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The Relationship between Business Strategies and Successful Innovation

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Abstract

The literature emphasises the role of innovation in driving economic growth. It is also generally understood by academics and practitioners that the types of strategies adopted by a firm play a key role in determining innovation levels and firm profitability. The research examines this proposition in the Australian context, using the construction industry as a case study. The primary research question driving the study was 'What types of business strategies are the main contributors to successful innovation?'. Data were collected via a large scale mail survey covering 38% of the industry, with 1,317 questionnaires distributed and a 30% response rate achieved. Innovation was defined as a new or significantly improved technology or advanced business practice. Innovation success was measured via an innovation index based on input and output innovation indicators. The results show that the following strategies are key drivers of innovation success:

- actively encouraging employees to seek out improvements and share ideas
- recruiting new graduates
- inter-industry networking
- international monitoring of best practice
- transferring project-based learnings into continuous business processes.

Businesses wishing to improve their innovation performance are encouraged to consider adopting these strategies, or embracing them more fully.

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Introduction

Innovation and its contribution to economic growth has been the focus of extensive academic attention since the early explorations of influential economists such as Joseph Schumpeter in 1943 and Robert Solow in 1956. The relationship between innovation and growth is no longer contested. Innovation improves the competitive advantage of nations, industries and businesses (OECD 2000). The current literature on innovation is vast and covers a broad range of objectives, perspectives and levels of analysis. Innovation is a current public policy buzz-word and leading contemporary consultants such as PricewaterhouseCoopers assert that ‘the time has come for innovation to enter the main stream of management thinking, to achieve its rightful place alongside financial management and strategic planning as a determinant of business success’ (PWC 2003, i). Yet change is slow and many businesses in Australia, as elsewhere, still fail to capitalise on the benefits innovation can provide. The research presented here was undertaken to provide guidance to businesses wishing to improve their innovation performance.

The research examines the drivers of successful innovation internal to the firm. Most studies of innovation drivers focus on a particular element of business strategy or conditions, such as regulations (eg. Gann 1998), communication (eg. Kivimaki et al 2000), R&D investment (eg. Wakelin 2001) or sophisticated clients (Morrison et al 2004). Focussing on those factors that are directly within the firm’s control – business strategies - this paper takes a broader approach, examining the role played by a range of key business strategies in determining firm-level innovation outcomes in the Australian context. There have been no recent attempts in Australia to examine the relative roles played by key business strategies in promoting firm-level innovation. The 23 key business strategies examined are based on those employed by Statistics Canada as representative of best practice innovation drivers (Anderson and Schaan 2001). The research questions addressed by the study are:

1. Are these business strategies really ‘best practice’ in the Australian context (that is, are highly innovative Australian firms significantly more likely to use them)?
2. Which business strategies most differentiate high and low innovators?
3. Which strategies are favoured by high innovators?

Innovation was defined as a new or significantly improved technology or advanced business practice, following OECD definitions (OECD/Eurostat 1997). Innovation may be new to the world, or just new to the industry or business concerned. This definition thus includes the adoption of existing advances developed outside a particular business.

Methods

A large scale survey was undertaken to explore the topic. Firms targeted were all located in the Australian construction industry. The selection of this industry was driven by the interests of the research body funding the research. It is also an industry in which cultural change is slow, contributing to poor innovation performance compared to many other Australian industries (Manley 2005). Questions concerning business strategies formed part of a much broader survey on innovation levels, types, drivers, obstacles and impacts. This paper reports only on business strategies, as a key driver of innovation success for firms.

The study population was defined as key organisations in the Australian construction industry. The sampling unit was therefore at organisational level. To make the survey manageable, the study focused on the commercial building and civil engineering sectors (excluding residential building – in line with the interests of the research sponsors). Further, the study was confined to NSW, Victoria and Queensland, although the industry was defined broadly to include main contractors, trade contractors, consultants, suppliers and clients. Key organisations were defined as those appearing on the pre-qualification lists of government road and building agencies in the three states, together with members of eight selected industry associations. The associations chosen for surveying were

identified by the government agencies working with the researchers, as those that made the most significant contribution to construction projects.

The surveys were sent directly to the sample by government agencies and industry associations working with the project team. In all, 1,317 surveys were distributed to the survey population of 3,476 businesses and 383 useable responses were received, giving a sampling rate of 38% and a response rate of nearly 30%. The survey was distributed through the post, rather than electronically via email or the internet. The electronic options were deemed to be sub-optimal for the construction industry, given the performance of previous electronic efforts. The surveys were sent to the contact person on the government agency pre-qualification lists and the industry association membership lists. These people were mainly managers.

The data presented in this paper are based on 23 business strategies listed in the survey. The strategies fall into four groups as shown below.

Human Resource Strategies
Actively encouraging your employees to seek out improvements and share ideas
Recruiting experienced employees
Recruiting new graduates
Participating in apprenticeship programs
Providing or supporting training programs for your employees
Use of multi-skilled teams
Technology Strategies
Enhancing your business's technical capabilities
Introducing new technologies
Investing in research and development (R&D)
Participating in the development of industry standards and practices
Protecting your business's intellectual property
Marketing Strategies

Delivering products/services which reduce your clients' costs
Increasing your market share
Building relationships with existing clients
Attracting new clients
Providing a broader range of services to your clients
Knowledge Strategies
We have robust relationships with key organisations in the industry
We actively monitor international best practice in our field
We actively monitor advances in related industries that might be applicable to our business
We have a formal system for transferring project learnings into our continuous business processes
When we make changes, we measure how well the changes have worked
We reward staff for maintaining networking linkages with strategically useful industry participants
We have a formal system to encourage staff to share ideas

These strategies are based on those employed by Statistics Canada as representative of best practice innovation drivers in their large scale innovation survey conducted in 1999 (Anderson and Schaan 2001).

Data gathered on the 23 strategies listed in the above questions were then cross-referenced with an index of innovativeness for each respondent. This index was employed to split survey respondents into three groups – high innovators, middle innovators and low innovators.

There were sixteen survey questions, and the four used for index development represented a mix of input and output innovation indicators – covering innovation capability and innovation success, and reflecting variables employed in existing indexes, such as PWC (2002).

The index measures:

1. the degree of novelty of each respondent's most important technological and organisational innovation,
2. the impact of each organisation's most successful innovation from the past three years on profitability,
3. the adoption rate of existing innovations by each organisation,
4. the importance respondents placed on investing in R&D.

1. Novelty Score: A points system approach was used to rank the respondents based on their responses to questions in the survey about innovation undertaken and novelty. Each respondent scored points based on whether they had introduced any technological or organisational innovations in the past three years and the degree of novelty. Each respondent who had undertaken innovation received a point and they then received further points depending on the degree of novelty of that innovation – new to the world, Australia, industry or firm. The aggregate of these points was the score achieved for each respondent.

2. Impact Score: Each of the scores achieved above was 'weighted' by the respondent's answer to a question about the impact of the organisation's most successful innovation over the past three years on profitability. A linear scale was chosen to weight the impact. Impact points ranged from one for 'no effect' to five for 'great improvement in profitability'.

3. Adoption Score: The adoption score was based on a count of the number of advanced practices the respondent's organisation employed, from a list of 22 types.

4. R&D Investment Score: Respondents who considered 'investing in research and development (R&D)' an important strategy to the success of their business also received a point. This was added to the cumulative scores.

The questions used to create the innovation index were tested for reliability. Cronbach's Alpha was used to test the relationships between individual items in the scale. The results were encouraging, with most scores being between 0.6 and 0.7. The closer the score is to one the better the score. These scores are therefore acceptable, indicating consistency in the responses and confirming the suitability of the approach described above as a basis for index development.

As part of a sensitivity analysis, three index models were trialled:

- an additive model;
- a multiplicative model; and
- a weighted multiplicative model.

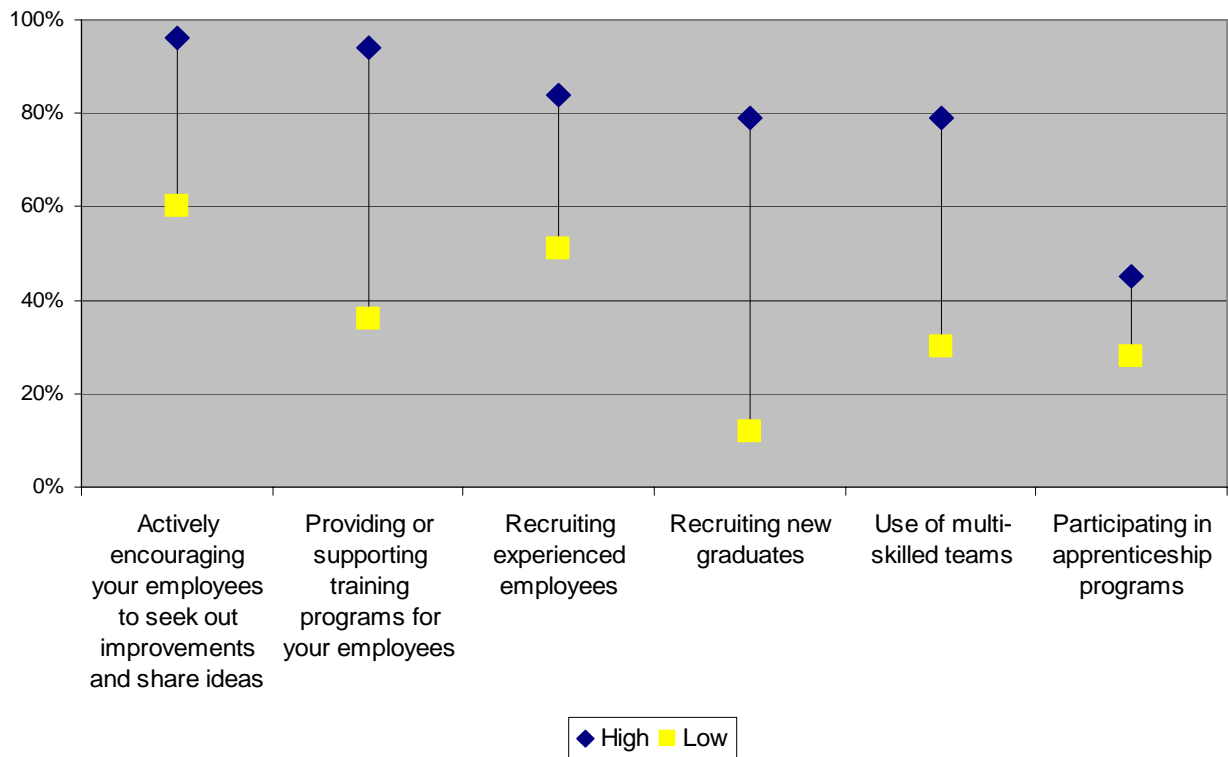
The models were applied to each respondent and the results compared for consistency, with the top and bottom quartiles drawn out for sensitivity assessment. Results of analysis showed that each of the models achieve the same subset of respondents as top quartile 'high innovators' and bottom quartile 'low innovators', with 80 businesses in each group (there were 223 middle innovators falling in-between). Due to this consistency, and the results of reliability analysis, the classification of respondents has a great deal of integrity. The study focuses on the differences between high and low innovators as a means of identifying the key innovation drivers among the 23 business strategies examined.

Results and Discussion

The proportion of high and low innovators nominating each business strategy as highly important to their business success is shown in the four charts to follow. A chi-squared statistical test was carried out on all survey responses to determine whether the high and low innovator groups differed. A statistically significant difference of $p < 0.01$ was found for all the business strategies, except 'building relationships with existing clients' ($p < 0.1$). The charts show that all the 23 business strategies are used more intensively by

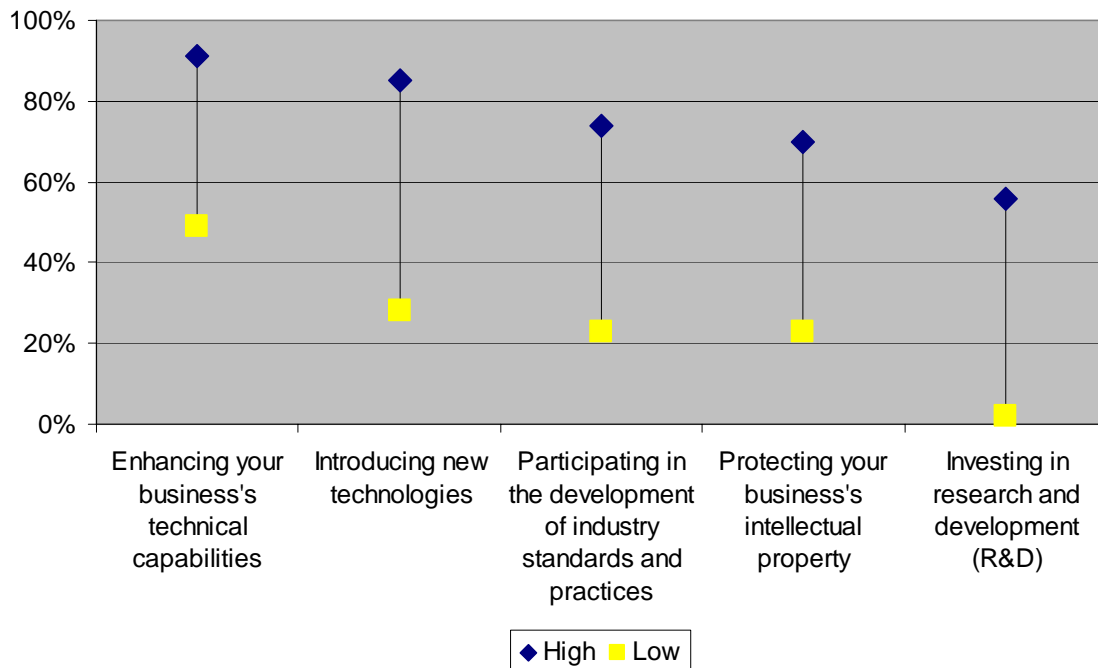
high innovators than low innovators.

Figure 1: Percentage of Innovator Groups Using Human Resource Strategies, Australian Construction Industry, 2004



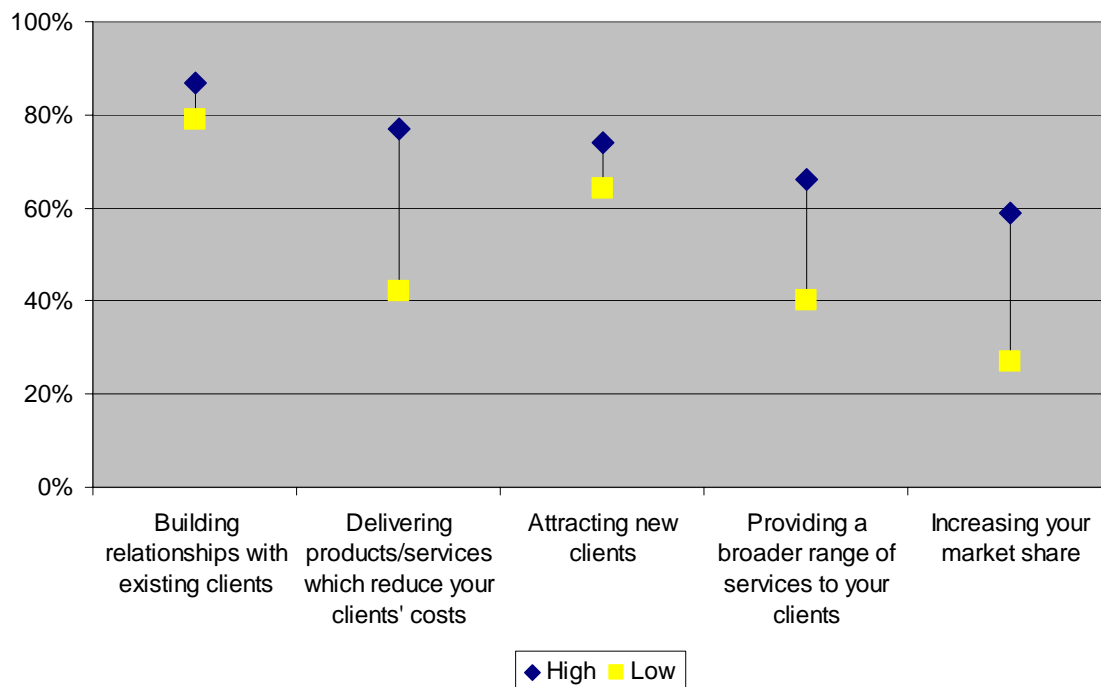
The two most commonly employed human resource strategies by high innovators are encouraging employee ideas and training employees. These are the two most popular strategies for high innovators across the full set of 23 types. The importance attached to them here is reflected in the literature (Barlow 2000, Love et al 2002). The human resource strategy that most clearly separates high and low innovators is the recruitment of new graduates, while high innovators are least interested in participating in apprenticeship programs. These two findings are probably related; apprenticeships are associated with established, rather than emerging knowledge, while new graduates probably have greater exposure to cutting-edge technical developments, and greater development of problem-solving skills. It seems low innovators might improve their innovation performance by taking a greater interest in new graduates.

Figure 2: Percentage of Innovator Groups Using Technology Strategies, Australian Construction Industry, 2004



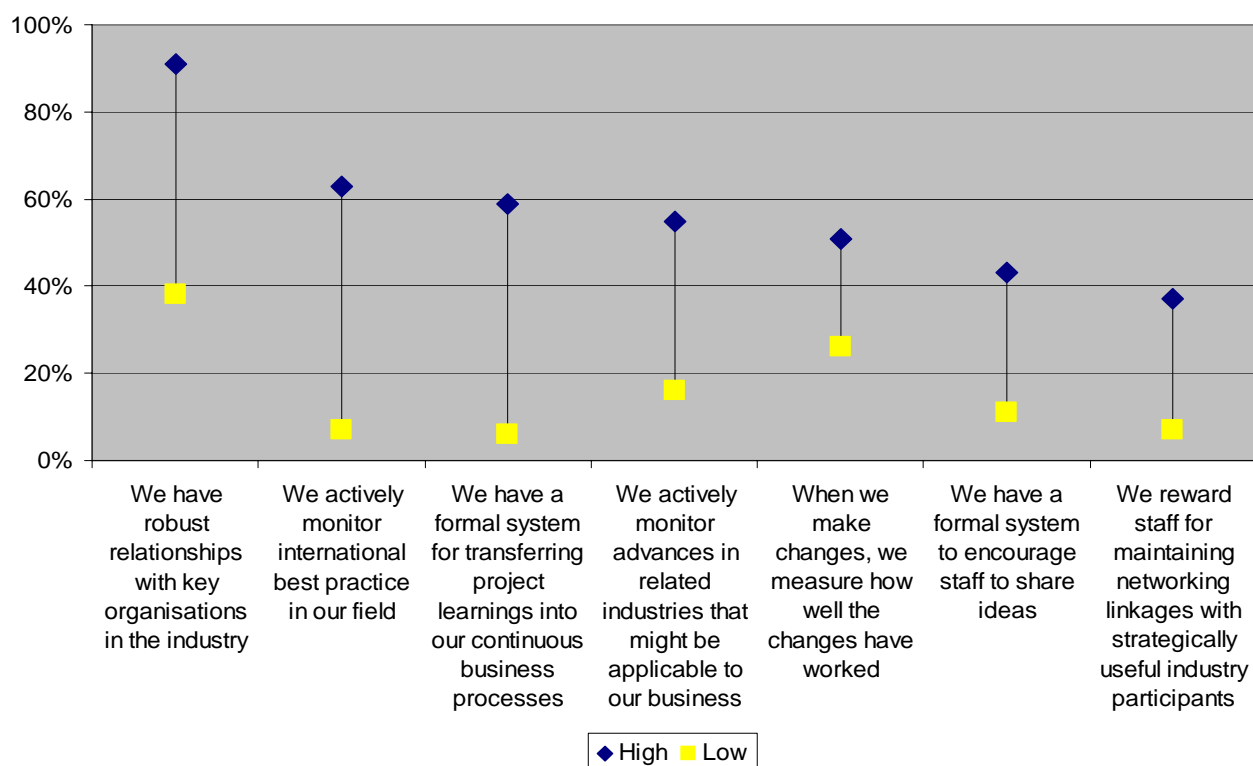
The gap between high and low innovators is roughly the same across all technology strategies. There is no one strategy that distinguishes high from low innovators. Similarly, the intensity of usage across strategies is ranked identically by both groups. Within both groups, businesses are much more likely to undertake capability development programs than R&D. Indeed, none of the low innovators undertook R&D. Although some research shows that organisational innovation (which does not typically involve R&D) can be just as critical to a firm's success as R&D (Hardie et al 2005), the dominant view still emphasises the lead role played by R&D in promoting successful innovation. (Bowns et al 2003). Low innovators can usefully look to increased R&D activity to improve business outcomes.

Figure 3: Percentage of Innovator Groups Using Marketing Strategies, Australian Construction Industry, 2004



High and low innovators place similar value on relationships with new and existing clients. Firm innovation levels are perhaps more influenced by the sophistication of the client; recent research shows that public-sector repeat clients make sophisticated demands and are key drivers of innovation (Manley and McFallan *in press*). The more demanding and experienced the client, the more likely it is to stimulate innovation in the projects it commissions (Barlow 2000). It may be that low innovators are not targeting demanding clients. Indeed, low innovators have less interest in reducing clients' costs than high innovators, which is contrary to the priorities of clients, as summarised during the Commonwealth Government's Action Agenda process (DISR 2004). Clients, particularly 'leading-edge' repeat public-sector clients, are commonly considered to exert influence on firms in a manner that fosters innovation (Seaden and Manseau 2001; Barlow 2000; Gann and Salter 2000; Nam and Tatum 1997; Kumaraswamy and Dulaimi 2001). Such influence is often manifested in their demands for outcomes that exceed business-as-usual. Low innovators may need to find the courage to expose themselves to this kind of pressure.

Figure 4: Percentage of Innovator Groups Using Knowledge Strategies, Australian Construction Industry, 2004



There are three knowledge strategies that are used much more intensively by high innovators: industry networking, international monitoring of best practice, and capturing project-based learnings. Industry relationships have a significant influence on innovation. The literature has found that industries with robust linkages between stages in the supply chain perform better than industries without such linkages, while firms with strong inter-relationships with related groups are similarly more likely to prosper than firms without such relationships (Anderson and Manseau 1999; Miozzo and Dewick 2002; Dubois and Gadde 2002). At all levels, industry relationships are important. At a more macro level, it is clear that participation in international networks increases the likelihood of a firm adopting/extending global best practice. At a more micro level, Gann (2001) suggests that project-based firms often struggle to learn between projects and have weak internal business processes. Effective networking appears to be a key driver of innovation capability.

Conclusions

Overall, the findings show that high innovators pay more attention to the business strategies emphasised in the literature as key drivers of innovation, than low innovators. The business strategy most clearly differentiating the two groups is ‘recruiting new graduates’; 69% of high innovators find this strategy highly important to the success of their businesses, compared to only 12% of low innovators. This probably reflects a greater interest in change, and may also reflect faster growth rates. The key role played by new graduates in driving industry innovation underlines the importance of robust support for researchers and educators within universities. In this light, the Commonwealth Government’s contentious higher education policies, which are currently being applied, are particularly problematic.

The most popular strategy adopted by high innovators is ‘actively encouraging employees to seek out improvements and share ideas’, although only half of them had a formal system in place to support this strategy. Nevertheless, high innovators were fifteen times more likely than low innovators to have introduced such a formal system. Another key finding of the research is the significant role played by networking and communication strategies in supporting innovation efforts, particularly in relation to inter-industry networking, international monitoring, and capturing project-based learnings.

It is noteworthy that the two most popular strategies for high innovators are both human resource strategies, while for low innovators the most popular strategies are marketing strategies. The reliance of high innovators on their employees underscores the importance of people in driving innovation and business success. Many innovation analysts concentrate on the role of technical factors in driving innovation – focusing for instance on R&D expenditures. The human resource finding here raises issues of employee motivation and trust which we plan to explore in future work.

Other plans for future work include looking into the nature of relationships *between* the business strategies, and investigating implications for the government and community sectors. In the meantime, businesses wishing to improve their innovation performance should find the results reported here useful. Learning from the behaviour of high innovators would seem to be an effective route to improved business performance, and indeed may be instructive for organisations and individuals in the government and community sectors interested in innovation.

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