Cases by Jay B. Barney and William S. Hesterly) provided by Dr Tsinopoulos.
Understanding the older entrepreneur: Comparing Third Age and Prime Age entrepreneurs in Finland

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Abstract

This paper responds to the need for more data on the topical issue of older entrepreneurship by comparing Third Age (50+ years) and Prime Age (20-49 years) entrepreneurs in Finland. The data comprises responses from 839 small firms which were established 2000-2006. The fact that 16% of these firms were founded by individuals aged 50 or over indicates that older entrepreneurship is not a marginal issue, even though the start-up rate in the Third Age population was found to be slightly less than half of that in the Prime Age cohort. Further, the findings point to the need for more empirical, especially qualitative, research on issues related to the social and cultural perceptions of old age and gender as well as different ‘pull’ motivations leading to entrepreneurship at an older age, which were found to clearly dominate over ‘push’ motives in this context.

Keywords: entrepreneurship, third age, older entrepreneur, ageing, Finland

Acknowledgements: The financial support of the Finnish Foundation for Economic Education is gratefully acknowledged.
1 INTRODUCTION

A number of recent conceptual and empirical studies have drawn attention to entrepreneurship at older ages (Baucus and Human, 1994; Curran and Blackburn, 2001; Dollinger et al., 1988; Hart et al., 2004; Kautonen et al., 2008; Levesqué and Minniti, 2006; McKay, 2001; Singh and DeNoble, 2003; Weber and Schaper, 2004; Webster and Walker, 2005). This is a topical issue for at least two reasons. Firstly, given the ageing populations in the OECD countries (OECD, 2001), the growing numbers of early retirees with the experience and financial means for entrepreneurship (Dollinger et al., 1988), and ‘the potential for older people to be disenfranchised in jobs and through retirement’ (McKay, 2001, p. 162), it is likely that the number of older business founders will be increasing. Secondly, promoting older entrepreneurship can be seen as a potential policy option for prolonging the working life of the ageing population (Kautonen et al., 2008; Webster and Walker, 2005). This, on the other hand, is considered a potential remedy to the economic challenges caused by the ageing population such as increasing costs of health care and, in institutional systems with public welfare and pensions, the burden of these payments falling on a decreasing number of workers (Visco, 2001; Webster and Walker, 2005).

Older entrepreneurship is still an under-researched area characterised by a scarcity of empirical data. In particular, little recent research is available on older entrepreneurs: the people who actually become self-employed or start a business at an older age (for exceptions, see Baucus and Human, 1994; Kautonen et al., 2008; McKay, 2001). Weber and Schaper (2004) provide an overview of the literature on the older entrepreneur and raise a number of issues for further research. One of these concerns the differences between younger and older entrepreneurs. What characterises and motivates older people who start a new business, and whether older entrepreneurs differ from their younger counterparts, and if so, how?

The present study sets out to explore these questions based on a survey of Finnish small businesses (less than 50 employees). The sample consists of a total of 839 enterprises, which were entered onto the Business Register maintained by Statistics Finland between 2000 and 2006. The sample includes 134 firms (16%) that were started by people who were between 50 and 64 years of age at the time of registering the business. This age interval corresponds to the definition of Third Age in Hart et al. (2004), while the authors used the term Prime Age to refer to 20–49 year olds. Thus, the terms older entrepreneur and Third Age entrepreneur are used interchangeably in this study to refer to an individual who becomes self-employed or starts a new business firm employing one or more people when aged between 50 and 64. Thus, the focus is not on the cohort of ageing business owners, but on those people who start a business late in their working career.

Due to the scarcity of previous empirical research in this area, the approach adopted in this study is explorative and its aims are mainly descriptive. The main contribution of the study is to respond to the urgent need for data and preliminary results on older entrepreneurs to enable hypothesis development and more detailed empirical studies in this under-researched area. The paper is organised as follows. The first section examines the older entrepreneur based on a review of previous conceptual and empirical literature. The emphasis is placed on those issues on which the survey data in this study sheds additional light: the characteristics of older entrepreneurs and their motivations to become self-employed or start a new business. Next, selected survey results are presented and their implications for our understanding of the older entrepreneur are discussed. The concluding section summarises the key results and provides potential future research avenues.

2 CHARACTERISTICS AND MOTIVATIONS OF THE OLDER ENTREPRENEUR: A LITERATURE REVIEW

2.1 Characteristics of older entrepreneurs

A number of characteristics of older entrepreneurs and their firms are addressed in the literature. One such characteristic concerns the entrepreneurial competencies and intentions of older people. Prior studies have suggested that older entrepreneurs are more capable of starting and running a business than their younger counterparts due to the financial, human and social capital accumulated over a lifetime career (Singh and DeNoble, 2003; Weber and Schaper, 2004). In fact, research evidence shows that the survival rates of businesses established by older entrepreneurs are higher than those of younger entrepreneurs (e.g., Cressy and Storey, 1995). On the other hand, two recent empirical treatises on older entrepreneurship indicated that in general, older people are significantly less likely to engage in entrepreneurial activity than younger individuals (Curran and Blackburn, 2001; Hart et al., 2004). This suggests that while the ability to establish and run a business is higher at an older age, the motivation...
for entrepreneurial behaviour is significantly lower. This is in keeping with the more general conclusion from a recent Norwegian study of nascent entrepreneurs over the age of 18, which found that while entrepreneurial competencies increase with age, entrepreneurial intentions tend to decrease (Rotefoss and Kolvereid, 2005).

Another characteristic considered in this study relates to the previous entrepreneurial experiences of older (potential) entrepreneurs. Given that earlier research has found that previous entrepreneurial experience positively influences the likelihood of establishing a business (Rotefoss and Kolvereid, 2005) and that a number of differences between novice and serial entrepreneurs exist (Alsos and Kolvereid, 1999; Westhead and Wright, 1998), it seems prudent to distinguish between these two groups in the context of older entrepreneurship. Here, the term novice entrepreneurs refers to individuals who establish a business without previous entrepreneurial experience, while serial entrepreneurs are those who have founded one or more businesses before their current one. MacMillan (1986, cited in Alsos and Kolvereid, 1999) described serial entrepreneurs as individuals who are motivated by the excitement and challenges associated with the creation and ownership of business enterprises. Ucbasaran et al. (2003) argue that serial entrepreneurs may enjoy an experience advantage compared to novice founders, since serial entrepreneurs have had the opportunity to acquire resources and learn in their previous entrepreneurial career. Even though it has been hypothesised that serial entrepreneurs run more successful businesses, empirical investigations have not supported this hypothesis (Alsos and Kolvereid, 1999; Westhead and Wright, 1998). One explanation may be, as Alsos and Kolvereid (1999) point out, that the skills acquired in previous ventures are not necessarily (fully) transferable.

A further characteristic concerns the gender distribution among older entrepreneurs. Based on their literature review, Weber and Schaper (2004) argue that older entrepreneurs are predominantly male. However, the data cited by the authors includes owner-managers over the age of 50, while the focus here is on individuals who start up after they have turned 50. Since many of the firms owned by older individuals are likely to have been started at a younger age, this argument does not directly address the specific characteristics of older entrepreneurs as they are defined in the present study. Then again the results of a recent self-evaluation survey by the Prince’s Initiative for Mature Enterprise (PRIME), an enterprise support organisation in the UK focusing on the Third Age segment, do show that most (64%) individuals contacting them for enterprise advice and support indeed are male (PRIME Initiative, 2006). Given that women manage and own approximately one third of businesses in developed economies (McClelland et al., 2005), there does not seem to be a difference to this general proportion in the 50+ age cohort.

However, while child care and related family obligations, including supporting the husband’s career, have been found to influence entrepreneurial behaviour among younger women, this is of limited importance or no longer an issue for older women (McKay, 2001). Therefore, one would actually expect a higher proportion of female entrepreneurs in older age cohorts, or explanations other than family obligations need to be found. One potential explanation for a lower start-up rate among older women is provided by McKay (2001), who interviewed ten women entrepreneurs between the ages of 57 and 73 in Canada. She explains that what is considered appropriate for a younger woman today in terms of career aspirations was not acceptable for generations of women before. The author continues that even if women of an older generation do realise and try to take advantage of changing gender roles, they often find their options ‘limited by perceptions of what is acceptable for their generation and age group’ (McKay, 2001, p. 161). Therefore, it seems fair to assume that older entrepreneurs are indeed mostly male.

The final issue related to the characteristics of older entrepreneurs addressed in this study is their educational background. Previous studies of older entrepreneurship indicate that older entrepreneurs generally possess lower levels of post-secondary education (Weber and Schaper, 2004). A likely explanation to this finding derives from the evidence cited by the authors, which seems to refer to older business owners rather than individuals starting a business at an older age. Most likely some or even many of these owner-managers started their businesses when they were younger and at a time when higher education was not as commonplace as it is today. Moreover, entrepreneurial individuals do not necessarily seek higher education degrees if the skills are not considered relevant and/or the degree is perceived more as a recruitment tool for large firms (Parker, 2004). This might also have affected the lower levels of higher education among those owner-managers who had started their first business early in their working career. In other words, previous studies do not seem to tell us much about the educational characteristics of older entrepreneurs.
2.2 Motivations for business start-up

Turning to the motivations for starting up in business, a distinction between ‘pull’ and ‘push’ factors is commonly found in the literature (e.g., Basu and Goswami, 1999; Stanworth and Curran, 1973; Wennekers et al., 2001). The former refer to positive factors that ‘pull’ people into business ownership, such as independence, increased earning and opportunities for carrying out their own ideas. Moreover, older individuals on the brink of retirement may see small-scale entrepreneurial activity as a positive way of keeping themselves active, thereby increasing their social inclusion and benefiting the society with their human and social capital (Kautonen et al., 2008; Webster and Walker, 2005). ‘Push’ factors, on the other hand, comprise negative impulses such as redundancy, a lack of alternative career opportunities and dissatisfaction with the current job (McClelland et al., 2005; Singh and DeNoble, 2003). If there is a lack of paid employment opportunities in the labour market, self-employment becomes more attractive, as does retirement in the particular context of older entrepreneurs (Dyer, 1994; Singh and DeNoble, 2003). However, Weber and Schaper (2004) note that insufficient retirement funds and inadequacies in pension entitlements also act as ‘push’ factors to entrepreneurship. Dissatisfaction with the current job and career development opportunities are particularly relevant for the Third Age segment, given that older people can face problems such as age discrimination and limited access to training opportunities in the labour market (Brown, 2000; Webster and Walker, 2005).

Singh and DeNoble’s (2003) conceptualisation of three groups of older entrepreneurs based on their outlook and risk-taking propensities provides a useful further distinction to the ‘pull’/‘push’ discussion. The authors argue that each type of entrepreneur demonstrates different manifestations of post-career self-employment. Constrained entrepreneurs are individuals who have relatively high entrepreneurial tendencies, but have been unable to act on these in their main career phase due to established or perceived constraints. The main motive for pursuing entrepreneurship in a later age is likely to be personal accomplishment. Rational entrepreneurs refer to individuals who decide to become entrepreneurs based on a rational comparison between the benefits offered by the person’s current position and entrepreneurship. Although the authors acknowledge a range of motives behind this rational choice – including prestige, respect and honour – the main motive is argued to be a reliable and steady stream of income, which is required to support the person’s established lifestyle. Reluctant entrepreneurs form the third group in this taxonomy. While constrained and rational entrepreneurs are attracted to entrepreneurship on the basis of ‘pull’ factors, reluctant entrepreneurs are self-employed by necessity due to a lack of viable employment opportunities in the primary labour market and the lack of such financial resources that would allow retirement while maintaining the preferred lifestyle.

3 METHOD AND DATA

The data used in this study originates from a survey conducted in October 2006 as part of a policy-oriented project on factors influencing the emergence of new enterprises in Finland. This study was, however, not designed specifically to compare Prime Age and Third Age entrepreneurs. Nevertheless, the dataset contained a substantial number of both older entrepreneurs and variables apposite for exploring their characteristics and motivations, thus making the data suitable for the purposes of this paper.

The sample was drawn from the Business Register maintained by Statistics Finland. The sampling frame included all businesses founded in 2000 or later, up until and including August 2006, amounting to a total of 97,804 enterprises. A random sample of 3900 was drawn and questionnaires were sent out by regular mail, 939 usable responses were received by the deadline, giving a response rate of 24.1% which can be considered satisfactory based on previous experience and other studies using similar sampling frames. However, even though the sampling frame was limited to businesses established in 2000 or later, the sample nevertheless contained 88 enterprises which had been founded in the 1990s. This is probably due to changes in the firm’s name, ownership or legal status, which had caused the business to re-register 2000-2006. These firms were removed from the sample, as were those few firms where the entrepreneur had been under the age of 20 or over the age of 64 when starting the business. This was done in order to facilitate comparability with previous research by using the definitions of Prime Age and Third Age in Hart et al. (2004).

The final dataset used in this analysis contains 839 firms founded between 2000 and 2006 by people who were between 20 and 64 years of age at the time of starting the business. A little over a third (36.5%) of the firms had been established in 2006 or 2005, a further third (32.2%) in 2004 or 2003 and the rest (31.3%) in 2002, 2001 or 2000. Hence, there is a slight majority of younger firms in the sample. However, there are no notable differences between the Third Age and Prime Age segments in terms of how many years the firms had been in business at the time the survey was conducted. There were no significant differences in terms of the sectoral distribution of the businesses established by
Prime Age and Third Age entrepreneurs either. In the total sample, 55.7% of the firms operated in the services sector, while 16.1% and 15.3% were engaged in trade and construction, respectively. Only a minority of the sampled businesses were in the manufacturing or transport sectors.

Chi-square and one-way between groups analysis of variance tests were conducted to explore differences between Prime Age and Third Age entrepreneurs. Chi-square analysis was used to identify differences relating to categorical variables, whereas analysis of variance tests were used with regard to variables measured at the interval level (seven-point Likert scale). The results of the analyses are presented and discussed in the following section.

4 RESULTS AND DISCUSSION

4.1 Characteristics of older entrepreneurs

The literature review commenced with a discussion of the entrepreneurial competencies and intentions of older people. One of the propositions that emerged in this context referred to entrepreneurial activity declining with age. From the total sample of 839 firms, 134 businesses (16.0%) had been founded by Third Age entrepreneurs, while 705 firms (84.0%) had been established by individuals belonging to the Prime Age category. The author’s calculations based on the population statistics available on the website of Statistics Finland (2006) show that there are approximately 3.2 million people in Finland aged between 20 and 64, that is, either Prime Age or Third Age. The share of Prime Age individuals of the total of 3.2 million was 65.2%, while 34.8% were Third Age. Hence, the rate of start-ups in the Third Age segment in the sample (16.0%) was less than half of the actual share of Third Age individuals in the population (34.8%). This finding is in keeping with the results in Hart et al. (2004), who found the entrepreneurial activity rate for Third Age individuals in the 2003 UK Global Entrepreneurship Monitor data to be approximately half of the Prime Age rate. Further support for the proposition that entrepreneurial activity declines with age is provided when the age at which the business was set up is investigated. The majority (60.4%) of the Third Age entrepreneurs were between 50 and 54 when starting their business, while far fewer started up in their late 50s (29.2%) or early 60s (10.4%). Lévesque and Minniti (2006) clarify the age effect in entrepreneurship with the opportunity cost of time. The authors argue that as individuals get older, they become less willing to invest time to activities which do not produce instant returns, including starting a new business.

Table 1: Gender and education

<table>
<thead>
<tr>
<th></th>
<th>Prime Age</th>
<th>Third Age novice</th>
<th>Third Age serial</th>
<th>Total</th>
<th>Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>267</td>
<td>37.9</td>
<td>32</td>
<td>42.1</td>
<td>11</td>
</tr>
<tr>
<td>Male</td>
<td>437</td>
<td>62.1</td>
<td>44</td>
<td>57.9</td>
<td>47</td>
</tr>
<tr>
<td>Total (n)</td>
<td>704</td>
<td></td>
<td>76</td>
<td></td>
<td>58</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comprehensive</td>
<td>118</td>
<td>16.8</td>
<td>10</td>
<td>13.1</td>
<td>20</td>
</tr>
<tr>
<td>Vocational</td>
<td>207</td>
<td>29.6</td>
<td>12</td>
<td>15.8</td>
<td>8</td>
</tr>
<tr>
<td>College or polytechnic</td>
<td>240</td>
<td>34.4</td>
<td>32</td>
<td>42.1</td>
<td>17</td>
</tr>
<tr>
<td>University</td>
<td>135</td>
<td>19.2</td>
<td>22</td>
<td>28.9</td>
<td>12</td>
</tr>
<tr>
<td>Total (n)</td>
<td>700</td>
<td></td>
<td>76</td>
<td></td>
<td>57</td>
</tr>
</tbody>
</table>

The table includes only respondents who indicated their gender or education level.

Table 1 addresses a number of issues discussed in the literature review section relating to the characteristics of older entrepreneurs. Firstly, the table distinguishes between Third Age novice and Third Age serial entrepreneurs based on whether the individual had had previous entrepreneurial experience before establishing the current business. For 56.7% of the Third Age entrepreneurs (76 respondents) the current business was their first one, while the rest (43.3% or 57 respondents) had founded one or more businesses in the past. This result shows that 9.5% of all businesses established between 2000 and 2006 in Finland were founded by individuals aged 50 or over who transferred from paid employment, unemployment or retirement to self-employment without previous entrepreneurial experience. This, together with the finding that 50+ serial entrepreneurs establish a further 6.9% of new Finnish businesses, clearly indicates that even though the entrepreneurial activity rate for the Third Age cohort is less than half of the Prime Age rate, older entrepreneurship is by no means a marginal issue.
A further examination of the data (not shown in Table 1) revealed that Third Age novice entrepreneurs more often start a one-person business (59.7%, compared to 47.9% in the Prime Age and 49.1% in the Third Age serial group) and that Third Age entrepreneurs in general hire more than one employee less often than Prime Age entrepreneurs (33.6% of the Prime Age entrepreneurs had two or more employees in their firm, compared to 19.4% of the Third Age novice and 18.6% of the Third Age serial entrepreneurs). However, none of these differences reached statistical significance in the chi-square test. When asked whether their business has grown, shrunk or stayed about the same in the past twelve months in terms of turnover, Third Age novice entrepreneurs tended more towards staying at the same level of business compared to the other two groups, showing lower observed than expected counts for growth. However, this result is not significant in terms of the chi-square test ($\chi^2 = 6.69$, df = 6; significance level = 0.351). Therefore, there is no statistically significant evidence to substantiate differences in the quality or success of firms established by Prime Age and Third Age entrepreneurs, or Third Age novice and Third Age serial entrepreneurs, in terms of the size and growth of the business.

The latter finding is in line with previous research on novice and serial entrepreneurs, where no evidence has been found to support the hypothesis that serial entrepreneurs run more successful businesses (Alsos and Kolvereid, 1999; Westhead and Wright, 1998).

Secondly, Table 1 displays the gender distribution of the Prime Age, Third Age novice and Third Age serial entrepreneurs in the sample. The literature review led to the proposition that Third Age entrepreneurs are predominantly male. Indeed, the share of women (32.8%) in the total Third Age sample does not deviate from the average general level of female entrepreneurship indicated in other studies (e.g., McClelland et al., 2005) and is approximately in keeping with the share of women (36%) in the clientele of the UK older enterprise support organisation PRIME (PRIME Initiative, 2006). Thus, this finding appears to support the proposition presented in the literature review that the removal of family obligations at an older age does not increase entrepreneurial behaviour for women. One possible explanation for the lower share of older female compared to older male entrepreneurs presented in the literature review refers to the changing perceptions of the appropriateness of career aspirations for women (McKay, 2001). The older generations have grown up in a time when women were less likely to pursue careers outside of home, and this may affect their entrepreneurial behaviour too. This proposition is supported by the share of women in the Third Age serial group, which is significantly lower than in the Third Age novice category. In fact, it seems that the very low number of female Third Age serial entrepreneurs is responsible for the low share of women in the Third Age segment as a whole, while the percentage of women in the Third Age novice group is much higher. This finding seems to suggest that perhaps the current climate and change in gender roles encourages older women to business ownership, while in the past, when most of the Third Age serial entrepreneurs started their first firms, few women could choose an entrepreneurial career for social and cultural reasons. However, the evidence presented here is still insufficient and further research is required to investigate this issue in more detail.

Thirdly, a comparison of the educational backgrounds of the three groups of entrepreneurs is displayed in Table 1. This comparison reveals that while Third Age novice entrepreneurs have the highest education level in terms of college, polytechnic and university degrees; more than a third of the Third Age serial entrepreneurs only possess secondary school level qualifications. A potential explanation for the latter has the same roots as for the low share of women in the Third Age serial entrepreneur category; the serial entrepreneurs may have started their first business at a young age at a time when having college or higher education degrees was not as common as it is today. Moreover, as entrepreneurially oriented people, the serial entrepreneurs might place less value on formal qualifications (Parker, 2004). Another possible explanation worthy of further research relates to the types of businesses founded by the Third Age novice entrepreneurs. In some professions, such as consultancy, law or medicine, it may be difficult to transfer into self-employment before a sufficient level of experience has been reached on top of the university degree, which may be a reason to postpone starting businesses until a later phase of the career. However, the data in this study do not allow this proposition to be examined properly, and thus an investigation of the impact of the occupational and career background on older entrepreneurship requires further research. Nevertheless, the data clearly demonstrate the difference between Third Age novice entrepreneurs and their serial entrepreneur counterparts in terms of their educational background, and puts Weber and Schaper’s (2004) argument that older entrepreneurs are less likely to have post-secondary education into a new perspective: while the Third Age serial entrepreneurs are likely to have lower levels of post-secondary education, this does not apply to older individuals who start their first business.
4.2 Motivations for business start-up

The second part of the literature review examined the ‘pull’ and ‘push’ motivations behind the decision to start up in business at an older age. On a general level, the ‘pull’ and ‘push’ motivations are associated with the terms opportunity and necessity entrepreneurship used in the Global Entrepreneurship Monitor (Minniti et al., 2006). As with the Global Entrepreneurship Monitor survey, the data used in this study includes a seven-point Likert-scale measure of whether the respondent experienced the business start-up as a necessity or opportunity. A dichotomous variable indicating necessity (values from one to three on the seven-point scale) and opportunity (four to seven on the seven-point scale; four was included in this category in order to clearly highlight the reluctant entrepreneurs) was formed and a chi-square analysis was run with the three categories of entrepreneurs. The result indicates that 10.5% of the surveyed entrepreneurs felt that they started in business out of necessity, while there were no statistically significant differences between the three groups ($\chi^2 = 0.15; df = 2;$ significance level $= 0.928$). The 10.5% necessity entrepreneurship figure is in keeping with the Global Entrepreneurship Monitor 2003 Finland results, which indicate that 10% of the Finnish Total Entrepreneurial Activity is necessity-driven (Arenius et al., 2004). Hence, there do not seem to be more Third Age reluctant entrepreneurs than there are necessity-driven entrepreneurs in general in Finland. This proposition is supported by the data indicating that less than five percent in the total Third Age sample had been unemployed for more than a year before starting the current business, unemployment or its threat being a major ‘push’ factor (Wennekers et al., 2001). Hence, it seems that older entrepreneurs in Finland are, in Singh and DeNoble’s (2003) terms, more likely to be constrained or rational entrepreneurs becoming self-employed mainly due to pull factors, rather than reluctant entrepreneurs.

The more specific ‘pull’ and ‘push’ motivations driving older individuals to start up in business were explored by means of one-way between groups analysis of variance. The data contained four variables relevant to this paper, which are reasonably normally distributed and pass the Levene’s test of homogeneity of variances. The four variables include two that can be classified as ‘pull’ motives and two that correspond to the definition of ‘push’ motives. The items and their means, standard deviations and the results of the analysis of variance tests are displayed in Table 2. The two ‘pull’ motives had clearly higher mean scores than the two ‘push’ motives for all three groups under consideration, which probably reflects the low share of necessity-driven entrepreneurship in the sample as discussed above. Statistically significant differences could be detected with respect to the ‘pull’ motives, while the between-group differences in terms of the ‘push’ motives were not significant. Despite reaching statistical significance, the actual differences in the mean scores of the ‘pull’ motives between the groups were rather small, as indicated by the small effect size (calculated using eta squared) of 0.01 for both variables (Cohen, 1988).

Table 2: ‘Pull’ and ‘push’ motives

<table>
<thead>
<tr>
<th></th>
<th>Prime Age</th>
<th>Third Age novice</th>
<th>Third Age serial</th>
<th>Analysis of Variance Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Mean</td>
<td>s.d.</td>
<td>No.</td>
</tr>
<tr>
<td>Pull</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I wanted to earn more money*</td>
<td>699</td>
<td>4.36</td>
<td>1.99</td>
<td>74</td>
</tr>
<tr>
<td>I wanted to carry out my own ideas*</td>
<td>700</td>
<td>4.52</td>
<td>2.21</td>
<td>75</td>
</tr>
<tr>
<td>Push</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment or threat of redundancy</td>
<td>703</td>
<td>2.62</td>
<td>2.22</td>
<td>76</td>
</tr>
<tr>
<td>I wanted a less stressful job</td>
<td>696</td>
<td>2.92</td>
<td>2.00</td>
<td>75</td>
</tr>
</tbody>
</table>

*Statistically significant difference between Third Age novice and Prime Age entrepreneurs at least at the .05 level.

**Statistically significant difference between Third Age serial and Prime Age entrepreneurs at least at the .05 level.
The items refer to the question ‘How did the following reasons affect your decision to found your current business?’ The items were measured on a seven-point Likert scale. The table includes only respondents who had indicated an answer to the respective items.
Post-hoc comparisons using the Tukey HSD test were performed for both ‘pull’ items. For the first item (‘I wanted to earn more money’), the test indicated that the mean score for Prime Age (M=4.36) was significantly different from the Third Age novice score (M=3.69). Third Age serial entrepreneurs (M=4.09) did not differ significantly from either Third Age novice or Prime Age entrepreneurs. While the differences in the mean scores are rather small, the results suggest that younger entrepreneurs are more motivated by the earnings differential when switching to self-employment than their 50+ counterparts. Moreover, in terms of Singh and DeNoble’s (2003) taxonomy, rational entrepreneurs seeking an increase in their income level do not seem to dominate the older entrepreneur segment, while money seems to matter even less to those older individuals who start up in business for the first time.

For the second item (‘I wanted to carry out my own ideas’), the Tukey HSD test revealed a statistically significant difference between the mean scores for Prime Age (M=4.52) and Third Age serial (M=3.77) entrepreneurs. The mean score for the Third Age novice group (M=4.17) did not differ significantly from either Third Age serial or Prime Age entrepreneurs. Again, the differences in the mean scores are fairly small and the score for the Prime Age category is the highest. Interestingly, the Third Age serial entrepreneurs rank carrying out their own ideas lower than earning money, while the vice versa is true for the Third Age novice entrepreneurs. Even though this difference is not statistically significant, it casts doubt on MacMillan’s (1986) argument of serial entrepreneurs being motivated by the excitement of the creation of new enterprises in the context of older entrepreneurship, and provides food for thought for future research: Do older serial entrepreneurs start businesses simply out of habit, for the need of earning money or keeping themselves busy, but with less enthusiasm and personal ambitions than their younger counterparts or the Third Age novice entrepreneurs? It might be useful to extend Singh and DeNoble’s (2003) taxonomy, initially developed with early retirees in mind, by including serial entrepreneurs as a fourth older entrepreneur category. A more detailed empirical examination of this extended taxonomy is required in order to better understand the motivations leading older individuals to start up in business.

5 CONCLUSIONS

Older entrepreneurship is an under-researched area of growing importance. This paper responded to the need for more data on the older entrepreneur by comparing the characteristics and motivations of Third Age (50+ years) entrepreneurs with those of Prime Age (20-49 years) entrepreneurs in Finland. The focus was on older individuals who establish a new business when aged 50 or over, rather than on older owner-managers who might have started their business at a much younger age. A summary of the key results and their implications for further research is provided in the following.

Firstly, the results of the study enlighten the comparative rates of Prime Age and Third Age entrepreneurship in Finland. The results support the earlier findings from the UK context by showing that entrepreneurial activity rates in the Third Age segment are significantly lower than in the Prime Age cohort (Curran and Blackburn, 2001; Hart et al., 2004). Related to the respective proportion of the age cohorts in the Finnish population, the start-up rate of the Third Age segment was slightly less than half of the rate in the Prime Age group. Nevertheless, 16.0% of Finnish new businesses are started by individuals aged 50 or over which indicates that older entrepreneurship is not a marginal phenomenon. Therefore, the specific characteristics and requirements of the 50+ segment should not be ignored when formulating enterprise support policies or programmes (Kautonen et al., 2008).

Secondly, the analysis of the characteristics of older entrepreneurs revealed a number of findings that warrant attention in future research. Throughout the analysis, a distinction was made between Third Age novice and Third Age serial entrepreneurs. In line with previous research (Alsos and Kolvereid, 1999; Westhead and Wright, 1998), the results did not point to any differences in the quality of enterprises established by older serial and novice entrepreneurs in terms of firm size and turnover growth. Moreover, the differences in these terms between firms founded by Prime Age and ones started by Third Age entrepreneurs were not statistically significant.

Even though the removal of family obligations at an older age would suggest increasing entrepreneurial potential among older women, their share of the Third Age segment was in keeping with the general share of female entrepreneurs found in other studies (e.g., McClelland et al., 2005). However, the percentage of women was not higher in the Third Age novice than in the Third Age serial category. Explanations related to cultural and social factors affecting the perceptions of the appropriateness of career aspirations for women of older generations were discussed (McKay, 2001), as were factors related to the educational and occupational background of older female entrepreneurs. This discussion should be continued in future research. How does the general population perceive the entrepreneurial potential of older women, and older people more generally, and how does this socio-
cultural perception affect the self-perception of older individuals in terms of their entrepreneurial intentions and capabilities? Besides gender, this question is related to the issue of cultural perception of old age and the capabilities of older individuals, raised by Weber and Schaper (2004), which is likely to differ between countries. Hence, cross-country comparisons would be particularly useful in future investigations.

Thirdly, the motivations leading to the decision to start up in business at an older age were explored in terms of ‘pull’ and ‘push’ factors as well as Singh and DeNoble’s (2003) taxonomy of constrained, rational and reluctant older entrepreneurs. Based on the finding that only approximately 10% of the older entrepreneurs were driven to self-employment by necessity and that the ‘push’ motives received clearly lower mean scores than ‘pull’ motives, it can be concluded that reluctant older entrepreneurs are clearly in the minority in Finland. The result reflects the Finnish rate for necessity entrepreneurship in the Global Entrepreneurship Monitor, which is also 10% (Arenius et al., 2004). However, the relative shares of constrained and rational entrepreneurs are more difficult to estimate based on the data used in this study. Hence, the motivations leading to entrepreneurship at an older age need to be addressed in more detail in further research. In spite of the differences in mean scores being small, the results led to the proposition that perhaps Singh and DeNoble’s (2003) categorisation of older entrepreneurs should be extended by including serial entrepreneurs as a further category. It would be interesting to examine in more detail how they differ from older novice entrepreneurs, as this could not be sufficiently addressed in the present study due to the limitations of the data. Moreover, researching older serial entrepreneurs could provide interesting data on how a long-term socialisation into the role of entrepreneur affects their motivations and behaviour.

Based on the preceding discussion, it is evident that more empirical research is required to improve our understanding of the phenomenon of older entrepreneurship. The findings presented in this paper and the questions and proposals formulated on that basis provide a number of ideas on how to proceed. Even though this paper provided preliminary evidence from the Finnish context, the findings cannot be generalised to other national contexts as such. Therefore, cross-country investigations would be imperative to generate information on older entrepreneurship for example at the EU level. The European Labour Force Survey dataset could be an appropriate starting point for such studies. Moreover, given the dynamic nature of entrepreneurship and the issues raised above, it seems that qualitative approaches such as narratives of older entrepreneurs (see e.g., Down, 2005) would be a useful next step to produce more detailed data on older entrepreneurs in order to enable researchers to formulate well-informed hypotheses for subsequent testing in survey studies.

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Mobile technology and the value chain: Participants, activities and value creation

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Abstract

Technology has evolved significantly and it is increasingly being used by businesses and consumers alike. Technologies such as those supporting electronic business (e-Business) and mobile business (m-Business) are being used across organizations extensively in an attempt to improve operations and subsequently translate in either financial gains or strategic advantages. Opportunities for realizing either of the two types of benefits can be identified through an examination of a business’ value chain. This conceptual study begins by proposing a business-centric interaction model that helps explain the interactions among all participants involved in an organization’s possible activities. The paper then explores the potential fit of wireless and mobile technologies across a company’s value chain through the citation of potential mobile and wireless business applications currently available. Finally, a discussion on the expected benefits and relevant concerns of mobile technology, as well as considerations for future research are provided.

Keywords: mobile technology, value chain, mobile applications, m-Business, concerns

Acknowledgements: The authors thank the journal’s reviewers for their comments. An earlier version of this paper was presented in the 2006 International Conference on Mobile Business (ICMB), Copenhagen, Denmark, June 26-27, 2006.
1 INTRODUCTION

Technology has evolved significantly and it is increasingly being used by businesses and consumers alike. For businesses, the last two decades have been marked by the transition of large and cumbersome mainframe computing systems, to personal computers offering increased capabilities and occupying only a small area of personal and work space. The latest innovation is found in mobile devices that introduce higher levels of flexibility and personalization. Technologies such as those supporting electronic business (e-Business) and mobile business (m-Business) are being used across organizations extensively in an attempt to improve operations and subsequently translate in either financial gains or strategic advantages. Opportunities for realizing either of the two types of benefits can be identified through an examination of a business’ value chain.

The paper begins by defining m-Business and presenting a business-centric interaction model that helps explain the interactions among all participants involved in an organization’s possible activities. Then, an overview of the value chain and the impact of m-Business on it are provided through the citation of potential mobile and wireless business applications currently available. Finally, a discussion on the expected benefits and relevant concerns of mobile technology, as well as considerations for future research are provided.

2 M-BUSINESS

Mobile business (m-Business) can be defined as electronic business interactions/transactions enabled at least in part by mobile technology that may target businesses and consumers alike (Coursaris and Hassanein, 2002). For the purpose of this paper the term m-Business incorporates m-Commerce activities which represent the transactions enabled by mobile technology.

There are several mobile technologies that support m-Business. These are typically grouped as devices and networks (White, 2005). Mobile devices range from small radio frequency identification (RFID) and global positioning system (GPS) chips to barcode scanners and wirelessly-enabled handheld personal computers. Mobile networks range from Bluetooth and RFID readers to mobile telecommunications networks and GPS. These mobile technologies are being used by organizations to help address their needs while offering opportunities for flexibility and customization.

Unlike e-Business, which leverages wired and consequently immobile access points (e.g. PCs), m-Business offers value by enabling users to be mobile and reachable anytime and anywhere. Therefore, value creation can occur by supporting either mobile users (e.g. employees) or mobile activities (e.g. tracking raw materials and supplies). A growing industry trend is found in Fixed-Mobile Convergence (FMC), in which centralized management and infrastructure support a mobile workforce, providing “full access to business applications from any location or network connection” (Winther, 2007). Thus, the greater the size of the mobile workforce and/or the higher the ratio of mobile activities within an organization, the greater the value proposition of m-Business for a firm. It is therefore important to explore the types of wireless interactions relevant to businesses.

3 A BUSINESS-CENTRIC MODEL OF MOBILE INTERACTIONS

In crafting the value proposition of m-Business for a business, three components are of interest: relevant actors, unique attributes of mobile technology, and the types of activities supported. We begin by identifying the relevant actors. These are described below and included in Figure 1, where interactions occurring among them within a wireless environment (i.e. at least one actor is using the wireless channel) are mapped:

Employees (E) – These are individuals that are part of an organization (in Figure 1 the association is identified by the matching subscripts, e.g. Business 1 has two employees E_{1A} and E_{1B}). Employees may need or want to interact with other colleagues or employees of other businesses. In addition, employees may be at the receiving end of an interaction initiated by both internal and external information systems. One example of a business application in this area is wireless notification by a System via SMS for a critical update. To this end, the possible wireless interactions are Employee-to-Employee (E2E), Employee-to-Consumer (E2C), and Employee-to-System (E2S). It is important to note that most such interactions could naturally involve activities in the reverse direction, e.g. a wireless System-to-Employee (S2E) interaction mode as well.
**Systems (S)** – These are machines that are run by businesses and could either be front-end (e.g. web interface) or back-end systems (e.g. corporate database). An example of this type of interaction is an employee engaged in wireless (and possibly remote) access of the business’ Enterprise Resource Planning (ERP) system. To this end, the potential wireless interactions are System-to-Consumer (S2C), System-to-Employee (S2E), and System-to-System (S2S). Again, the activity could occur in the reverse direction as well.

**Consumers (C)** – These are individuals that a business may interact with wirelessly. One example is an interaction between an employee and the consumer by means of SMS or e-mail. To this end, the potential wireless interactions are Consumer-to-System (C2S), Consumer-to-Employee (C2E), and Consumer-to-Consumer (C2C) to the extent it relates to the business activities (e.g. community-based interactions).

**Figure 1: A Business-Centric Model of Mobile Interactions**

Having identified the mobile interactions, the next relevant component in formulating a value proposition for mobile technology to organizations is to understand its unique or enhanced attributes, which include connectivity, personalization, and localization (Turban, 2002).

**Connectivity** - A wireless infrastructure enables mobile workers with 24/7 connectivity supporting “anytime, anywhere” communication and information exchange.

**Personalization** - Mobile devices are typically assigned to single users, who are then able to personalize interface and application settings that may not only increase their satisfaction with using the device but may also improve the efficiency and effectiveness of the system.
Localization - Localization is particularly important as it adds a new dimension to reachability extending from the Internet’s ability to reach a location (i.e. IP address) to reaching a user (i.e. a mobile worker) or an item (e.g. tracking a shipment).

The context of value creation for mobile technology becomes complete by the types of organizational activities supported. These activities are explored next in more detail within the framework of Porter’s (1985) value chain.

4 THE VALUE CHAIN

Michael Porter (1985) coined the term “value chain” as the set of linked activities performed by an organization that impact its competitiveness. As seen in Figure 2, the value chain consists of five primary and four support activities. Primary activities are directly concerned with the creation or delivery of a product or service. These include inbound logistics (e.g. receiving and storing raw materials), operations (e.g. converting raw materials through manufacturing into finished goods or service creation process), outbound logistics (e.g. delivering of goods or services to customer), marketing and sales (e.g. identifying opportunities and processing customer orders) and service (e.g. providing after-sales support to customers). These primary activities are facilitated by support activities, which include infrastructure (e.g. organization-wide administrative and managerial systems), human resource management (e.g. managing personnel), technology development (e.g. R&D and continuous enhancements of technology-related activities), and procurement (e.g. purchasing materials and equipment). Support activities span the entire organization, as shown in Figure 2. For example, technology development initiatives could attempt to optimize business activities such as fleet management (inbound/outbound logistics), assembly line operation (operations), sales processing (marketing and sales), and help desk (service). In addition, technology optimization may be used in streamlining operations and freeing up resources “for the strategic initiatives that drive growth and competitive advantage, and accelerate time to business outcomes” (HP, 2007). “Margin” refers to the potential profit margin that an organization could realize through the sale of its product or service, provided the customer is willing to pay more than the cost of the good sold (i.e. cost of all value chain activities involved, from start to finish, in selling a good).

Figure 2: Porter’s Value Chain (Source: Porter, 1985)

Organizations search constantly for technological opportunities that could yield a lower cost of the goods sold, increased revenue, or improved customer satisfaction, all of which would translate into strengthening a firm’s viability. The next section examines how mobile technology can impact an organization’s value chain in these areas.
5 MOBILE TECHNOLOGY AND THE VALUE CHAIN

In a landmark paper, Porter examines the impact of the Internet on the competitive positioning of a firm (Porter, 2001). In this work he argues that the basic tool for understanding the impact of information technologies, such as the Internet, on companies is the value chain. According to this approach, the impact of information technologies on a company can be assessed by examining the influence of such technologies on the primary and support activities in the value chain. Here, we employ this approach to gain an understanding into the impact of mobile technologies on companies.

Primary activities

Inbound / Outbound logistics

During these activities a company manages the process of receiving, storing raw materials (i.e. supplies), and distributing finished goods to customers. Supply chain integration and demand chain management are recent extensions in enterprise modeling that require a novel enablement of on-demand information exchanges (Hsu et al., 2007). These information exchanges typically involve a large number of enterprise databases that belong to multiple business partners, and consequently visibility of materials and resources facilitates operational readiness in receiving and delivery timelines. A current trend highlights the implementation of RFID-augmented systems to integrate enterprise information along the life cycle of a product (Hsu et al., 2007).

RFID tags can be used to track products throughout the entire shipment process (AT&T, 2007c), improving the efficiency of placing new items on the sales floor. For example, after the deployment of their new RFID tagging system, Wal-Mart realized a 19% increase in their use of (RFID tagged) promotional display items. This improvement was attributed to the displays being put up on time and in a correct manner because of the information carried on the RFID tagging system (Hoffman, 2006). In the absence of such visibility, errors can be costly for both inbound logistics, where wrong shipments translate to problems down the supply chain (e.g. meeting outbound deadlines), as well as for outbound logistics where unfeasible order confirmations would otherwise be rejected or rescheduled had real-time inventory data been available at the time the order was being made (Ericson, 2003). Logistics activities can yield strategic business value for a company by lowering distribution costs, reducing inventory, improving customer service, and increasing working capital (Roberts, 2002). Typically neglected, effective inbound logistics can also create value through shorter production and time-to-market cycles of goods produced by the company.

E-Business has been instrumental in generating significant savings during these activities by optimizing processes that previously had been predominantly handled manually. With extensive e-Business applications available in this area, the main driver for using mobile technology is the inherent nature of mobile activities occurring in this segment of a firm’s value chain. Receiving raw materials may require the use of a vehicle fleet (e.g. trucks) operated by the company. In this case, wireless fleet management enables real-time visibility of shipment status and performance reporting by providing the location of the shipment’s delivery vehicle. For highly valuable products, web-based wireless item-tracking is also possible. Wireless modules are integrated in barcode scanners that allow for automatic registration of shipped products at designated transfer points. This information is then sent wirelessly to a central server for storage. Wireless item-tracking is one of many applications of RFID technology (AT&T, 2007c), making it even more valuable at locations where barcodes cannot be read by fixed devices.

In addition, two-way connectivity between mobile workers (e.g. drivers) and dispatch allows for real-time driving directions, route changes, and delivery schedule updates. General Motors and Siemens are just two of many vendors offering wireless fleet management solutions. These solutions typically make use of the Java2ME platform combined with GPS and GSM/GPRS and other digital networks to enable real-time connectivity between the vehicle, the mobile worker, and dispatch. Solutions are web-based and do not require additional software beyond a web browser (Siemens, 2004).

In addition to the above benefits, fleet management is optimized with integrated wireless solutions. By monitoring a vehicle’s status wirelessly, companies are able to improve their “situational awareness, security and decision making in tracking and managing shipments… as they move through global supply chains” (Biesecker, 2006). This area presents significant opportunity for mobile solution providers, since one-third of U.S. transportation companies have been using mobile technology since 2003 (Collett, 2003). Enabling their entire fleet with wireless tracking and messaging can result in these companies eliminating loading errors, improving productivity, and customer service. In a related example, FedEx adopted handhelds that allowed for data exchange directly with the company’s back-end system and its Web-based item-tracking application (Collett, 2006). In another case, Lockheed
Martin teamed up with Savi technology to track all of its shipments using RFID-integrated packaging. Not only can customers track the location of their orders, “the tags can also be equipped with sensors that measure humidity, temperature, light, and vibration, which let the shippers know the condition of their goods and whether security may have been breached” (Biesecker, 2006).

20th Century Fox Home Entertainment International was successful in implementing a mobile strategy that involved the use of wireless devices by sales advisors in the UK market. These mobile professionals switched from the traditional pen-and-paper system to wireless PDAs and Bluetooth-enabled mobile phones for collecting necessary information (e.g. retail store DVD stock levels). An integrated SCM solution that exploited the capability for data synchronization via the wireless Web resulted in improved logistics: the stock replenishment cycle shrunk from three days to one day, while product returns diminished from six-seven weeks to one day. A number of additional benefits apply throughout the value chain, including a five percent increase for on-shelf product availability, a ten percent increase in sales, and a 150-labour-hours-per-month reduction in capturing data (Extended Systems, 2004).

Operations

Operations reflect value-creating activities that transform inputs into final products or services. With emphasis on manufacturing and warehouse activities, mobile technology presents organizations with an opportunity to introduce new or enhanced business processes that would result in greater productivity, efficiency, and effectiveness. It could also result in increased employee satisfaction and lower voluntary turnover (AT&T, 2007c).

The use of mobile technology in manufacturing is particularly evident in the automotive and aerospace industries, where approximately two-thirds of all U.S. based companies are actively using it. For example, General Motors installs wireless computers on forklifts so that drivers can send and receive data, such as work instructions and updates, directly from the factory or warehouse floor. This ability is expected to yield savings in excess of one million dollars at a single GM facility by decreasing use of the forklifts by 400 miles per day, and also in productivity increases as the number of deliveries doubled since implementing the wireless solution (Collett, 2003).

Another opportunity for wireless operations is found in quality control (AT&T, 2007c). MicroElectroMechanical Sensors (MEMS) are being developed that will allow for wireless detection of defects. These sensors will identify out-of-range vibrations in industrial equipment and send, and receive data wirelessly with a range of one thousand feet (Collett, 2003). Their small size, approximately the size of a grain of sand, makes them particularly suited for installation on cumbersome machinery, for which quality inspections would otherwise be lengthy and consequently costly. Predictions of wireless operations in the future show a trend toward machine-to-machine (M2M) communications – or S2S according to Figure 1 - for tracking maintenance, service, and status issues (Morley, 2007). By utilizing databases and wireless networking technologies, machines within an operations facility can be monitored automatically, reducing the amount of human labour hours needed to maintain manufacturing equipment.

Real-time wireless asset tracking and inventory visibility is also employed in Operations. Through the use of location-based technologies, e.g. radio frequency identification (RFID) tags and wireless access points (Bryant, 2007), items moved around in a particular facility can be tracked continuously. This allows for faster retrieval of needed items, thus lowering labour costs, increasing productivity and expediting delivery to customers, and subsequently improving customer satisfaction (Collett, 2003). Until recently, the adoption of such technology has been scattered and limited. However decreases in costs and improvement in sensitivity, range and durability have enabled more widespread use of RFID in logistics and operations (Williams, 2004). Powerful players, such as Wal-Mart, have encouraged adoption by requiring their top 100 suppliers to place RFID tags on shipping crates and pallets as of January 2005. By the end of 2007, Wal-Mart had over 600 suppliers on board. After two years of RFID implementation, Wal-Mart is starting to reap the benefits, including a 26% reduction in stock-outs along with a plethora of available logistics and sales data (Hoffman, 2006).

BMW is another company that has benefited from RFID implementation by utilizing this technology in its Assembly Finish System to locate any vehicle coming off the assembly line and being parked in any one of 3000 spaces available on site. Similar benefits to those described above are realized through a web-based solution that graphically displays the location of each car on site (WhereNet, 2004).

Inventory visibility is also critical in parts replenishment. Several automakers have implemented wireless solutions that support “just-in-time” manufacturing processes. Typically, the solution continuously monitors and updates inventory levels as stock is being used, and automatically sends a wireless request specifying the type, volume, and delivery location of a material when needed in real-
time. This is an innovative alternative to the traditional “paper-based Kanban parts replenishment systems or hardwired electronic call systems, and it offers the twin advantages of low installation costs and unparalleled flexibility in industrial manufacturing environments” (WhereNet, 2004). Benefits include lower inventory levels, decreased operating costs, and improved productivity, all of which contributed in a significant “Return On Investment” (ROI) of less than one year in the case of the Hummer vehicles. Similar benefits were gained by Monroe Truck Equipment by replacing a broad supplier base with a single provider of raw materials (steel), all enabled through the implementation of a novel wirelessly-enabled just-in-time ordering system (Anonymous, 2007).

Moving away from plant operations and manufacturing, mobile technology can offer significant benefits in the service industry as well. YouthPlaces, a non-profit organization offering youth-related after-school programs, was able to leverage scannable I.D. cards and wireless devices in tracking youth participation in real-time as opposed to experiencing a 30-day lag. This information was then used for activities such as staff scheduling and training (Extended Systems, 2004).

**Marketing and Sales**

M-Business has been argued by many to be a new channel for commerce. While the objective here is not to support or reject this view, mobile technology certainly enables uniquely two elements of the marketing mix, namely promotion and place (or distribution). Promotion takes the form of wireless advertising and, although it is still at its infancy, it presents significant potential as wireless devices increasingly penetrate the consumer market. Coupled with location-based technology and future built-in sensors and personalization capabilities, wireless promotions can be targeted and more effective. Extending from the promotional opportunities presented, distribution of goods and services to a wireless device is a novel capability, allowing for immediate access/delivery of pertinent data, such as business-related information. By improving the availability of information, mobile workers are more knowledgeable and consequently more productive and effective in satisfying customer needs. Through mobile technology, customer concerns can be addressed immediately by accessing needed resources (e.g. questions on product specifications), without mobile workers having to prepare and carry excessive amount of paper documentation. Finally, in terms of sales, wireless point-of-sale devices enable immediate order fulfillment, reduce the incidence of incomplete transactions (e.g. abandoned shopping carts on the wired Internet), reduce paperwork and waste, improve accuracy of orders, and enhance customer service.

To illustrate these three wirelessly-enabled areas, namely promotion, distribution, and sales, the following examples are cited. Wireless Point-of-Sale (POS) devices are being utilized in retail settings to help employees assist customers on the sales floor without requiring them to wait in long lines for price queries and item availability. On-demand service helps reduce customer turnover, especially during the holidays when large crowds and long lines deter customers (AT&T, 2007a). As an example of promotional activities enabled by mobile technology, SkyGo has been delivering advertisements on wireless devices. Initial consumer feedback has been positive, in particular for time-sensitive coupons from restaurants and media related-promotions such as audio clips for upcoming concerts and movie trailers that further allow users to buy tickets from their wireless Web-enabled phones (News.Com, 2001). While potential benefits of wireless promotions are extensive (e.g. high recall and response rates, reaching clients in a high-growth market sector) (Bergells, 2004), businesses need to place the consumer at the centre of such campaigns and effectively address their concerns. The consumer’s ability to personalize the type, volume, and delivery time of advertisements are key success factors in obtaining customer acceptance of this service. In addition to wireless advertising, other forms of wireless promotions include mobile research surveys, e-news sponsorships, and banner ads displayed on wireless Websites.

In terms of distribution, mobile technology provides a new channel for the delivery of simple information such as static web pages, dynamic real-time updates such as location-based traffic information, and rich media such as video streaming of news and movies. Users of web services over mobile phones benefit from “anytime connections,” enabling activities that required time-sensitive data. Services such as driving directions and weather updates are frequently needed in a mobile setting where a wired connection is not feasible (e.g. while traveling). Mobile e-mail access also helps users increase productivity and respond to important information in a timely manner. These services are being utilized by employers desiring a centrally managed mobile workforce.

For example, MyPrimeTime utilizes wireless distribution of its articles in real-time to members’ mobile devices. These life management related articles can be viewed directly on Web-enabled mobile phones or downloaded for future access on a PC via synchronization. To achieve this, MyPrimeTime has partnered with AvantGo to make use of the latter’s mobile Internet service (Petersen, 2000).
Drawing from sales applications, Nappi sales force uses wireless devices to send in orders directly to the corporate back-end system, allowing for timely load and schedule updates, which are then automatically forwarded to the plant. Mobile workers are able to save time from placing phone calls to complete an order and the company realizes savings in terms of communication costs. A barcode scanning feature of some mobile devices further reduces the time to complete a sales transaction and eliminates errors as sales people are not required to key in the order (Collett, 2003).

A similar solution implemented by M.R. Williams, a wholesale distributor of various products, involves the use of PDAs for the collection and wireless transmission of critical data (e.g. inventory levels) from retail stores to corporate back-end systems. This integrated approach resulted in sales increases of 34 percent in the first year of the system’s use, as well as in freeing up 60 percent of field sales consultants’ time by automating product returns and credits. Additional benefits include improved customer satisfaction and inventory control, as well as increased efficiencies and profits (Extended Systems, 2004).

Service

Corporate responsibility does not end with the sale of a product or service. It continues with ongoing support through after-sales activities that aim to maintain or enhance product value. Most often access to information in a timely manner is a critical component in this endeavor. The flexibility of mobile technology is ideal for supporting mobile workers in unplanned situations that call for information with high variability. Equipping mobile workers with knowledge enhances their ability to solve even the most challenging business problems in less time while improving productivity and customer service (IBM, 2004).

The ability to provide time-sensitive information to mobile workers is a growing competitive necessity. Mobile technology can support collaboration through anytime anywhere access to important information including discussions, documents, work flows, notifications, and e-mail, and provides mobile workers with abilities of synchronization, working offline, and flexibility in the device type used. SiteScape addresses this need for information availability through its wireless collaboration solution. Mobile workers have access to corporate information and key business applications such as Customer Relationship Management (CRM), Sales Force Automation (SFA), Supply Chain Management (SCM), and others that improve productivity, reduce cost of communication, and convert captured data into knowledge thus providing a competitive advantage. Similar benefits can be found through push applications such as emails and system updates (e.g. security updates) sent to wireless devices without requiring mobile workers to log in (Ewalt, 2003). As illustrated through the previous examples, most of these benefits can be realized during other activities as well and not only for Service.

Mobile technology can benefit not only businesses and mobile workers, but also customers. Service technicians are equipped with wireless laptops that contain a library of product repair information (e.g. schematics). When a part is required service technicians can immediately place the order wirelessly directly with the supplier (Collett, 2003). This results in a faster repair and consequently improved customer satisfaction. A similar situation is encountered in the health care industry: integrated mobile devices assist health care professionals with checking-up on patients, keeping track of patient status and medications. Mobile integration offers further benefits by helping workers locate necessary equipment and other workers in emergencies, when time is critical (AT&T, 2007a).

In the service industry, caregivers for in-home patient care employed by STBNO were equipped with wireless PDAs that provide them with current information and real-time updates in terms of patient schedules and care data. With just one fourth of the work force enabled with the new system, the company has achieved a five percent increase in field service productivity. Additional benefits include fewer errors, shorter billing cycles, lower administrative costs, and an improved level of patient care and satisfaction (Extended Systems, 2004).

Support Activities

Firm Infrastructure

A competitive business environment calls for a firm’s ongoing effort to develop competitive advantage. This may be found in any of the following gains: operational efficiency (e.g. reducing costs, improving communication); innovation (e.g. implementing new business processes); revenue generation (e.g. increased productivity, introduction of new revenue streams); and customer satisfaction (e.g. improved service). Mobility support is a factor that can positively influence any of the above areas. While employee reachability via mobile phones may be a good start, a truly mobile-enabled enterprise emerges only when employees, applications, and infrastructure are fully integrated. A firm’s
infrastructure supports the entire organization and its value chain through systems and mechanisms for planning and control, such as accounting, legal, and financial services (IDA, 2000). Thus, value creation is optimal when a mobile worker is not only able to receive phone calls, but rather able to communicate with business partners, retrieve data, and analyze it by means of applications made available through a mobile device of any type.

Monitoring and supporting a mobile workforce presents a business challenge that goes beyond traditional management requirements. In a pilot study, AT&T devised a new management strategy for over 5,000 employees, whose mobile communications were carried on a variety of networks with an array of calling plans and pricing schemes. By analyzing the multi-carrier system, it was determined that 23% of mobile employees had calling plans that did not fit their usage. By measuring employee usage against hundreds of calling plans in their Multi-Carrier Solutions platform, AT&T was able to streamline their mobile strategy and reduce average monthly cost for mobile systems by 21% (AT&T, 2007b).

While e-Business technologies were responsible for integrating an organization across its value chain, mobile technology will extend this integration across time and place as well. Two areas that benefit from such wireless platforms are communication and information. Wireless devices enable two-way communication through voice, text messaging (and its variants), e-mail, and video-conferencing. Information availability is supported through the integration of mobile technology on existing Enterprise Resource Planning (ERP) systems and all associated modules, such as accounting (e.g. filing expense claims), manufacturing (e.g. monitoring production levels), and quality (e.g. remote management of information technology) among others. Integration across time and place enables synchronization. Synchronous communication, for example, can be realized more often as the time an employee is not reachable is minimized. Synchronous communication will also translate into faster processing of orders, requests, etc. Finally, integrated systems can increase productivity and subsequent profit. Research in Motion’s (RIM) Blackberry provides one such solution for mobile workers requiring access to information and communications. This platform integrates voice, email, SMS, wireless Web, organizer and other productivity applications. The proprietary Enterprise Server seamlessly connects multiple enterprise systems (RIM, 2005).

Another platform offering integrated communications and extensive functionality is IT Solution’s “m-Power”. By utilizing Bluetooth-enabled mobile phones, wireless PDAs and laptops distributed to the company’s field service engineers, information technology initiatives including notifications to mobile workers, confirmations of orders, and time sheet management were implemented. This resulted in the following benefits: 50 percent reduction in HelpDesk personnel, 60 percent and 15 percent savings in communication costs to and from field service engineers respectively. Additional benefits include shorter billing cycles and more accurate and reliable expense claim submissions (Extended Systems, 2004).

Human Resource Management

An organization is responsible for employee recruitment, selection, training, development, motivation, and rewards. As employees are an expensive and vital resource to an organization, effective and efficient human resource management (HRM) can add significant value to a firm. Striving for this goal, Motorola decided to redesign its HRM system in an attempt to address present inefficiencies; it was estimated that some employees spent up to 75 percent of their time on administration rather than activities that could be of more value. The solution came in the form of Enet, an HRM system based on Internet technology. This Web-based system, also accessible through wireless devices, allows employees to access critical HR-related information and services anytime anywhere, such as “initiating, approving and tracking administrative change requests such as merit increases, leaves of absence and department job changes” (Accenture, 2005). Thus, clerical work for HR employees is reduced, subsequently reducing paperwork, and allowing them to concentrate on higher value-adding activities, such as relationship management. Benefits of Enet for employees span the entire organization. For example, mobile workers have a direct line of communication with human resources. As a result, there is improved employee satisfaction and greater credibility for the HRM system given a higher level of consistency than previously achieved through paper-based processes. Savings will be realized in the form of “more consistent and efficient processes, cost avoidance, improvements in data integrity and reduced process cycle time, which has dropped from two weeks to two days or less. As a result, the system is expected to pay for itself in just one year. The company also expects Enet to increase employee satisfaction and retention by improving communication and making human resources services more accessible and useful for employees” (Accenture, 2005).

Furthermore, in recent years there is a trend towards satisfying the need for a balanced lifestyle or that of increased work-related mobility through telecommuting and flexible work practices. These
policies can be achieved by adopting mobile technology. While mobile technology is popular among mobile workers in sales, support and field service, only a few companies have implemented wireless services in HR. However, an organization’s workforce is becoming increasingly mobile. For example, the U.S. led the world in 2006 with 68% of its workforce being mobile and it is estimated to reach 75% by 2011 (IDC, 2008). At a global level, the mobile workforce is expected to grow by more than 20 percent, with 878 million people working remotely by 2009 (Gosling, 2007) and 1 billion doing so by 2011 (IDC, 2008).

Consequently, wireless HR solutions will become a critical component in successful HRM strategies (Roberts 2001). For example, Wireless-i offers complete solutions for expense and time sheet management that allow employees to enter work-related claims and up-to-date time sheet information easily anytime anywhere (Wireless-I, 2005). By monitoring time utilization and expenses, these solutions allow organizations to reduce HR-related costs, empower employees, improve employee satisfaction, and improve productivity (AT&T, 2007d).

Similar control over field service representatives (FSRs) was desired by Valspar, a leader in the paint and coatings industry. By using their wireless PDAs to scan retail store inventory and update back-end systems, FSRs were tracked in terms of their location and time spent for each job. This feature resulted in better time management by FSRs and in a decrease from three weeks to two days for generating results on ad-hoc requests (Extended Systems, 2004).

**Technology Development**

Activities focusing on technology development add value to an organization by introducing innovative technology that improves services, products, and business processes. Hence, technology development is an important catalyst for competitive advantage. The latest trend in technology development involves m-Business, where the utilization of mobile technology can potentially reap the above benefits thereby strengthening a firm’s value chain. Whether in-house or outsourced, development of wireless solutions can target any of the primary activities and/or their linkages. At the same time, mobile technology can enhance the research process with real-time access to pertinent information regardless of time and/or geographic location, such as real-time consumer feedback transmitted from the user’s device (e.g. wireless survey) and wireless access to the organization’s knowledge base and knowledge directory. Communication may be initiated by the user or it may be set up to occur automatically between a mobile device and the network at specified times. In addition, mobile technology can foster product development by providing a flexible yet powerful platform for collaboration across locations. Furthermore, the use of the Internet has been shown to have a significant positive impact on Research and Development (R&D) (Linder and Banerjee, 2005). Since m-Business delivers the Internet wirelessly, the benefits gained from e-Business are transferable, thus creating additional value for the organization (caution is needed given the novel usability issues associated with mobile technology). Expected benefits of mobile technology, both current and emerging as in the case of WiMax (AT&T, 2006). In Technology Development include improved productivity through greater accuracy (as calibration can be constantly corrected), improved production times due to reduced downtime, greater flexibility in production times and volumes (DTI, 2005).

One company that has utilized mobile technology in this context is 3Com. The company was able to leverage these wireless networks to strengthen the relationships among team members by improving the communication amongst them and the availability of information to them (3Com, 2005).

Improved communication may also be realized through “On Demand Mobile Conferencing” (ODMC), a solution offered by Zeosoft, a provider for mobile infrastructure software and application development technologies. ODMC enables real-time exchange of information through text messages, file sharing, and live group discussions with white boarding capabilities on a virtual work space accessed by wireless devices. The solution improves “existing business processes, increases employee productivity, and reduces the cost of conducting meetings” (ZeoSoft, 2005).

The ability to gain access to Personal Information Management (PIM) (e.g. e-mail, contact lists) and groupware data was also enabled by First Command’s wireless solution. First Command, an international financial management company, implemented a system that allowed for real-time synchronization of sales associates’ mobile devices, which not only enabled anytime, anywhere collaboration via the corporate Microsoft Exchange system, but also resulted in savings for each associate of up to three hours per day (Extended Systems, 2004).

**Procurement**

This support activity encompasses all purchasing transactions for goods and services. Optimal conditions include the lowest price and highest quality for what is being purchased. Mobile technology can add value by enhancing current electronic procurement practices, such as web-based order
fulfillment. Transactional cost savings, increased flexibility, and customer satisfaction are a few of the expected benefits realized when enabling an organization with wireless procurement. Corrigo, a service management solutions provider, offers an application to property managers that enables field technicians to order repair parts through a WAP-enabled mobile device. Eliminating the burden of searching through catalogs for part numbers, followed by phone calls to place an order, apartment maintenance and repair workers can directly access supplier data and order needed parts. In addition, this IT solution brings property managers closer to customers (i.e., residents) by allowing them to enter a service call either by phone or online instead of having them visit the property management’s office, and relaying that information immediately to the mobile repair worker. The application also allows residents to track the work order status, while property managers are given visibility to maintenance personnel activities (Moozakis, 2000).

Elcom International, on the other hand, has extended their Internet Procurement Manager to wireless devices. Initially capable only for routing and approvals, eMobileLink enables e-mail notifications of requests for quotes (RFQs), downloading and viewing RFQs, and approving/rejecting them from a wireless device, while integrating settlement capabilities (Ferguson 2001).

A new trend in mobile workforce management is Fixed-Mobile Convergence (FMC), which utilizes a centralized management structure which overviews mobile employees. By using equipment that operates over a variety of networks including cellular, Wi-Fi, and possibly WiMAX in the near future, employees can access and transmit data. When associated with an office private branch exchange (PBX), FMC-enabled devices offer all the functionality of an office phone and laptop computer while allowing the freedom of wireless networks and cellular coverage (Winther, 2007).

In terms of order entry, Zync Solutions, a provider of web-hosted software solutions, equipped field representatives with mobile devices for scanning bar codes instead of placing orders manually, as well as recording any additional information that may be obtained during the store visit. With time savings of 30 percent (i.e., 150 labour hours per month), the information is sent up the value chain wirelessly via the corporate back-end system. Additional benefits include improved information flow, efficiency, productivity, reporting accuracy, response time to retailers’ needs, which subsequently improve sales and a faster return on investment (ROI) (Extended Systems, 2004).

Figure 3: Prominent m-Business applications in the Value Chain
6 DISCUSSION

The foregoing discussion found in the previous section was summarized in Figure 3. Figure 3 describes an organization’s primary and support activities in terms of both representative applications currently found in industry, as well as the interaction types (included between brackets) that convey which interactions, from those depicted in Figure 1, are being enhanced by the listed application. Cognizant of these value-adding mobile technologies, managers can then better leverage m-Business to support and enhance both the primary and support activities of an organization’s value chain contributing to a firm’s overall competitiveness.

By exploring the impact of mobile technologies on the various components of the value chain and through citing extensive industry examples, this paper has demonstrated the potential of such technologies. The applications outlined in the previous section can be generalized and grouped according to the following classification:

**Asset tracking** – Referring to either physical objects (e.g. merchandise) or human resources (e.g. employees), these applications allow organizations to access tracking information. The organization then leverages the assets’ visibility for optimizing processes (e.g. timeliness of deliveries). The function of tracking employees could also be combined with the capability for continuous communication thereby increasing the value of these applications (e.g. a mobile worker equipped with a GPS enabled mobile phone).

**Data access** – Access to time-sensitive information could enhance an organization’s efficiency and effectiveness resulting in competitive advantages. Information could either be pushed to the employees, business partners, and/or consumers (e.g. through SMS), or pulled by employees from remote locations (e.g. field technicians requiring specifications for various jobs). Data access may also optimize an organization’s data management, with collaboration applications that support knowledge sharing and increase knowledge flow.

**Automation** – Mobile technology can be used to automate some tasks previously performed by employees. Benefits for an organization may include lower workforce requirements, improved employee time allocation, and improved quality by automating processes and reducing employee errors. One company that implemented such mobile workforce automation processes is Intermountain Gas Company (IGC). IGC serves more than 275,000 “natural gas customers across Southern Idaho and employs 350 people in seven district offices” (IGC, 2008; Itron, 2005). Unlike many utilities, IGC did not have an integrated dispatch system for work orders rather routed orders either by paper or radio. By enabling dispatch and field service workers to communicate and share data in real time through a wireless, web-based mobile communications and automated solution, IGC “improved emergency response by quickly identifying the nearest field representative with appropriate skills; decreased fleet mileage through tighter, more efficient routing and streamlined order processing by eliminating reams of paper orders and reducing data entry errors. Employee productivity and customer satisfaction increased while the costly paperwork and time associated with traditional manual work order processing was eliminated” (Itron, 2005).

Despite the above applications and associated benefits of mobile technology, it is still in its infancy and companies are faced with the dilemma of why, and if so, when they should invest in it. The decision will depend on many factors, one of which is whether the organization’s workforce needs to be or is already mobile. In this case, opportunities arise according to the environment in which it operates. Within a B2B and B2E environment, the value propositions are similar in that mobile technology and the corresponding applications aim to improve the productivity of the parties involved, while the focus varies between the two settings. In B2B it is the efficiency and effectiveness of the interactions between organizations that is of interest. In B2E the efficiency and effectiveness of a single worker and/or a team can be enhanced by wireless solutions that help increase productivity, streamline administrative processes, and build competitive advantage by simplifying and improving the effectiveness of collaboration.

In addition to the above considerations, there are several concerns that arise with using mobile technology in a business setting. Such concerns exist at the level of employees, organizations, and even society at large, and include the following:

**Employees** - Poor ease of use and low perceived usefulness may be deterrents in workers’ adoption of a newly implemented technology (Davis et al., 1989). This usability concern is related to the concern for compatibility between current mobile technology capabilities and employee
expectations, values and experiences. Also, privacy concerns may arise, as the content of an employee’s communication, but also his/her whereabouts may be perceived as intrusive and as a threat to their individual privacy.

**Organization** – Given the unique nature of mobile technology and its vulnerability (Coursaris et al., 2003), concern regarding the safety of information exchanged over a wireless network increases with the degree of interaction and the sensitivity of the information exchanged (Rogers, 1995). In addition to security, there is concern over the reliability of the technology. Connection quality should be maintained for the specified network coverage. The inherent concern here is that loss of the connection can result in loss of data (Nielsen, 2000). Lastly, organizations are faced with the concern over the cost of implementing mobile technology and the expected return on that investment. As some benefits may be intangible and difficult to quantify (e.g. improved communication, timely decision making, improved customer satisfaction through increased responsiveness, etc.), it may be challenging for a business to have sufficient evidence in support of adopting mobile technology.

**Society** – Social skepticism around the growing use of mobile technology is in part due to the confusion over its effects on people’s health. Studies have been inconclusive on whether this technology can be potentially harmful in the long-term, but in the absence of a clear answer there is apprehension towards use of such systems. Concerns over an individual’s privacy and security may also deter them from using mobile solutions put forth by businesses. For example, location tracking may be perceived as threatening, both in the context of unsolicited messages/advertising and physical safety, as this information could be dangerous if intercepted. Furthermore, anytime and anywhere access offered through mobile technology provides employees with valued flexibility, but further blurs the line between work and home. Since mobility may provide 24/7 access to employees, expectations of 24/7 availability and responsiveness may also surface. This may have detrimental effects on the quality (and quantity) of leisure time and home life.

### 7 CONCLUSION

This paper examines the potential for mobile technologies to provide value to various business activities. Resulting benefits of mobile technology implementations may include improved productivity through enhanced process efficiency and effectiveness, as well as improved customer service. Organizations, however, need to be cognizant of potential concerns among employees and society at large in their assessment and implementation of such technologies. This paper can serve managers as a go-to resource during their initial consideration of mobile technology. Rather than making multiple choices and adopting various technological standards, a comprehensive consideration of the organization’s value chain can provide a holistic representation of the company’s needs. Having identified such an aggregate set of needs, information technology (I.T.) managers can proceed with the adoption of integrated systems that either include or entirely consist of mobile technologies and span multiple areas of the organization supporting a subset of services presented in this paper and delivering maximum value. In addition, I.T. managers were provided in this paper with a different lens that could be used during their assessment of I.T. resource needs. Moving beyond the individual user’s needs and considering each individual’s potential interactions with other employees and systems, an enhanced set of user requirements is produced from which, again, I.T. choices pertaining to mobile technology adoption are likely to become less risky and may have a higher return on investment.

While the value-chain framework provided in this paper can help managers employ new mobile technologies or assess the value and appropriateness of existing mobile applications, there are several fruitful areas for further investigation. Future research could delve more deeply into each primary or support activity to explore specific advantages and obstacles across various industries. Detailed case studies can be examined to provide managers with concrete best practices in their industry or comparable industries. Additionally, the value chain framework could be used as a lens to understand the current mobile technology platforms and how they support specific needs and expectations of employees, trading partners and customers. Lastly, empirical data could be gathered to provide further evidence of mobile technology usefulness for various value chain activities. Such data could focus on the perceived value of such technologies from various stakeholder perspectives.
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Turnover and heterogeneity in top management networks -
A demographic analysis of two Swedish business groups

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Abstract

A theory based on the demography of top management teams is used to explain membership turnover in two Swedish business groups, network analysis being used to define group membership. The results suggest these business groups possess a combination of financial and industrial experience as a group resource and the socialising strategy of control as a force counteracting the conflict-producing force of heterogeneity. An organisational demographic perspective focusing on opposing forces of heterogeneity and homogeneity is developed. It is shown that the perspective can be applied both to formal organisations and to informal ones such as networks.

Keywords: top management networks, turnover, heterogeneity, business groups

Acknowledgements: The order of authors reflects their contributions. The work this paper represents was funded by The Swedish Council for Research in Humanities and Social Sciences, and The Bank of Sweden Tercentenary Foundation. Lars Bengtsson and Michael Lubatkin provided helpful comments. Robert Goldsmith provided language editing.
1 INTRODUCTION

Organisational demography (Pfeffer, 1983) involves measuring the individual characteristics of persons belonging to an organisation, using these to describe the organisation and explain organisational outcomes. A common issue involved is that of explaining turnover, i.e., the exit of members of an organisation, especially members of top management teams (TMT), on the basis of such heterogeneity-related variables as differences in age, culture, tenure, education and functional experience (Daily and Dalton, 1995; Elron, 1997; Hambrick and D’Aveni, 1992; Keck and Tushman, 1988; Keck and Tushman, 1993; Kirkman & Shapiro, 2001; McCain, O’Reilly III and Pfeffer, 1983; O’Reilly III, Caldwell and Barnett, 1989; Pelled, 1996; Wagner, Pfeffer and O’Reilly III, 1984; Wiersema and Bantel, 1993, and Wiersema and Bird, 1993). A basic hypothesis concerns the ‘similarity-attraction paradigm’ (Tsui and O’Reilly, 1989) stating that persons prefer individuals who are similar to themselves, or more specifically that high heterogeneity triggers turnover.

A demographic perspective alone however, does not indicate which individual dimensions trigger turnover. While in some situations heterogeneity of branch, for example, can trigger turnover (Jackson, Brett, Sessa, Cooper, Julin and Peyronnin, 1991), it can, however, be expected to be negatively related to turnover in the case of business groups, as will be argued in this paper. There is thus the need for considering the context of the organisation when predicting the dimensions that are important in triggering turnover, as indeed has been argued by Alexander, Nuchols, Bloom and Lee (1995) and Milliken and Martins (1996). Additionally, the heterogeneity of even highly relevant dimensions does not necessarily influence turnover appreciably, since it is conceivable that countervailing forces of an integrative character may reduce the turnover effects of heterogeneity (Hambrick, 1994).

A demographic perspective has often been used to explain TMT processes and outcomes in formal organisations, and it has expanded to include boards of directors (Knippenberg et al., 2004; Schippers et al., 2003; Zajac and Westphal, 1996) and the relationships between the board and the TMT (Golden and Zajac, 2001; Daily and Schwenk, 1996; Kor, 2006). While Hambrick (1994), in an extensive review of the literature argues for studies focusing one level below the organisational edge, i.e., the business unit level, we contend that the level above the single organisation, when it exists, is as important to study as the other levels. Indeed, there are informal organisations such as business groups (Collin, 1998; cf. Gerlach, 1992) consisting of separate corporations linked by flows of ownership, management, board members, board directors, capital, and the like. It is, therefore, likely that some teams are based within more than one formal organisation. These groups take on the form of conglomerates or spheres of influence (Levine, 1972) for example, in the US, of konzerns and bank groups in Germany, of Keiretsus in Japan (Aoki, 1990), of industrial groups in France (Encaoua and Jacquemin, 1982) and of financial groups in Sweden (Collin, 1990). Business groups seem to consist of elite individuals, quite similar to ‘the inner circle’ in UK (Useem, 1984) and ‘upper echelons’ in US (Hambrick and Mason, 1984). They can be seen as basically equivalent to the TMTs of formal organisations. Thus, the paper extends the notion of TMT turnover to include top management teams other than formal ones.

However, lacking formal status, the TMTs of business groups cannot be identified through methods such as those of letting the position in the formal hierarchy determine whether a manager belongs to the TMT of the corporation or not. The present paper proposes that a TMT can better be identified through network analysis in which such criteria as possibilities for interaction and frequency of interaction are used to identify those managers who belong to the TMT.

The paper’s aim is to predict turnover in networks of elite individuals identified on the basis of interlocking directorship data (this study is based on the data from 1975, 1980 and 1986) from the two largest business groups in Sweden (the Wallenberg group and the Handelsbank group). The theory put forward to explain turnover here states that the TMT of a business group possesses a combination of financial and industrial experience, that this branch heterogeneity represents a resource, and that a socialising strategy of control serves to counteract the potential conflicts which this heterogeneity tends to produce. The major contributions of the paper are the idea of countervailing forces affecting turnover, the application of turnover to elite networks and use of an operational definition of the TMT based on explicit group considerations.

The paper is divided into five sections. The first section describes the demographic perspective and deals with questions of turnover, heterogeneity and the definition of TMT that the paper is addressing. The second section examines turnover in Swedish business groups, first introducing the two largest Swedish business groups, and then developing a theory to explain TMT turnover in these business groups. The third section takes up the method by which the members of the TMTs of the business groups were identified, the data that were obtained and the measures that were employed. The fourth section presents the results of the analysis. The last section concludes the paper and considers...
possible implications for research and offers a simple rule of thumb for management when composing a TMT.

2 THE PERSPECTIVE OF ORGANISATIONAL DEMOGRAPHY AND ITS APPLICATION TO TMT TURNOVER

A study of TMT composition using the perspective of demography has to be based on certain arguments concerning issues of both ontology and methodology. This section is devoted to the arguments a) that organisational demography should retain its objective character, b) that the study of TMT and its composition, i.e., turnover, is important since TMTs and the composition those have affect the organisation and can be regarded as a strategic resource for the organisation, c) that it is partly a substantive theoretical problem to determine which demographic dimensions that are relevant in predicting turnover, and finally d) that the operational definition of a TMT should be based on team characteristics, making it possible to study elite’s in non-formal organisations such as networks and the forces behind their compositional characteristics.

The objective character of demography

Ever since the time of Malthus, researchers in economics have been interested in demographic variables. It was Pfeffer (1983) that has introduced demographic considerations into organisation theory as a perspective of its own after considering demographic variables in a number of empirical studies (McCain, O’Reilly and Pfeffer, 1983; Pfeffer and Leblebici, 1973; Pfeffer and Moore, 1980). Since Pfeffer’s (1983) classical work, demography of organisations became a rapidly expanding field that an organisational perspective focused on culture and organisational economics has been.

The rapid expansion of demographic studies in organisational science not only can be attributed to the long-established tradition, but also to the possible use of quantitative and objective measures well suited to statistical analysis, as well as to employable data with few problems of access (cf. Stewman, 1988). All this have fitted with the Anglo-American research tradition of explanation and prediction based on use of statistics and statistical techniques, finding strengths in the use of such clearly objective variables as tenure, age and gender. Pfeffer (1983, p. 301) indicates that, whereas organisation theory often employs variables that in a methodological sense are subjective - specifically such conceptual constructs as norms and roles - demographic variables are facts which it is therefore possible to observe. However, the shortcoming of the demographic perspective is a conception of the individual through the prism of the demographic characteristics the perspective takes into account, moreover the intervening variables - such as communication, social integration and conflict- the subjective ones are still concealed in the darkness of the black box (cf. Bacharach and Bamberger, 1992; Lawrence, 1997; Pettigrew, 1992; Priem, Lyon and Dess, 1999).

However, recent research has been concerned with opening up this black box through the study of the intervening processes, measuring both direct effects and indirect effects of a group’s demography (Ancona and Caldwell, 1992; Ancona, 1990; Kirkman and Shapiro, 2001; O’Reilly, Caldwell and Barnett, 1989; Pelled, 1996; Simons, 1995; Smith et al, 1994; Umans, 2008). Pfeffer’s (1983) contention that the variance explained by the intervening process variables should be small has received mixed support, Smith et al (1994) obtaining negative support and Ancona and Caldwell (1992) positive. Yet the main objection that Pfeffer (1983) has against focusing on the process is both epistemological, involving the difficulties associated with observing subjective variables, and methodological, concerning the problem of accessibility. In the research referred to above, arguments for the possibility of observing intervening variables such as social integration (Smith et al, 1994), debate (Simons, 1995) and relative cohesiveness of groups (O’Reilly, Caldwell and Barnett, 1989) have largely been lacking. Despite this, the epistemological objection only casts doubt on the possibility of measuring the intervening variables, not on the impact these can have. In fact, it is impossible to comprehend the impact of demographics without theorising about the processes in which demographics are an input and turnover, for example, is an outcome. The present paper accepts the Pfeffer arguments for the strong rule of organisational demographics. The paper theorises about intervening variables generally and examines empirically the effect of demographic variables.

The importance of TMT and its composition

In the attempt to explain various organisational outcomes, organisational demographics could well concern itself with the demographic composition of the entire organisation. However, most of the efforts to explain organisational performance are focused on the top management team (Daily and Dalton, 1995; Elron, 1997; Ely and Thomas, 2001; Hambrick and Mason, 1984; Hambrick and
D’Aveni, 1992; Heijltjes, Olie and Glunk, 2003; Murray, 1989; Norburn and Birley, 1988; Priem, 1990; Smith, et al, 1994; Wagner, Pfeffer and O’Reilly, 1984), on strategic change (Keck and Tushman, 1988; Wiersema and Bantel, 1992), on innovation (Ancona and Caldwell, 1992; Bantel and Jackson, 1989) and on board composition (Westphal and Zajac, 1995; Zajac and Westphal, 1996). The rational behind such a focus is that the TMT and its composition influence the organisation. At this stage of research, the idea that top management makes a difference is becoming less an assumption (Meindl, Ehrlich and Dukerich, 1985) than an empirical conclusion, one that a variety of empirical studies have supported (e.g., Kosnik, 1990; Norburn and Birley, 1988; Smith, Carson and Alexander, 1984; cf. Furtado and Karan, 1990), especially from a strategic choice perspective (Eisenhardt, 1989; Wiersema and Bantel, 1992). Such intriguing conclusions as the following have been drawn: “...it would appear that environmental determinism and strategic choice are not ends of a continuum, but, rather, separate dimensions.” (Eisenhardt and Schoonhoven, 1990, p. 525). In these terms, there are certain degrees of freedom that a TMT can access, making the quality of the TMT an important variable for the organisation.

Recognising the importance of the TMT to the outcome of an organisation makes it possible to treat the top management team as a definite resource for the firm involved. The composition of such a team in terms of age, tenure, social background, experience, network connections, education, and the like can be considered as a quality of the TMT as a whole. Not only the individual members, but also the overall composition of the TMT can thus be regarded as a valuable and scarce resource that would be hard for competitors to imitate (Barney, 1986, 1991; Castanias and Helfat, 1991). Consequently, the composition of a TMT can be considered a strategic variable.

However, treating the composition of a TMT as a strategic variable assumes a causal link between strategy and the composition of the TMT, a matter which can be questioned (cf. Mittman, 1992). For example, the strategy and structure of an organisation, together with the composition of its external and internal labour pools (Haveman, 1995), determine the organisation’s demographic composition. The demographic composition of an organisation can in turn influence strategy and structure of the organisation. Thus, determining causality can be a definite problem present in demographic studies. Bantel and Jackson (1989), for example, found innovation and top management team composition, just as Keck and Tushman (1988) found strategic reorientation and top executive team composition, to be correlated. Is it this team composition, then, that determines innovation and reorientation, or is it the other way around? Or is it perhaps, as Michel and Hambrick (1992) assert, a reinforcing spiral? Keck and Tushman’s (1993) findings can be interpreted as supporting the latter view, although they primarily concern the influence of reorientation upon changes in TMT. To make the argument short, a TMT and its composition - despite certain causality problems - can be considered as a strategic variable for the organisation, thus merit scientific concern.

Demographic heterogeneity and turnover

The composition of a TMT can be influenced by the TMT itself. Westphal and Zajac (1995), and Zajac and Westphal (1996), showed that powerful CEOs tend to influence the composition of the board through promoting directors that are demographically similar to them. This result is consistent with the hypothesis, which Tsui and O’Reilly (1989) call ‘the similarity-attraction paradigm,’ that persons prefer individuals who are similar to themselves. One can suppose that human groups generally have a tendency to become homogeneous and to regard heterogeneity as disturbing (Jackson et al, 1991). One explanation of this general tendency of similarity-attraction is contained in self-categorisation theory (Turner, 1987), which Tsui, Egan and O’Reilly (1992) and Westphal and Zajac (1995) have applied to demographic studies, arguing that individuals shape their self-identity through categorisation and that in the pursuit of high self-esteem they prefer individuals who are similar to them in terms of these categories. Another explanation of similarity-attraction is that individuals minimise their transaction costs in relationships through interacting with similar individuals, thus reducing the efforts necessary for gaining understanding. This is expressed by Kanter (1977, p. 58) for example as follows: “Social certainty, at least, could compensate for some of the other sources of uncertainty in the tasks of management.”

A central hypothesis in demographic studies of organisations is that homogeneity, i.e., sameness with respect to certain dimensions, creates stability and ease of communication (Priem, 1990; Smith et al., 1994; Zenger and Lawrence, 1989) due to individuals’ involved sharing similar experiences (Blau, 1977). Heterogeneity, in contrast, appears to readily create conflicts, reducing the ability to interact (Kirchmeyer and Cohen, 1992; Kosnik, 1990; Sutcliffe, 1994), although at the same time it is often associated too with such forms of change as innovation (Bantel and Jackson, 1989; cf. Watson, Kumar and Michaelsen, 1993), strategic change (Keck and Tushman, 1988; Wiersema and Bantel, 1992) and turnover (Wagner et al., 1984).
According to ‘the similarity-attraction paradigm’, as well, both strategic change and innovation are associated with heterogeneity. Keck and Tushman (1988) found support for the hypothesis that reorientation, representing a change in both strategy and structure, increases heterogeneity. The causality involved does not have to apply to both aspects of reorientation, however, since heterogeneity could well be caused, for example, by a change in the internal labour pool brought on by structural change. Such causality supports in any case there being a relationship between heterogeneity and change. In like manner, Bantel and Jackson (1989) obtained support for the hypothesis that innovativeness and functional heterogeneity are correlated. Their conclusion is as follows:

“On the one hand, heterogeneity has a positive effect on innovative and creative decision-making. On the other hand, heterogeneous (and thus, innovative) groups are subject to higher turnover, presumably because members find the increased conflict and decreased communication to be stressful.”(1989, p. 118)

Turnover and heterogeneity have been hypothesised to be correlated as well, studies such as those of Godhelp and Glunk, 2003, McCain, O’Reilly and Pfeffer (1983), Wagner et al. (1984) and Wiersema and Bird (1993) being confirmative of this, whereas Wiersema and Bantel’s (1993) study, for example, is disconfirmative. However, an important theoretical question concerns individual characteristics that tend to trigger turnover. Wagner et al. (1984) found that similarity in date of entry and age correlated positively with turnover, which has also been supported by the findings of Godhelp and Glink (2003). This is a cohort aspect of turnover that could be thought to apply to any type of organisation. As already indicated, a TMT composition characterised by heterogeneity, for example functional heterogeneity (Bantel and Jackson, 1989) or heterogeneity in years of education (Smith, et al, 1994), can be a valuable resource for a firm, partly due to the cognitive conflicts it produce (Amason, 1996). Countervailing forces of integration, i.e., of homogenisation, might likewise be found within the organisation. These could prevent the heterogeneity from triggering turnover and allow heterogeneity to be retained as a resource.

The homogeneity which groups tend to show have been suggested by Murray (1989) and Michel and Hambrick (1992) to be a phenomenon similar to that of the Ouchi’an clan. The broad and strong interaction within a clan and the long tenure of its members point towards group homogeneity, making homogeneity and clan membership, therefore, appear similar. Although such similarity can be considered to be basically valid, it can only be assumed to be found on those dimensions that constitute the clan. Obviously, clan members cannot be alike on all dimensions conceivable. The overriding problem is to identify those dimensions that are relevant when cohort similarity creates cohesion. Murray (1989) appears to conclude that it is not homogeneity per se, but functional homogeneity in particular, that explains the performance results obtained in his sample of oil companies. In another working group, in which functional heterogeneity was an imperative from the start, Murphighan and Conlon (1991) found for British String Quartets that homogeneity on dimensions such as age, sex and school background were positively correlated with success. Contrary to their prediction Alexander et al (1995) found a downward curvilinear relationship between heterogeneity in employment status and turnover in a sample of US nursing staffs, concluding “…that demographic heterogeneity does not operate similarly across all demographic attributes.” (p.1477) This indicate one possible explanation to the reported (West and Schwenk, 1996) nonfindings between an aggregate measure of 12 variables measuring demographic homogeneity and performance. Demographic variables probably need to be treated with more care than summed up into one single measurement. Thus, it can be asserted that a theory predicting a certain relationship between heterogeneity and turnover has to consider the organisation in question, i.e., it is partly a substantive theoretical problem to determine which dimensions that are relevant in predicting turnover.

To summarise, human groups have a tendency towards homogeneity due to the shaping of self-identity and ease of understanding, thus creating groups characterised by stability. As an opposite, heterogeneity creates conflict and stimulate turnover but tends to be correlated with innovation due to the diversity of perspectives in the group. However, we argue that the general tendency of heterogeneity triggering turnover has to consider the specific group and its context. It is conceivable that there exists groups such as TMTs were heterogeneity is a valuable resource that can be retained through countervailing forces of integration, i.e., of homogenisation, thus preventing heterogeneity from triggering turnover.
Operationalisations of TMTs

Finally, turning to a methodological problem with ontological implications in TMT studies, one can note that studies of the team demographics of top management have concentrated largely on formal organisational aspects (Pettigrew, 1992), with the consequence that non-formal organisations have been neglected and TMTs have in large been only formally defined. Since it is difficult to verify the existence of a team in the true sense in any organisation (Hambrick, 1994), it generally is assumed that top management represents a team. Empirically, three different methods have been used to identify teams. One has been to define the TMT in terms of members’ formal titles, such as those of vice president or higher (Wagner, Pfeffer and O’Reilly, 1984), as well as secretary and treasurer (Keck and Tushman, 1993). Defining teams in this way is quite arbitrary, however. Eisenhardt and Schoonhoven (1990) adopted a more qualitative approach, defining as a founding team those persons who were founders or were working full-time as executives at the time of founding. Such a method has the weakness of neglecting the importance of informal organisations (Hambrick 1994). A second method of identifying the TMT is to simply transfer the problem from the researcher to the CEO, letting the latter identify the TMT given either more thorough instructions (Bantel and Jackson, 1989; Boeker, 1997) or more general ones (Amason, 1996; West and Schwenk, 1996; Amason and Sapienza, 1995; Smith et al, 1994). This method has the disadvantages of a person who is not trained scientifically making the observations, and of its being impossible to measure the reliability of the observations since independent observers are lacking. A third method, used by Weirsema and Bird (1993) and partly by Jackson et al (1991) and Uman (2008), considers the frequency of meeting in executive committees to document the existence of a TMT. This method can be regarded as superior since group membership is determined by a dimension, i.e., frequency that is relevant in defining groups. It has the additional advantage of being consistent with the assumption of interaction that the similarity-attraction paradigm makes.

The focus on formal organisations has withheld attention from organisations that are not formal in character but have an elite group equivalent to a TMT, as exemplified by certain kinds of networks. In a pioneering paper, Pfeffer and Leblebici (1973) analysed the moving of executives to a new role or location as one form of interorganisational communication and coordination. Thus considered, there might appear to be no major ontological or methodological differences between analysing formal organisations and analysing informal organisations such as networks of organisations or persons. As Useem (1984), for example, has shown a network of organisations can be governed by an elite group of individuals, just as a formal organisation can be. To be sure, the top management that constitutes a team is as much a matter to be examined empirically as is a network of individuals that constitutes a team of a larger network. In examining non-formal organisations such as networks, however, the researcher cannot rely on formal positions or even on CEO opinions, but is forced to define a TMT theoretically.

In summary, based on the self-attraction paradigm, one of the relevant factors in identifying TMTs is frequency of interaction, which has the additional advantage of being possible to apply to non-formal organisations governed by an elite group equivalent to TMTs.

Concluding this section, we have argued for a demographic perspective using objective variables predicting turnover in TMTs on the general notion of heterogeneity, but with a consideration of the existence of countervailing forces in specific groups, such as elite groups of networks, and with the operational definition of a TMT being based on team characteristics. In the following, a specific type of network organisation that of business groups, is examined in this way.

3 TURNOVER IN SWEDISH BUSINESS GROUPS

In contrast to the UK and the US, Sweden has constellations of corporations, quite similar in certain respects to the Keiretsus of Japan, in which several corporations are connected through relations of ownership, interlocking directorates and financial service. The individuals who interlock and connect the boards of the various corporations in the group represent the group’s elite; an elite that can be regarded as equivalent to the TMT of a single corporation, and in a similar vein represents a valuable resource for the group. The composition of this elite group can thus be assumed to be of importance of the group. The aim in this section is to formulate predictions concerning turnover based on the assumption that business groups possess as a group resource a combination of financial and industrial experience and, as a force countering the conflict-producing force of this branch heterogeneity, a socialising strategy aimed at control. The section starts with a brief account of Swedish business groups, since the reader may not be acquainted with them. It concludes with the deducting of
A Digest on Swedish Business Groups

The Swedish industrial economy is dominated by some few business groups, each consisting of industrial and/or financial corporations connected through relations of ownership, interlocking directorates and financial service. Two groups of this sort, the Wallenberg-group (W-group) and the Svenska Handelsbank-group (SHB-group), are of special importance in Sweden since they in some sense controlled corporations that represented roughly 50 per cent of the stock value of all the corporations listed on the Stockholm stock exchange in the 90’ies and still dominate the Swedish economy.

Both groups are very old, having been created during the depressed years in the 1920s and 1930s (Sjögren, 1991). Their evolution has been viewed as a corporate response to financial problems and to problems of ownership (Berglöv, 1994; Collin, 1998). The groups have been centred around two large banks, Stockholms Enskilda Bank (the W-group) and Svenska Handelsbanken (the SHB-group). Although Swedish banks, as opposed to their German counterparts, have never been allowed to possess shares in industrial corporations, much of the early history of the two Swedish business groups is similar to that of their German counterparts (Chandler, 1990). Typically the groups contain multinational corporations, exploiting raw materials from Sweden, such as iron and wood, and utilising technical innovations. For example, in the year of 1986 (appendix 1.), the groups contained two similar corporations, Stora (belonging to the W-group) and SCA (belonging to the SHB-group), which utilised raw material from the large forests in the northern and central parts of Sweden. Others utilised technical innovations, for example Aga (gas, belonging to the SHB-group) and Astra (pharmaceuticals, belonging to the W-group). The corporations tend to be highly internationalised. For the year 1990, the non-domestic sales of the 20 largest corporations in the two groups were found to be 78 percent (median: 82) and their non-domestic employees to represent 48 percent (median: 57) of their working force.

The strong ties the member companies once had to the two banks have in large part been replaced by strong ties to two investment corporations: Investor (W-group) and Industrivärden (SHB-group). The W-group has been managed through control of “Investor” by the family heads of the Wallenberg clan, who until the 80’s were Jacob and Marcus Wallenberg, then being governed by the new family head, Peter Wallenberg, son of Marcus Wallenberg, and recently a fourth generation assumed the power. The SHB-group has no such ultimate capitalists as the clan Wallenberg. Rather, it is much more nebulously based, cross ownership and historical relations playing a major role. In both groups interlocking directorates form a closely knit network linking all the corporations involved. The members of the boards are generally not employed by the corporation in question, the distinction between insider and outsider, so important in UK and US, being a non-issue in these groups, and in Sweden at large. The two business groups are very distinct, being clearly separated. There has only been one corporation, namely Ericsson, that has been shared by the two groups, each of which has an equal share of the votes and an equal number of directors on the board of that company. Each of the other corporations in the two groups belongs to either the one group or the other but not to both. In a manner similar to the inclusion of the member corporations within a single group, those persons linking the corporations of the one business group through interlocking directorships do not have extensive relations with persons or corporations belonging to the other group. Thus, the two business groups are quite distinct from each other, with very few overlaps. As opposed to the Japanese Keiretsu, the intercorporate trade is very slight.

The groups have been very stable in their structure during the whole 1900 and they appear rather similar today (cf. Collin, 2007), having the characteristics of highly international corporations controlled by a financial centre, utilising interlocks and ownership as control devices. The changes over the years consist mainly in some corporations being divested and some being added to the structure.

In sum, the two business groups, although lacking legal identity, build strongly on ownership ties and interlocking directorates, the investment corporations serving as centres. They divide a considerable part of the Swedish industrial economy into two separate camps. The elite of the interlocking directorates of these two groups can be regarded as conceptually closely comparable to the top management teams (TMTs) of formal organisations, making it only confusing to invent a new term for them, such as e.g., Top Directors Team (TDT). Both can be seen as being subjected to the same forces of inclusion and exclusion in connection with demographic composition.
A Demographic Explanation of Membership Turnover in Business Groups

In terms of the ‘similarity-attraction paradigm’, turnover can be explained on the basis of heterogeneity, and is treated as an attribute of the TMT (McCain, O’Reilly and Pfeffer, 1983). The heterogeneity possibly found in the original or the earlier composition of a group tends to decline through members who are dissimilar to the majority being separated from the group. Nevertheless, those dimensions with heterogeneity that trigger separation, i.e., the turnover of group members, should be identified. In this section, identification of the dimensions triggering turnover in the TMTs of the two Swedish business groups is dealt with, eight hypotheses being considered.

An obvious cause of turnover in elite networks is that of individuals’ leaving the TMT due to retirement. The general tendency of elderly employees to have lower voluntary turnover compared to younger ones is thus not applicable on elite networks since they can be assumed to consist of rather old people. Additionally, younger members of the elite network presumably have no incentive to leave since there are no real alternatives to the group due to the fact that they are on the edge of the society. Accordingly, considering the specific group in question, the first hypothesis expresses the expectation that an increase in age will increase a person’s probability of leaving the team.

\[ H_1: \text{Age is positively related to turnover.} \]

The second hypothesis is the general cohort argument that the individuals belonging to a given generation tend to share similar norms and similar perceptions of reality (Wiersema and Bantel, 1992; Wiersama and Bird, 1993), this fostering cooperation. Differences in age imply difficulties in communication and understanding, leading to turnover of individuals who are dissimilar.

\[ H_2: \text{Age heterogeneity is positively related to turnover.} \]

However, as previously argued, one has to consider the specific organisation. For one of the two Swedish business groups, the Wallenberg group, the fact that a capitalist family is the controlling principal creates a dynastic pattern which could be expected to result in a heterogeneity of age. Indeed, the age distribution in the sample that is to be analysed is skewed, the heterogeneity of age being greater for the W-group than for the Handelsbank group.\(^1\) If the most deviant values on the age variable for the Wallenberg group are deleted, the difference in heterogeneity between the groups disappears almost entirely. This can be attributed to the Wallenberg group’s being a family group in which one or two family members are installed early and leave late. In 1975 the third and fourth generations of the Wallenberg family belonged to the group. In 1980 the oldest brother in the third generation had died, and in 1986 the entire third generation was deceased. The first individuals from the fifth generation were recruited after the death of those in the third generation. Such patterns are presumably common in dynastic groups. One obvious explanation of this dynastic pattern is the family’s need to educate the coming generations for the possible role of assuming the function of family head. Another explanation, based on the ‘similarity-attraction paradigm’ and analogous to the socialising strategy of control through rotation (Edström and Galbraith, 1977), is that an early recruitment to the group has the function of bridging the generation gap. Generational identity, just as is the case of cultural identity in international organisations, needs to be replaced by an organisational one, i.e., by family identity that fosters cooperation and control of the group. This serves to explain why one person tends to stay so long in the position of being family head. This reflects not only his being the pater of the family, which seems the most obvious explanation, but also the need of socialising younger generations so as to reduce generational discrepancies. The skewed age pattern makes it unwise to consider only persons below the age of 65, as Wiersema and Bantel (1992, 1993) did, for example, since here it excludes several of the most important persons in one of the groups. Thus, we expect that family membership resists turnover.

\[ H_3: \text{Family membership is negatively related to turnover.} \]

\(^1\) Heterogeneity at the organisational level was measured by the coefficient of variation (standard deviation divided by the mean). There appears to be consensus that at the organisational level the heterogeneity of continuous variables should be measured in this way (Allison, 1978; Hambrick and D’Aveni, 1992; Keck and Tushman, 1988; Murray, 1989; Wagner, et al., 1984, Wiersema and Bantel, 1992). A t-test on the individual age data showed a significant difference (<.05) between the two groups on the age-variable. No significant differences on any other variables were found.
Returning to demographic aspects, the fourth hypothesis relates to differences in professional outlooks. Similar to the turnover effect of functional heterogeneity (Bantel and Jackson, 1989), experiences from different branches can be assumed to create different attitudes, norms and perspectives (Jackson et al., 1991). Since individuals according to the similarity-attraction paradigm can be expected to recruit similar individuals and to expel dissimilar, one could readily hypothesise that turnover would be triggered by heterogeneity in branch experience. In terms of strategy, there are definite arguments for there being an effect of this sort. The origin and survival of Swedish business groups have been viewed as being partly based on the success of such groups in finding solutions to corporate problems of credit supply and ownership control which would call for particular communality in matters of financial strategy. The organisational structure of the two groups considered is indeed more similar (see appendix 1.) to that of the financial holding company form (H-form), consisting of loosely coupled corporations whose major inter-transactions are the transfer of capital and of top management, than to that of the industrial functional form (F-form) or of the multi-divisional form (M-form), which both involve operations as a whole being more closely linked. Through particular emphasis being placed on the financial experience of their members, the selection of members of the TMT in Swedish business groups could, according to this line of reasoning, be expected to reflect a desire for a branch homogeneity directed towards the financial part of the economy, i.e., banks and investment corporations. The dominance of financial experience in the TMT that the branch homogeneity creates would in turn enforce the group’s financial strategy.

However, there is a rather different logic that might be expected to apply to business groups, thus emphasising the need of considering the organisation in question when deducing predictions on demography. Ever since Hilferding (1910) wrote of the growing enterprises in Germany in which banks and industrial corporations were intertwined, the finance capital to which he referred has been regarded as a form of cooperation between industrial and financial corporations, something much resembling what is found in the two groups under consideration. If, as already indicated, these business groups represent a solution not only to financial problems but also to corporate governance problems, then it can be regarded as rational for industrial and financial experience to be mixed.

The TMT of a business group can be expected to represent the whole group, both internally and externally, and has therefore to reflect the cooperative trait between industrial and financial corporations. Due to this symbolic consequence of diversity (Hambrick, 1994; Ely, 1995; Milliken and Martins, 1996) heterogeneity in branch experience cannot be expected to trigger turnover. On the contrary, a decrease in heterogeneity in branch experience would insipid the symbolic impression of cooperation, and would therefore be avoided through selection and turnover.

Another consideration suggesting that branch heterogeneity does not trigger turnover involves the dynamics that heterogeneity creates. The business groups and their corporations, having been in business for at least 60 years, could be expected to have brought competitive advantage to the corporations of which they are comprised. According to studies of the relation between heterogeneity and performance, heterogeneity is related to innovation, high performance, high turnover (Murray, 1989) and growth (Eisenhardt and Schoornhoven, 1990). In the business groups in question, branch heterogeneity might therefore be expected not only to reflect the composition of financial and industrial capital, but also to be a competitive resource providing a balance between a financial and an industrial orientation to corporate governance. Thus, branch heterogeneity might best be seen as a coveted quality of the group and not something that would trigger turnover. In fact, if branch heterogeneity is indeed that which is desired, one would expect that a person with a similar branch experience as others who were in the group would be avoided as a member or be considered for replacement. In these terms, branch heterogeneity would be expected to have a negative triggering effect on turnover.

\[ H_4: \text{Branch heterogeneity is negatively related to turnover.} \]

Functional heterogeneity has been shown to readily lead to conflict (Kosnik, 1990), reducing possibilities for communicating and interacting (Sutcliffe, 1994). The business groups can be thought to possess a centripetal force in the sense of homogenisation occurring in the sense of socialisation counteracting and thus reducing the conflicting and centrifugal force of branch heterogeneity. Accordingly, the fifth hypothesis concerns tenure, operationally defined as the proportion of one’s career spent within the group. An integrating mechanism within a business group is the learning and transmission over time of norms and values, i.e., the indoctrination of ideology. One way of operationalising such a concept is by the use of the variable ‘Tenure’, measuring the length of exposure (Wiersema and Bird, 1993). However, such an operationalisation cannot separate age and indoctrination. Two persons, each with 10 years of tenure, but one of them with 20 years of additional experience from another organisation, and the other with the 10 years of experience in the group and
nothing more, differ in their degree of involvement in the organisation. It could be expected that the one with experience only from the current corporation would be more aligned to the corporate norms than the one having only one third of the corporate experience gained in the corporation under consideration. Thus, the transmission of norms and values is not simply a matter of length of service, but also of the proportion of the individual’s career spent in the group. Focusing on socialisation thus rules out the alternative explanation, offered by Jackson et al (1991), that the members of the group are highly paid for performance and therefore are induced to tolerate conflict. The heterogeneity argument states here that individuals with a similar socialisation history in terms of having spent a similar proportion of their career within the group, tend to stay.

\( H_5 \): Heterogeneity in the proportion of one’s career spent in the group is positively related to turnover.

Turning to those individual characteristics of earlier origin, one might well expect such factors as class origin and education to influence turnover. Differences in the social origin of an individual lead not only to different experiences a person has had but also in different behaviour and manner of communicating. Thus, one might well expect a higher turnover for those most dissimilar in origin.

\( H_6 \): Heterogeneity in class origin is positively related to turnover.

In Japan, education measured in terms of the prestige of the university attended has been shown to have impact on turnover (Wiersema and Bird, 1993). One might well have similar expectations for Sweden. Persons who have been educated at the same university tend to have had similar experiences and constitute according to self-categorisation theory an easily knowledgeable category in which people can be classified. Sweden also does have one prestigious private business school and one prestigious institute of technology, former students there presumably easily feeling an affiliation with the elite of Swedish society. Educational level could have a similar influence, making those educated at the university level dissimilar in experience and attitudes to those of lower educational level.

\( H_7 \): Having attended a prestigious business school or institute of technology is negatively related to turnover.

\( H_8 \): Heterogeneity in educational level is positively related to turnover.

Turnover in what amounts to the top management team in both of the Swedish business groups is thus predicted here to be influenced by the general factors of demography such as age, heterogeneity of age, the heterogeneity in the proportion of one’s career spent in the group, and heterogeneity in social origin and educational characteristics. Turnover was also predicted to be influenced by organisational specific factors such as family membership and branch heterogeneity.
4 METHOD

The TMT-equivalent for a Swedish business group can be constructed by the use of network analysis. The method section begins with a discussion of this and ends with an account of how the variables were constructed and how the data were collected.

The construction of a ‘network’ TMT

The two business groups in question, although frequently referred to in the Swedish press, do not exist as formally established entities. Before a business group and the equivalent to a TMT within it could be analysed, they had to first be identified. An initial step to doing this empirically was to select, from Sundqvist’s (1986) systematic account of ownership links between corporations in Sweden, a total of 38 corporations listed on the Stockholm stock exchange that appeared on the basis of having large voting shares to belong to one or the other of the two groups.

Data on the persons elected as board members at the annual meetings of shareholders of the corporations selected was obtained for the years 1975, 1980 and 1986. There are other persons on Swedish boards of directors, but they are excluded in this data set since they are elected by the white and blue collar unions or the government, thus not being representatives for the owners. The reason for selection to the board being used as a criterion for identifying TMT members is that the board of directors is considered to be one of the most important arenas for influencing a corporation (Tricker, 1993). Other important arenas, in particular industry-wide organisations and other pressure group providing political representation, would have been inferior alternatives due to the strategic importance that boards of directors have (cf. Stockman, Ziegler, and Scott, 1985; Useem, 1984). A rather long time interval between the measurement points was selected since the groups and their members seem rather stable. The networks were originally constructed to show the stability of the two business groups (as reported in Collin, 1990). The differing periods of time between the successive measurement points, 5

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2 Sweden has had and still has different voting rights attached to shares. Old corporations, such as Ericsson, had as great voting differences as 1 - 1/1000 vote per share. The largest single owner in 1986, Industrivärden, had an equity share of 3.1 per cent but 22.3 per cent of the votes, whereas 48.1 per cent of the equity was owned by non-Swedes, who however had only 0.5 per cent of the votes. Thus, the voting shares, not the share of equity, is a relevant measure of influence.
years and 6, can be assumed to not have had an appreciable impact on the results.3 Since neither the network analysis nor the descriptive statistics indicate any radical change in the groups over time, this difference appears to have had no disruptive effect.

From the sample of individuals who for the years 1975, 1980 and 1986 were on the boards of directors of the 38 corporations selected (n=237, 224, 205 respectively), the set of those persons who had positions on two or more boards was drawn (n=56, 73, 71) so as to provide a means of examining the interconnections between the corporations. A network analysis (not reported here, but available upon request), with hierarchical clustering using lambda sets (Borgatti, Everett and Freeman, 1992), confirmed there being clusters of two distinct sets of individuals, taken to represent the upper-echelon individuals of the two business groups.

Identification of the equivalent of a top management team in each was carried out using two criteria so as to construct a core set of persons from the sample of interlocking directors of the 38 corporations. The first criterion was that these company board members were all to have connections with each other, such that each of them met with each of the others on at least one board. Formally, it meant that the network had a density of one (1). The second criterion was that, under the restriction of density = 1, the frequency of connections inside the core network was to be maximised. The rationale for use of these two criteria was that a TMT was assumed to be a closely knit network of high density in which there were as many opportunities as possible for interaction. Other clustering techniques that were possible were unable to produce networks with high frequency of member contact under the restriction of the density equaling one (cf. Borgatti, Everett and Shirey, 1990). The density criterion was crucial since it is hard to imagine a genuine team in which some of the members never meet. The frequency criterion was based on the assumption that the team identity of the individuals depends to a large extent on the number of interactions (cf. Weirsema and Bird, 1993). This clustering procedure, reported in Collin (1990), created networks consisting of 4, 8, and 11 individuals for the Wallenberg group, and 6, 11 and 13 individuals for the Svenska Handelsbank group for the years 1975, 1980 and 1986, respectively. These two groups of individuals are distinct and separate from each other. Only a few members of the respective groups met with members of the other group. There were some few corporate boards where this could occur, for example on the board of Ericsson, the ownership of which is divided equally between the two business groups.

Data and Measurements

The dependent variable ‘Turnover’ was registered in 1980 and in 1986 as having either occurred or not occurred. In the present context, turnover signifies that an individual, even if excluded on the basis of the two criteria employed, may nevertheless have been present in the network of interlocking directors and be a member of one or several of the boards. Turnover thus represents not absence from the network but absence from frequent interaction with those members who are characterised by a high frequency of interaction, i.e., with those members belonging to the core network that constitutes the business group’s TMT. This is a less rigorous indication of turnover than that which applies to a formal organisation in which absence means that the individual has left some formal position, even though one may still be present within the organisation. Yet, as Tsui, Egan and O’Reilly (1992) argue, turnover is a radical change in an individual’s attachment to the organisation, psychological disattachment being less dramatic. Thus, turnover in an elite network falls in between these two extremes.

However, a more important point is that within the network the criteria of turnover are relational, exclusion of an individual from the TMT changing the network characteristics of all the individuals still included, as well as the possibilities for additional individuals being included. This means that turnover in terms of exclusion from the network is an empirical representation of there being lesser possibilities of interacting with the closely knit members of the top management team. An alternative to this dichotomous approach is to use the concept of team involvement, as measured for example by distance from the network centre. Although it is tempting to avoid the difficulties connected with dichotomous variables through use of continuous variables, the conceptual gain is small. Both logically and methodologically, team involvement requires the concept of a centre to which the individual’s involvement can be related. The creation of a centre of this sort requires somewhat different

3 The selection of 1986 as the last year was due to its being the first year for which extended ownership data was available, making selection of the corporations to be studied a better informed one than it would otherwise have been. It would have been wise to take five-year steps backwards. However, the magic of the decade seems to have been the reason for selecting the years 1975 and 1980. A rational argument is that my data and results were easier to relate to other investigations of the Swedish economy since they too are restricted to the “decade magic”. 

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assumptions and calls for clustering techniques, of which the one described below represents one possibility.

Demographic data on the individuals was collected from the annual reports of the corporations and from a Swedish publication ‘Who Is That?’ (Vem är det?, 1981; Vem är det?, 1985). The data concerns those individuals present in the business groups in 1975 and in 1980, respectively. Since some of the individuals were present both in 1975 and in 1980, the population tested (N=29) is larger than the sum of the individuals involved (S=23).

Branch experience was divided into financial, industrial and other experience. The category ‘Other experience’ consisted of governmental service in different forms, research appointments and working in private organisations supporting trade and industry such as the Swedish Employers’ Confederation. Functional heterogeneity, being the equivalent to branch heterogeneity, is seldom defined theoretically but arbitrary divided into traditional functions such as marketing, production, etc. The distinction between financial and industrial experience is conform to the theory and sufficient for the purpose of the theory of financial capital (Hilferding, 1910). It implies that financial experience is gained in financial organisations and industrial in industrial corporations. A person working in a financial department of an industrial corporation is considered as gaining industrial experience, whereas a person working in an investment corporation, mainly on the board of directors some one of the corporations it owns, is considered as gaining financial experience. Although such a categorisation is becoming less and less adequate due to increasing separation between the financial and the industrial operations of large corporations, e.g., through the creation of internal banks, it was still a feasible categorisation in the 70s. Since nearly all the persons in the sample gained the major part of their experience prior to the 80s, this categorisation was regarded as relevant. As a proxy for branch heterogeneity, financial experience measured as Financial experience/(Financial + Industrial + Other experience), that is, as the proportion of working-life experience gained in financial corporations, was selected. One could equally well have taken ‘Industrial’ experience in place of ‘Financial’ experience in the above ratio since industrial and financial are almost mutually exclusive, the category ‘other’, representing basically governmental or scientific service, being only a small category.

Tenure was measured by the variable ‘Years Spent in the Group’ (YSG), defined as the number of years the individual had been employed by one or more of the corporations belonging to the business group. In both groups the individuals in question had been in the group for some 20-25 years. As already indicated, such a measure has a serious deficiency in its reflecting both group indoctrination and age (the Pearson coefficient being 0.66, p <.000 for ‘Age’ and YSG). One way of removing the age component is to divide YSG by the variable ‘Years of Working Life’, defined as the difference between the present age and the age at first employment. This procedure creates the variable ‘Proportion of one’s Career Spent in the Group’ (PCL), measuring the proportion of the individual’s working life spent in corporations belonging to the business group (where the Pearson coefficient for ‘Age’ and PCL is 0.02, p=0.902).

Heterogeneity on the individual level was assessed by a network-equivalent measure of similarity, involving each individual’s distance to the others in the network, a measure proposed by Wagner et al. (1984). The following expression defines the i-individual’s distance:

\[ D_i = \min_{S} \left[ \frac{1}{n} \sum_{j \in S} (x_i - x_j)^2 \right]^{1/2} \]

where i and j belongs to a subgroup S, defined as all subsets with a largest integer size of (n+1)/2.

An advantage of this measure is that it considers the structure of the whole group. As an example in the Wagner et al article indicates, a five-person group with years of entry of 1, 1, 3, 5, and 5 involves a lesser distance for the first and the second person than if they had been in a group with 1, 1, 5, 5, and 5 years of entry. The first-year-entry persons have a distance of 1.155 in the first group and one of 2.309 in the other.

Due to the Wallenberg-group having a dynastic pattern involving family members, a dummy was created with 1 for individuals with close kinship, i.e., related by blood, and 0 for those not belonging to the family or only related by marriage.

Class origin classified according to the father’s occupation was the variable expressing class position. The classificatory scheme was a socioeconomic classification (Socioekonomisk indelning) used quite commonly in Sweden, defined by a governmental bureau with responsibility for statistics

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4 The recording of data on individuals was permitted through a governmental license.
made available to public authorities (SCB, 1982). The prestigious-school variable was coded 1 if the individual had more than a year of education at the Stockholm School of Economics or at the Royal Institute of Technology, both schools without doubt the most prestigious in Sweden. Educational level was divided into four levels, the first three of these corresponding roughly to the North American levels: university level, senior high school, grade school, and a fourth level for those with only six years school, as was once possible.

It has been argued (Pelled, 1996) that the visibility of a demographic dimension influences the triggering effect of the dimension, clearly visible dimensions such as gender, race and age being most conflicting and thus stronger predictor of turnover. Gender and ethnical origin are highly visible dimensions and could be expected to be of some importance since, concerning gender, women have a high involvement in the wage labour force of Sweden and, concerning ethnical origin, most of the corporations in the business groups are highly internationalised in terms of sales and production. However, none of these variables was included due to lack of variance. All members in the business groups were simply Swedish men.

Results
Table 1 summarise the descriptive statistics. During the 16 years, 10 persons were subject to turnover, whereas 19 persons were still in the TMT of the group in question, suggesting Swedish business groups to be fairly stable. Turnover is strongly correlated with age and age heterogeneity, and is only slightly correlated with distance in proportion of one’s career spent in the group (p=.15). The age variable indicates these persons to be relatively old, varying between 43 years and 83 years of age. The two distance measures, concerning heterogeneity of financial experience and proportion of the career spent in group, are comparable in the sense of the variable underlying each having a range of 0 to 1. On the average, distance is larger for financial experience than for proportion of one’s career spent in group. The same is true for the variation involved. Heterogeneity seems to be less for the proportion of one’s career spent in the group than for financial experience, providing support for our proposed theory that branch heterogeneity is a coveted resource. However, one should observe that some of the individuals are ones who show low branch heterogeneity and high heterogeneity in the proportion of their career spent in the group and who thus, according to the theory presented, could be strongly expected to experience turnover.

Since the other measures of distance differ from these and from another in the range of the underlying variables, no direct comparisons between them are possible. However, one can note the small differences found in educational level, reflecting the fact that the majority of the individuals have university or business school education. Almost half of them attended the two highly prestigious schools, but as can be seen in the correlation matrix, attendance is not correlated with turnover, which is in accordance with the expectations here.

Table 1: Mean Standard Deviation and Correlation Coefficients for Dependent and Independent Variables (N=29)

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Turnover</td>
<td>0.34</td>
<td>0.48</td>
<td>.51*</td>
<td>.39*</td>
<td>-.14</td>
<td>.27</td>
<td>.05</td>
<td>-.14</td>
<td>.24</td>
<td>.02</td>
</tr>
<tr>
<td>2. Age of individual</td>
<td>58.7</td>
<td>10.1</td>
<td>.30</td>
<td>.02</td>
<td>-.14</td>
<td>.46*</td>
<td>-.21</td>
<td>.21</td>
<td>.11</td>
<td></td>
</tr>
<tr>
<td>3. Distance in age</td>
<td>4.63</td>
<td>2.71</td>
<td>.19</td>
<td>.10</td>
<td>.30</td>
<td>-.35†</td>
<td>.04</td>
<td>.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Distance in the proportion of financial experience</td>
<td>16.1</td>
<td>18.5</td>
<td>-0.08</td>
<td>.29</td>
<td>.20</td>
<td>-.23</td>
<td>-.29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Distance in the proportion of one’s career spent in the group</td>
<td>11.8</td>
<td>11.6</td>
<td>-.45*</td>
<td>.10</td>
<td>.11</td>
<td>-.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Family membership</td>
<td>0.17</td>
<td>0.38</td>
<td>-.44*</td>
<td>-.15</td>
<td>.11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Distance in class</td>
<td>.31</td>
<td>.33</td>
<td>-.07</td>
<td>-.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Distance in educational level</td>
<td>.09</td>
<td>.27</td>
<td>-.33†</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Prestigious school attendance</td>
<td>.48</td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.1;  †p<.05;  **p<.01;  ***p<.001
Table 2 presents the logistic regression equation in which the eight hypotheses are tested. The model is significant at the 0.01-level and correctly classifies 86% of the cases, or 25 out of the 29. The age effect, as expected, is highly significant in predicting turnover, and contributes most to the model, as the R-statistics in the right-hand column of the table indicate. These R-measures, which range from -1 and +1, and are based on the Wald statistics, can be interpreted as the partial contribution of the variable in question to the model. Three other variables contribute to the model at a significance level of between .05 and .1. One of these is heterogeneity of age, a slight cohort influence on turnover being evident. Another is heterogeneity in the proportion of one’s career spent in the group, likewise found to affect the probability of turnover. In addition, family relationship can be seen to have a negative influence on the probability of turnover, as predicted.

Table 2: Result of logit regression analysis (N=29)

<table>
<thead>
<tr>
<th></th>
<th>Turnover</th>
<th>Stand Errors</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Age of individual</td>
<td>.41*</td>
<td>.19</td>
<td>.28</td>
</tr>
<tr>
<td>3. Distance in age</td>
<td>.73†</td>
<td>.38</td>
<td>.21</td>
</tr>
<tr>
<td>4. Distance in the proportion of financial experience</td>
<td>-.12</td>
<td>.07</td>
<td>-.12</td>
</tr>
<tr>
<td>5. Distance in the proportion of one’s career spent in the group</td>
<td>.15†</td>
<td>.08</td>
<td>.19</td>
</tr>
<tr>
<td>6. Family membership</td>
<td>-.8.2†</td>
<td>4.74</td>
<td>-.16</td>
</tr>
<tr>
<td>7. Distance in class</td>
<td>-.45</td>
<td>3.18</td>
<td>0</td>
</tr>
<tr>
<td>8. Distance in educational level</td>
<td>-.68</td>
<td>3.66</td>
<td>0</td>
</tr>
<tr>
<td>9. Prestigious school attendance</td>
<td>.69</td>
<td>2.03</td>
<td>0</td>
</tr>
<tr>
<td>Constant</td>
<td>-28.3*</td>
<td>11.8</td>
<td></td>
</tr>
</tbody>
</table>

Model chi-square 20.88**
Percent correct predicted 86.21

Branch heterogeneity, measured as distance in terms of financial experience, has the expected sign but is not even significant at a .1-level. However, the support for hypothesis here concerning the impact of branch heterogeneity upon turnover can be regarded as slightly stronger than the test involved indicates. In the regression presented here, heterogeneity of financial experience is used as a proxy for branch experience. A slightly different result would appear if one used industrial experience as the proxy for branch experience. Remember that three categories of branch experience were distinguished: ‘financial’, ‘industrial’ and ‘others’. Accordingly, correlation between financial and industrial heterogeneity is extremely high (.87) but not equal to one, since there is a third category, ‘others’. With the use of industrial experience as the measure of branch heterogeneity, the results are similar, the same number of cases being correctly classified and the chi-square of the model improving to 24.7, with an accompanying lowering of the significance level to .002. The significance levels and relative impact of the variables other than branch heterogeneity are not changed, branch heterogeneity being significant at a .1-level. Although there is only weak significance, the results can be interpreted as suggesting that branch experience can influence turnover in such a way as heterogeneity decreases, the probability of turnover becomes higher.

The social background variable and the educational variables had no significant impact on turnover. This supports the contention that, although these variables can surely have an impact on a person’s possibility of starting the journey to the top, the social forces at the top within an organisation, such as those relating to branch heterogeneity, commitment and heterogeneity of the proportion of one’s time spent within the group, and of age, are more narrow in time in the influence they have.

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5 The regression of a qualitative variable represented by a dummy variable such as turn-over poses at least two problems of estimation (Montgomery and Peck, 1982). First, the estimated probabilities can assume meaningless values, specifically values that are negative or greater than one. Secondly, the errors are not distributed normally. A solution to both problems is to apply a logit model as estimated via a maximum likelihood technique, creating an S-shape curve with asymptotes at 1 and 0 (Kennedy, 1984; Afifi and Clark, 1990), which Morita, Lee and Mowday (1993) argue to be an appropriate technique for predicting turnover.
It can be concluded that the theory of TMT turnover presented here, based on a demographic perspective, received a slight support from the TMT constructed here through network analysis. Although support for the model as a whole was found to be significant, the effects for most of the variables were only found to be significant at the 0.1 level. The results should be treated with caution since a logit regression requires larger sample size than n=29 in order for the findings to be considered robust. However, one should note that demographic studies employ rough variables such as age and functional heterogeneity in attempting to represent complicated social processes. As a result, such studies typically have a low capacity to explain the variance of the dependent variable.

5 DISCUSSION AND CONCLUSION

A demographic perspective can reveal important aspects of the functioning of organisations, aspects otherwise not easily detected, due partly to data access problems. This is true regardless of whether the organisations are formal ones or networks. Here it has been demonstrated that network organisations of a certain kind have counterbalancing forces. The business groups and their TMTs that were investigated as constructed networks were branch heterogeneous and characterised by long tenure. Age, heterogeneity of age and heterogeneity of group investment influenced turnover, whereas family membership and branch heterogeneity had only a slight and uncertain influence, although in the predicted direction of restraining turnover. These results can be interpreted as indicating that the business groups possess a combination of financial and industrial experience as a group resource and that the socialising strategy of control serves to counteract the conflict-producing influence of branch heterogeneity.

The empirical results were weak and have therefore to be regarded as preliminary. Nevertheless the result obtained imply the need for distinguishing theoretically between those dimensions characterised by heterogeneity, which is presumed to be conducive to turnover, and those characterised by homogeneity, which is seen as facilitating integration. Dimensions of these two opposing types may both be active and yet counterbalance each other. In taking account of forces of both an integrative and a separative type simultaneously, a demographic perspective can make a contribution to the science of organisations, where the latter tends to focus on integrative forces alone (Perrow, 1986). However, there is nothing in the demographic perspective itself that can distinguish which type of dimensions is involved. In the contribution to organisational demography by Pelled (1996), it is argued that job-relatedness and visibility relevant dimensions here, triggering conflicts and thus affecting turnover. Since the only means of identifying job-relatedness that is available is to have a substantive theory about the empirical phenomenon in question, a demographic perspective must rely on a theory that in relation to the empirical object can predict what dimensions are relevant. The present paper has emphasised this point by making a prediction of branch heterogeneity on the basis of a substantive theory of business groups, a prediction that in opposition to predictions of many demographic studies using functional heterogeneity in a organisation as an equivalent. Heterogeneity was predicted to hamper turnover instead of promoting it due to branch heterogeneity being a resource valuable to the group. Accordingly, propositions in organisational demography has to consider the organisation in question.

The model was significant, but except for the age variable, the significance of the individual variables was rather weak. There are at least two possible causes of this one could suggest: the small sample size and inadequate determination of the TMT’s. The sample size was indeed quite small (N=29), making the influence of each of the observations on the results rather strong. Thus, outliers and misinterpreted observations of even a rather small magnitude can clearly influence the results. This can only be compensated for by increasing the sample size. Since Sweden only had, and still has two business groups of any particular importance, no other groups than these could be included. The sample size could be increased through use of the time trick as already used here, the size of the sample having been extended in the present case through observations of turnover not in one but in two different time periods (ending in 1980 and 1986, respectively). Thus, one method of enlarging the sample size would be to include a greater number of time periods. Another method would be to include business groups from other countries such as bank groups from Germany, Keiretsus from Japan and holding groups from Belgium. This would be possible now since business groups have been given more attention in research (cf. Yiu, Lu, Bruton & Hoskisson, 2007) thus making it possible to share data from different countries. As will be argued below, the fear of a strong cultural influence distorting the results appreciable when three or four countries that are culturally different are included is probably unfounded.

The definition of a TMT employed here, i.e., density being equal to one and frequency being maximised, might conceivably create a group lacking in empirical reality, making the correlation's
random and meaningless. However, the problem of defining the top group is present in every TMT study. In fact, as the paper argues, a network definition of a TMT ought to be a superior method for defining it since such a construction is based on such relevant group dimensions as density and frequency, no attention being directed at comparatively inferior dimensions as formal positions in the firm or CEO opinions. Despite the weak results, it can be concluded that the model offered has a bearing for predicting turnover in business groups but that the empirical test could be improved through increasing the sample size by including business groups from other countries.

The latter step would raise the question of whether the results obtained reflect primarily cultural factors. Since Sweden is known to be a collectivist society (Triandis, 1995), forces towards conformity should be strong, at least if one accept analogous arguments that Wiersema and Bird (1993) have put forward concerning Japan. Although the present sample, to be sure, is very small and Sweden did not have any other business groups similar to the ones studied, it does not appear that the results simply reflect Swedish conformity. If there are strong forces towards conformity in Swedish society generally, then forces of conformity that might be quite special for particular organisations such as those of group investment would not be expected to influence turnover since conformity is created in and by society. Put simply, there is no need of creating organisational conformity in a highly conforming society. Indeed, one can argue as we do here that the dynamic power which extreme heterogeneity provides is made possible by the countervailing force of homogeneity which the business groups endeavour to achieve. The cultural traits which are relevant here may not be those of either heterogeneity or homogeneity, but rather of other dimensions, the impact of each being a function of the cultural context. Heterogeneity of class, for example, could be expected to have a rather different impact in a more class-conscious society such as England. Similarly the prestige of a particular university could well have a protracted effect in a less informal society such as that of Germany, of France or, as Wiersema and Bird (1993) found, of Japan. In the Scandinavian countries, and possibly in other informal countries such as the US, the impact of having attended a prestigious university or business school can be expected to diminish quickly with age. Thus, the generalisability of results here is probably not appreciably hampered by culture.

The generalisability of the results is limited, especially by the gender invariance that was present. The sample consisted exclusively of men, making heterogeneity of gender a meaningless variable. This seems to be quite common in demographic studies of TMTs. The exclusion of gender in TMT studies is probably caused in part by the low variance of the gender variable. For example, Zenger and Lawrence (1989) excluded gender since only 4.3% in the sample were women, and Tsui and O’Reilly (1989) reported that in a group higher than middle management only 4% were women. The effect of the gender variable having been excluded due to low variance is that most results cannot be generalised to TMTs in general, but to the most frequent type of TMT, that consisting of males only. It is quite conceivable that groups in general and TMTs in particular could display other outcomes if faced with high heterogeneity of gender or if populated only by females. In fact, Tsui, Egan and O’Reilly (1992) found that men’s attachment to an organisation diminished to a great extent when a mixed-gender group was involved than women’s did. An interesting question is whether the hypothesised causal link between heterogeneity and turnover is as valid in female as in male groups. Even in Sweden, where the say of women is particular strong, e.g., with roughly 50% women in the parliament, such an investigation of TMT groups must await the advent of a greater number of women on the scene, recent data on the TMTs of the listed Swedish corporations having shown that only 18% were women (Berg, 2003).

One of the major contributions by this paper would appear to be the determination of a TMT through network analysis, allowing it to be defined on the basis of such team characteristics as frequency of contacts and density, instead of formal positions. Demography appears to be a viable concept for explaining outcomes and processes not only in formal positions and in formal organisations, but also in certain non-formal organisations such as the business groups considered here. The latter are elite groups basically similar to the TMTs of formal organisations. Not only can the network approach to assessing membership taken here be applied to formal organisations as well, but there are also phenomena somewhat similar to what was studied here which could be examined in a similar way, such as the cooperation, for example, between companies in science parks. The latter represent the assembling of different research organisations at a given geographical site, where service, support and other types of resources are exchanged. An interesting question is whether interactions of this type are based primarily on functional, personal or demographical considerations. Considering networks highlights certain problems concerned with the makeup of teams. Whereas one can reasonably assume that there are persons in the upper echelons of formal organisations who constitute a TMT, its being an empirical question who these persons are, the same assumption cannot be made for non-formal organisations without the help of empirical data. Data on cooperation and team-like
characteristics is indeed found in the case of Swedish business groups. For science parks, no such data has as yet to our knowledge been assembled. This emphasises the importance of regarding membership in a TMT as an empirical question that only can be answered after the analysis of patterns of interaction.

A limitation of the present study, that of its particular focus on networks, should be noted. An important difference between a formal organisation such as a corporation and an informal organisation such as a business group is that in the latter case the environmental forces influencing turnover are much more difficult to comprehend. This is particularly apparent when one considers performance, an important variable in TMT research (Keck and Tushman, 1993; Priem, 1990; Dess and Priem, 1995; West and Schwenk, 1996). Whereas the performance of a corporation can indeed be measured, certain difficulties notwithstanding (Murray, 1989), it is extremely difficult or even impossible to measure the performance of an informal organisation. The present paper has focused on group factors that influence turnover there. This leaves to further research the intriguing question of the effects of environmental forces on networks and on their upper echelons.

TMT demographics focuses on the composition of the TMT but generally considering only one of two compositional events, the turnover (Daily and Dalton, 1995; Hambrick and D’Aveni, 1992; Keck and Tushman, 1988; Keck and Tushman, 1993; McCain, O’Reilly III and Pfeffer, 1983; O’Reilly III, Caldwell and Barnett, 1989; Pelled, 1996; Wagner, Pfeffer and O’Reilly III, 1984; Wiersema and Bantel, 1993, and Wiersema and Bird, 1993). The other event which influences the composition of a TMT is the inclusion of a new member. Whereas decisions of hiring are often scrutinised in social psychological studies (Westphal and Zajac, 1995), selection processes in the internal managerial labor market that create a pool of would-be TMT-members are an almost virgin area for demographic research. Few studies have concentrated on the inclusion of new members in TMTs it has been empirically researched by those concerned with board composition (e.g. Furtado and Karan, 1990; Westphal and Zajac, 1995) and have been highlighted by the innovative paper by Pfeffer and Leblebici (1973). Thus, although turnover is a rather well covered aspect of TMT composition, it is time to focus on the “turn-in” or selection of TMT-members.

The balancing of integrative forces of homogenisation that create stability and of the separative forces of heterogenisation that create change is of genuine managerial concern. The functioning of a group, for example its capacity to process information (Thomas and McDaniel, 1990) and its performance in an ultimate sense, depends not only on the competencies of the individuals involved, but also on the group’s composition. It is highly tempting to consider the possibility, however trivial it may appear, of recruiting for such business groups as the Swedish ones examined, a greater number of financially oriented individuals at times when the companies involved are under financial stress. The present results emphasise the importance of considering the total effects of recruitment and dismissal. The manager and the researcher face the same basic difficulty of distinguishing those dimensions for which heterogeneity has a noticeable effect on the group or company from those for which it has little or no effect. One possible rule of thumb could be one based on the idea of countervailing forces considered in this paper, i.e., the idea that in stable environments TMTs can be functionally and branch homogeneous without much effort needing to be spent on socialising the members, whereas in complex and turbulent environments diversity in branch experience and functional heterogeneity creates the need of homogenising through socialisation the individuals involved. Simply put, playing golf and holding dinners for the TMT are a necessary investment in homogenisation for corporations in medicine, for example, but a waste of money for corporations in the oil business.
APPENDIX

1 The Wallenberg group and the Handelsbank group in 1986

Only the largest corporations are included. The arrows indicate share ownership. Similarities between the groups are stressed at the expense of such dissimilarities as the fact that the Wallenberg group depends ultimately on non-contestable control of a few, large foundations, while the Handelsbank group has smaller foundations making the group slightly more vulnerable for control contests.
REFERENCES


Book Review:

Strategic Management and Competitive Advantage: Concepts and Cases

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Book Information

Book Title: Strategic Management and Competitive Advantage: Concepts and Cases
Author: Jay B. Barney and William S. Hesterly
Publisher: Prentice Hall: Financial Times Press, UK
Edition: 2nd edition
Year: 2007
Pages: 656 pages
ISBN: 0132338238
Price: £39.59

Keywords: strategic management, competitive advantage, cases
BOOK REVIEW

This is the second edition of a textbook on strategy aimed at undergraduate students. Its key differentiator to other similar books is that it uses the so called “VRIO” (Value, Rarity, Imitability, and Organisation) framework to integrate the positioning perspective and the resource based view. The book does this by reviewing some of the key strategies, such as cost leadership and product differentiation, and then trying to address a series of key questions related to the VRIO approach.

In the first part the book provides some introductory elements of strategy. It does so, by introducing the key strategic concepts to students. It then explains the key tools for strategic analysis such as Porter’s five forces model. The concluding chapter in this part focuses on the resource based view and explains how it can be used to evaluate a firm’s internal capabilities.

In the second part the book focuses on the development and implementation of business level strategies. In contrast to many other strategy textbooks which focus on the implementation process of strategy, the authors of this textbook focus directly on the key business strategies that a firm can follow such as cost leadership and product differentiation. I think this is a refreshing approach and helps students easily evaluate a firm’s strategy.

Finally in the third part the book focuses on the development and implementation of corporate strategies. In this section the book explains high level strategies such as vertical integration, corporate diversification, and strategic alliances. Similar to the previous part, the text focuses on the strategies rather than the strategy process.

The book uses a plethora of examples to illustrate the key theoretical points it presents, making it both relevant and easy to read. Furthermore, as the key readership of the book is undergraduate students, the amount of cases makes it easy to find simple examples from the marketplace to associate them with everyday life. This task becomes even easier with the use of households names, names that most US based students would be familiar with and often have an opinion about.

There are three additional distinctive features of the book which make it a good choice for strategy teaching. The first is the link of the theories presented in the main text to the emerging enterprise. The authors make a good effort to associate the knowledge and tools explained in the main text to smaller organizations. This is something which is not very often found in strategy textbooks. As the authors correctly argue in the opening sections of the book, business graduates are more likely to work in smaller organisations rather than larger ones. It therefore makes a lot of sense to add such a section in every chapter.

The second distinctive feature is the “research made relevant box” which also adds considerable value to the strategy student. The authors have done a good job in selecting key research papers and linking them to the discussion in the main text. As a result the text does not read as a prescription to strategy making but also provides critical evidence based views on the theory on current developments of strategy.

The third and final distinctive feature of the book is the case studies at the end of the three sections, which are current, thorough and provide plenty of data for analysis. Furthermore, the choice of the case studies is such that gives students hands on view of the issues and theories examined in the text.

The VRIO approach presented in the book is very convincing and provides an underlining framework which should prove useful and clear for both students and professors to follow. It will of course require an adaptation from current teaching practices but this should be the case whenever a new course textbook is introduced.

One concern for the potential use of the book in international classrooms is that it is significantly US centric. Most of the case studies used to support the arguments in the main text are of companies residing in the USA. This would not necessarily be a problem for non US students had the context been explained in an international basis. In fact quite often the opposite happens. For instance, when describing the case of Ryanair a European low cost carrier, the authors compare it with SouthWest airlines, a US low cost carrier. Furthermore, the “International Context” section of each chapter explains the implications of international strategies for US based organisations. For example when explaining the cost leadership strategy the authors discuss the potential cost benefits that can be gained by US based organisations when moving their operations to low cost countries. This of course is a valid situation. However, this may be of little value to a Chinese student trying to understand how companies in China would like to move up the value chain.

The case studies at the end of each part, however, are considerably more international using companies such as Vodafone, Samsung, and Toyota. Therefore, instructors deciding to adopt this book for their teaching could use these case studies to illustrate the points they want to make.
In conclusion I think this is a very good book that can significantly add value to the teaching of strategy at the undergraduate level. Both the structure and the clarity of writing make the key perspectives of strategy easily understood and relevant.