INNOVATION CAPABILITY: EXPLORING THE FACTORS THAT MAKE UP THIS CONSTRUCT IN THE SERVICES SECTOR

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ABSTRACT

Innovation Capability (IC) describes the ability of a firm to support the development of new products, services, processes and systems. This research is part of a larger study to investigate IC in the services sector with the Australian hotel sector as the case study. A survey was carried out of 164 hotel owner-managers, primarily in South Australia, and this identified two key dimensions or factors of innovation capability that address operational aspects of these businesses. These capabilities are different to those that have been previously reported in the literature.

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INTRODUCTION

The underlying aim of this paper is to contribute toward the development of an innovation capability scale for the service sector. The Australian Hotel Industry is used as a basis toward achieving this. Innovation in the manufacturing sector is well reported and documented, and many factors have been highlighted that influence a firm’s innovation capability. However, innovation capability within the service sector is far less reported and remains an area that is under-examined. The research reported here examines assumptions made about the homogeneity of innovation capability across different types of industry sectors and finds that the capabilities that influence innovation in a service industry are markedly different to those that have been identified in the manufacturing sector.

The importance of innovation to economies and to individual organizations has been addressed in the literature as far back as Schumpeter (1934, p. 142). Writers such as Huber (1984) proposed that in the post-industrial age with increasingly complex and turbulent environments, organisations will need to rely to an increasing degree on innovation and experimentation for their survival and development. In this regard, more recent research has established a positive link between innovation and firm performance (Covin & Slevin 1989; Zahra & Covin 1995; Dess, Lumpkin & Covin 1997).

Innovation is the mechanism by which organisations develop value through new products, processes, and systems that are needed to respond to changing markets, technologies, and modes of competition (Utterback 1994; Dougherty & Hardy 1996). Innovation is important to firms because innovation and competitiveness are linked (Alvarez & Barney 2001). By itself, one-off innovation is not sufficient for competitiveness. Firms need to be able to innovate on a continuing basis (Kiernan 1996; Slater 1997). In addition, firms compete not just on new products but on their capacity to develop new products (Prahalad & Hamel 1990). Firms are therefore presented with the challenge to build their capacity to support innovation on a continuing basis and, in this way, develop competitive advantage.

For this reason, there has been increasing interest in identifying and understanding the attributes of firms that enable them to continuously support innovation (Damanpour 1991; Slater 1997). This has led to the development of “innovation capability” (IC) as a construct that describes the capacity of a firm to develop new products, processes, and systems (Prahalad & Hamel 1990). This capacity assists firms to compete in dynamic competitive markets. Research has shown that firms with IC have a sustained competitive advantage and use it to achieve higher levels of performance (Alvarez & Barney 2001).
Thus, it is important to understand IC so as to be able to assist firms to improve their ability to innovate and hence their abilities to survive and grow.

The relatively few published IC studies that have been undertaken have been in the manufacturing sector (Guan & Ma 2003; Yam et al. 2004), and these focused on product innovation. An Australian study (Terziovski & Samson 2007) found a positive relationship between a measure of innovation capability and firm innovation performance across 12 industry sectors.

However, the nature of activities in manufacturing and service organisations differ significantly, such as in changeability in immediate consumption of service outputs, and the interaction between service provider and customer, and "these differences would unequally affect both the determinants of innovation and the strength of their influence" (Damanpour 1991, p. 560). This supports the focus of this exploratory study on IC in the services sector. The services sector is represented by many subsectors including wholesale trade; retail trade; accommodation and food services; information, media and telecommunications; financial and insurance services; rental, hiring and real estate services; professional, scientific and technical services; administrative and support services; public administration and safety; education and training; health care and social assistance; arts and recreation services; and other services. (Australian Bureau of Statistics web site).

This research focuses on developing a service measure of IC using one particular service industry sector - the Australian hotel sector. The hotel sector is an important part of the Australian economy with 1,290 licensed hotels Australia-wide with five or more rooms as at December 2005. These employed 78,200 staff and generated annual revenues of AUD$3.049 billion from 14.1 million guest arrivals (ABS 2005b). Globally, the tourism and hospitality sector, of which the hotel sector is a part, has become the world’s largest industry at about 6% of the world’s gross national product and growing rapidly (Lerner & Haber 2001).

The hotel sector was chosen as the basis for this exploratory research because it is subject to rapid and continuing change and is highly competitive. Hotels are predominantly small businesses with the majority (65.1%) employing fewer than 20 persons (ABS 2005b), and they are considered to be not very innovative. In a recent Australian Bureau of Statistics (ABS) study of innovation in Australian industry, for example, the ABS concluded that businesses in the accommodation, cafés, and restaurants sectors (hotels overlap this sector) had the lowest rate of innovation of all of the sectors that were included in the study (ABS 2005a).

There is little published research on innovation in services in general and in the hotel sector in particular (Ottenbacher & Gnoth 2005). The studies in this sector have been largely carried out in the United States and Europe, and have typically investigated large hotel chains and large individual hotels to identify general principles of innovation management for new products or services (Jones 1996; Ottenbacher & Gnoth 2005). Other studies have been carried out into best practice in hotels, with the aim to ‘foster innovation in current management thinking’ (Dubé et al. 1999, p. 14) in areas including architecture, environmental management, food and beverage management, information technology, marketing, hotel operations, human resources and service quality (Enz & Siguaw 1999; Siguaw & Enz 1999d, c, a, b, e; Dubé et al. 2000; Enz & Siguaw 2000b, a). Although these studies included hotels ranging from budget through economy to deluxe, the best practice ‘champions’ that were selected from 115 in-depth cases came largely from well-known and well-resourced chains in the United States. This makes the findings from these studies less applicable to smaller groups and to individual hotels with fewer resources.

There are no published studies of IC and the IC-firm performance relationship that focus specifically on the services and hotel sectors, although there are conceptual papers addressing the “innovation orientation” of hotels (Siguaw, Simpson & Enz 2006; Simpson, Siguaw & Enz 2006), and these are discussed below. This research, therefore, contributes to building an improved understanding of innovation in the hotel sector specifically. More broadly, it provides the basis for future research to develop IC measures for services based industry sectors.

The paper proceeds as follows. First, we discuss the IC construct and the underlying theoretical foundations of the research. Second, we provide an overview of the research method and results. Finally, we discuss the results achieved in terms of the factors identified as making up IC for this sector.
THE INNOVATION CAPABILITY CONSTRUCT

Innovation activity in the firm involves the interaction between three key aspects of the firm’s operations. These include the resources of the firm including knowledge, processes and products, the firm’s external linkages with societal and market changes, and the creative input of individuals in the firm (Trott 2005).

IC describes the attributes that a firm needs in order to support this innovation activity. These attributes give it the ability to quickly and successfully adopt new processes and methods, and develop and introduce new and improved products to compete more effectively in a rapidly changing environment. Because innovation itself is a complex activity, IC has many dimensions or components and draws on a wide range of assets, resources, and abilities (Sen & Egelhoff 2000).

Hurley and Hult (1998, p.44) define the capacity to innovate as “the ability of the organization to adopt or implement new ideas, processes or products successfully”. They also propose that “firms that have a greater capacity to innovate are able to develop a competitive advantage and achieve higher levels of performance”. Lawson and Samson (2001, p. 384) define IC as “the ability to continuously transform knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders”. This is the definition that is used in this research.

Innovation capability has similarities with “innovation orientation”, that has been described “as a set of understandings about innovation built into the fabric of a firm’s knowledge structure that influences organizational activities, but not as a specific set of normative behaviors” (Siguaw, Simpson & Enz 2006, p. 560). In particular, innovation orientation is proposed to develop a set of ‘innovation competencies’ including resource allocation, technology, employee competency, market competency and operations competency. It is also proposed that there should be a positive relationship between innovation orientation and innovation performance as well as overall business performance. However, there are no published empirical studies to develop and test this construct and to compare it with innovation capability. For this reason, this research focuses on innovation capability.

THEORETICAL FOUNDATIONS

Several different theoretical approaches have been used to create measures to operationalise the IC construct including technical product innovation, open systems theories of the firm, organisation innovation theories, the resource based view of the firm, and dynamic capabilities theories. The specific theories are reviewed below, with particular attention to the number of dimensions and items proposed by researchers for specifying the innovation capability construct.

Product and Service Innovation and IC

Cormican and O’Sullivan (2004) drew on models of technical product innovation, such as the New Product Development (NPD) model developed by Cooper and others (Cooper 2001), to develop a “product innovation management scorecard” based on a study in 8 enterprises of the reasons for failure of new product projects. The authors proposed a scorecard comprising 50 items grouped into 5 dimensions of strategy and leadership, culture and climate, planning and selection, structure and performance, and communication and collaboration.

Chiesa, Coughlan et al (1996) proposed a “technological innovation audit” that was based on a similar model of technical innovation process (or NPD process) that was in turn influenced by the EU Quality Award framework. This approach resulted in a scorecard that included two to four levels of detail (items) of analysis under each of the following 5 dimensions: technology acquisition, leadership, resourcing, systems and tools, and increased competitiveness. This was pilot tested with eight enterprises.

A study in the field of service innovation included an innovation capability measure with one dimension and five items (Grawe, Chen & Daugherty 2009). This was a parsimonious scale based on the literature and on consultation with industry experts.
Open Systems Theory of the Firm and IC

Other authors have drawn on the open systems theory of the firm to propose a definition of innovation capability that integrates the human aspects of the organisation with its technology dimensions (Ettlie 1983; Judge, Fryxell & Dooley 1997). This approach treats organisations as open systems that receive inputs and produce outputs through the interactions of its members that are influenced by the environment and the organizational culture (Katz & Kahn 1978; Lawrence & Lorsch 1986). In particular, changes in one component of the organisation system can lead to changes in others (Katz & Kahn 1978).

The open systems theory of the organisation has been used by researchers to examine the behaviour and the operation of teams in the work environment as a way of understanding the factors driving innovation in companies. For example, West and Anderson (1996) developed and tested an inputs-processes-outputs model of group innovation that identified the importance of group (or team) capabilities and process in determining the level of innovation output. Eckermann, Nagalingam et al (2002) developed a measure of “five cultural capabilities that an organisation must embrace in fostering innovation” (Eckermann, Nagalingam & Lin 2002, p. 727). The 5 dimensions with 79 items proposed by Eckermann et al (2002) included visionary, knowledge, entrepreneurial, social, and synergistic capabilities. This scale was validated using a sample of 84 manufacturing companies in South Australia.

Organisation Innovation Theories and IC

Tuominen and Hyvönen (2004) developed a measure of innovation capability based on organisation innovation theories, drawing on the literature addressing firm strategy, structure and competitive position as well as on empirical evidence. The authors proposed that firms pursue two separate dimensions; the first being technological innovation (including 4 items relating to product and technical processes that create value for customers) and the second being managerial innovation (including 6 items relating to strategy development and organisational management that create value for the firm). The ten individual items used in this study, however, are actually measures of the innovative behaviour of the firm rather than measures of its capability. This instrument is therefore of limited value in investigating the “innovation capability” of firms (as defined in this research).

Resource Based Theory of the Firm and IC

The resource based theory of the firm proposes that a firm’s resources are important in supporting its competitive advantage and in implementing corporate and marketing strategy. To be successful, a firm needs to have resources that are valuable, are rare, are difficult for other companies to imitate and are also difficult to substitute (Barney 1991). A capability can be defined as an integration of the firm’s different resources that it manages to take advantage of external business opportunities (Peteraf 1993), and it is the superior resources and capabilities that will allow the firm to be competitive in its environment.

Using the resource based theory, IC can be described as a special asset of a firm that gives it the ability to quickly and successfully adopt new processes and methods and develop and introduce new and improved products to compete more effectively in a rapidly changing environment (Lawson & Samson 2001).

Adler and Shenbar (1990) defined IC in terms of 5 dimensions of resources or capacities. These include the ability to develop new products that meet market needs, the capacity to apply the appropriate processes to produce these new products, the ability to adapt product and process technologies to meet future needs, and the ability to respond to unexpected opportunities arising from technology change and competitor activities. Christensen (1995) proposed 4 distinct and generic categories of assets for technological innovation. These included scientific research assets, process innovative assets, product innovative application assets, and aesthetic design assets. He also proposed that successful innovation needs the combination of more than one of these assets that are spread over different parts of the firm.

Capaldo et al (2003) proposed a method for evaluating IC in a firm using 6 resource sets and 22 items. These dimensions included entrepreneurial resources, human resources, and resources arising from external linkages for each of the two areas of market innovation capability, and technological innovation capability. This approach was illustrated by three case studies using qualitative assessment of scores of the businesses on the dimensions used. The value of this approach appears to be limited as the measures consider only a very limited range of firm resources.
Guan and Ma (2003) used the resource based view of the firm to develop a detailed operational representation of IC in terms of a set of 7 “innovation drivers” specified by 70 items. This measure was validated using a sample of 213 Chinese industrial (manufacturing) firms. A positive relationship was found between the dimensions of IC and export performance except for the dimension relating to manufacturing capability. In addition, the study identified the different impact of two groupings of innovation capability. These were a set of core and complementary innovation assets, using a framework proposed by Teece (1986). This approach with its published measures lends itself to replication and to benchmarking studies in the manufacturing sector.

A study of shipping services used an innovation capability measure of one dimension and 5 items that was drawn from the literature (Yang, Marlow & Lu 2009).

Dynamic Capabilities Approach and IC
The dynamic capabilities approach builds on the resource based theory of the firm. It can be defined as “the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Teece, Pisano & Shuen 1997, p. 516). Competitive advantage is described as a function of the process that is particular to the firm by which its assets can be deployed and redeployed in changing market circumstances. Lawson and Samson (2001) draw on this framework to propose a model of IC that is made up of a number of processes within the firm. These are grouped into 7 major dimensions that include: vision and strategy, harnessing the competence base, leveraging information and organisational intelligence, creativity and idea management, organisational structure and systems, culture and climate and the management of technology. A study using these dimensions (with the addition of an 8th dimension of “possessing a market and customer orientation” and including a total of 101 items), was carried out with 220 businesses across 12 industry sectors and found a positive relationship between the measure of innovation capability and firm innovation performance (Terziovski & Samson 2007).

Tang (1998) developed an “integrative” model of innovation in organisations that was validated using a sample of 871 professional engineers. This study resulted in 9 dimensions with 46 items, and these dimensions included leadership, support mechanisms for innovation, task variety and autonomy, group attitude and behaviour towards innovation, integration between functional areas, project screening and selection, project management, staff knowledge and skills, and information gathering and communication. A positive relationship was found between this measure of innovation capability and respondents’ perceptions of their company innovation effectiveness and innovation effectiveness (Tang 1999). The measure developed and published by Tang has been adapted and applied in a study of the relationship between firm innovation capability and the implementation of total quality management (Perdomo-Ortiz, Gonzalez-Benito & Galende 2005).

Romijn and Albaladejo (2002) developed a model comprising two major inputs into product innovation capability. The first set of inputs included internal sources, including three dimensions (and nine items) encompassing the professional background of the founders or managers, the skills of the workforce and a measure of internal R&D efforts to improve technology. The second set of inputs included external sources comprising three dimensions (including 11 items) of intensity of networking, proximity advantages relating to networking, and receipt of business support from government and industry bodies. The model was piloted with 33 electronics and software firms and a number of these factors were found to be related positively to measures of innovative performance.

One of the very few studies of innovation capability in the services sector used five dimensions as the framework for a qualitative study of public sector organisations, and these dimensions included human, relational, organisational, physical, and monetary assets (O’Connor, Roos & Vickers-Willis 2007).

Literature Summary
The number of innovation capability dimensions and items identified in the literature are summarised in Table 1. The differences in the number of dimensions used in these studies, and the lack of consistency in their nature and definition (as described above), reflect the different theoretical starting points that these studies used to derive these dimensions of innovation capability, and possibly their different industry sectors. The range of dimensions and number of items identified supports the proposition that “there is no clear agreement of what the real variables of innovation capability might be” (Lawson & Samson 2001, p. 389). In contrast, this study has used a grounded approach that
investigated innovation behaviour in businesses to arrive at a number of dimensions and items that reflects innovation practice in small service businesses.

Table 1: Dimensions and numbers of items in innovation capability scales

<table>
<thead>
<tr>
<th>Reference</th>
<th>Industry sector</th>
<th>Empirical or conceptual</th>
<th>Number of dimensions</th>
<th>No. of items in scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Cormican &amp; O'Sullivan 2004)</td>
<td>Technology</td>
<td>Empirical</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>(Chiesa, Coughlan &amp; Voss 1996)</td>
<td>Manufacturing</td>
<td>Empirical</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>(Grawe, Chen &amp; Daugherty 2009)</td>
<td>Electronics</td>
<td>Empirical</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>(Eckermann, Nagalingam &amp; Lin 2002)</td>
<td>Manufacturing</td>
<td>Empirical</td>
<td>5</td>
<td>79</td>
</tr>
<tr>
<td>(Tuominen &amp; Hyvönen 2004)</td>
<td>All sectors</td>
<td>Empirical</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>(Adler &amp; Shenbar 1990)</td>
<td>Defence</td>
<td>Conceptual</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>(Christensen 1995)</td>
<td>Technology</td>
<td>Conceptual</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(Capaldo et al. 2003)</td>
<td>Software</td>
<td>Empirical</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>(Guan &amp; Ma 2003)</td>
<td>Manufacturing</td>
<td>Empirical</td>
<td>7</td>
<td>70</td>
</tr>
<tr>
<td>(Yang, Marlow &amp; Lu 2009)</td>
<td>Shipping</td>
<td>Empirical</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>(Lawson &amp; Samson 2001)</td>
<td></td>
<td>Conceptual</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>(Terziovski &amp; Samson 2007)</td>
<td>12 sectors</td>
<td>Empirical</td>
<td>8</td>
<td>101</td>
</tr>
<tr>
<td>(Tang 1999)</td>
<td>Professional engineers</td>
<td>Empirical</td>
<td>9</td>
<td>46</td>
</tr>
<tr>
<td>(Romijn &amp; Albaladejo 2002)</td>
<td>Electronics, software</td>
<td>Empirical</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>(O'Connor, Roos &amp; Vickers-Willis 2007)</td>
<td>Public sector</td>
<td>Empirical</td>
<td>5</td>
<td>(Qualitative study)</td>
</tr>
</tbody>
</table>

RESEARCH METHOD

This research is part of a larger project into IC and the IC-firm performance relationship in service businesses.

Research Background
The research described in this paper is based on earlier qualitative research (Balan, Lindsay & O'Connor 2009), in which interviews with 51 hotel owner managers around Australia provided data for a grounded analysis of factors that these participants identified as important in relation to innovation activities. In particular, this analysis identified a total of 38 distinct categories of statements relating to innovation activity. In addition, a further eight categories were drawn from statements relating to barriers to innovation. These categories were then grouped into nine separate dimensions:

- alliances (with organisations such as external agencies, other hotels and suppliers)
- customer intelligence (including customer feedback, customer knowledge)
- environmental awareness (including awareness of constant change, and awareness of competition, regulations, business trends, market position, technology changes, foresight)
- entrepreneur characteristics (including the manager’s personal knowledge, knowledge about the business, leadership and lifestyle)
- experimentation (including proactiveness)
- human resources and human capital (including having good operations, good staff, job design, staff incentives and motivation, team culture, team knowledge, formal education, formal skills training, in-house training and organisation structure)
- operations (including management systems and quality control)
- resource awareness (including financial investment and resource management)
- strategy and planning (including planning, vision, strategic view of the business and portfolio management)

Research Design
In this research, each of these categories was used to develop a total of 46 innovation capability questionnaire items. Participants were asked to assess their business in relation to each item, using a
single statement, 11 point Likert scale, ranging from "0 = strongly disagree" to "10 = strongly agree". The number of points was based on findings that 11 point scales have higher validity coefficients than seven point scales (Alwin 1997), that 11 point scales are less affected by method variance (Darbyshire & McDonald 2004), and that a meta-analysis of published research studies showed that there was “a positive relationship between the number of scale points and reliability over the normal range of scale points” (Churchill & Peter 1984, p. 366). In addition, a scale of 0 to 10 allows the graphical presentation of results on a scale with which people are familiar, and this was an important aspect of the individualised benchmark reports that were sent to each hotel manager completing the questionnaire.

Participants
A questionnaire including these 47 items was pilot tested by sending to the 51 hotel owner-managers who had been interviewed in the first qualitative stage of this study. This resulted in 5 questionnaires being received from South Australian hotels, and 7 from hotels in other states (all of these responses were included in the subsequent analysis)

After minor changes to the questionnaire based on feedback from the pilot participants, the questionnaire was sent to hotels in South Australia that were members of the South Australian branch of the Australian Hotels Association (AHA), which is the industry partner in this research project. The South Australian branch posted a printed copy of the questionnaire to the members with whom the association normally communicated by fax, and e-mailed two copies of the questionnaire (one copy in the form of an Excel spreadsheet, and the other as an Acrobat document) to the members with whom the association normally communicated by e-mail.

The sample frame included 424 hotels in South Australia that could be described as "general hotels" that were either independent or members of small groups. This sample frame did not include the four or five-star hotel chains, or the larger chains of general hotels owned by Coles or Woolworths/ALH.

The association distributed a reminder e-mail or fax message as part of its regular communications with its members. This activity resulted in 40 completed questionnaires (9.4% of the sample frame).

The association also provided the researchers with a membership list including the names of managers and of hotels and their addresses and telephone numbers. Phone follow-ups were undertaken over a two-month period, and these produced a further 112 completed questionnaires (26.4%).

The survey therefore included a total of 157 questionnaires from South Australian (36.8% of the sample frame), and 7 responses from the pilot of the questionnaire in other states.

As an incentive to complete the questionnaire, participants were offered a detailed report for their particular hotel with their results benchmarked against the average.

RESULTS

The survey sample was a good representation of the population (sample frame) in terms of the geographic distribution of hotels, as shown in Table 2.

Table 2: Geographic distributions of the population of hotels and of the survey sample

<table>
<thead>
<tr>
<th>Region in South Australia</th>
<th>Population (sample frame)</th>
<th>Survey sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Business District</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>Capital city suburban</td>
<td>31%</td>
<td>27%</td>
</tr>
<tr>
<td>Country and regional</td>
<td>59%</td>
<td>57%</td>
</tr>
<tr>
<td>Anonymous returns</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The survey was to be completed by the hotel manager, and this was by and large the case, as shown in Table 3.
Table 3: Position held by person completing the questionnaire

<table>
<thead>
<tr>
<th>Position held by respondent</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotel manager, general manager, venue manager, site manager</td>
<td>83.5%</td>
</tr>
<tr>
<td>Director/owner/partner</td>
<td>13.4%</td>
</tr>
<tr>
<td>Commercial manager, marketing manager, operations manager</td>
<td>3.1%</td>
</tr>
</tbody>
</table>

Respondents were predominantly male (76.2%).

Research method
As the questionnaires were received, the data was checked and consolidated, entered into an Excel spreadsheet, and then converted into an SPSS datafile.

A major purpose of this research was to reduce the number of items to measure innovation capability. This was carried out using structural equation modelling (SEM), using Amos 17.0

Each dimension that had been identified in the previous stage of the research was separately analysed as a one-factor congeneric measurement model, and this resulted in a reduction of the number of items for those dimensions for which the SEM model would run. The Cronbach Alpha for the reduced number of items in each dimension was then checked, and items removed as appropriate. This resulted in an overall reduction from 46 to 27 items.

The 27 items in 9 dimensions were then combined as shown in Figure 1.

Figure 1: Reduced model with 9 Dimensions and 27 items
This model was run with items being removed as appropriate, based on their residual weights. As items were removed, dimensions were also deleted at the stage that they had only one item attached to them. This process resulted in a two-factor solution, as shown in Figure 2.
Details of the dimensions and their items are included in Table 4.

Table 4: Details of the two-dimension solution

<table>
<thead>
<tr>
<th>Original Dimension</th>
<th>New Dimension</th>
<th>Item</th>
<th>Item Number</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Manager Attributes</td>
<td>6 Management Commitment</td>
<td>Our management team is completely engaged, and put in a lot of hours, in running this business</td>
<td>19</td>
<td>.771</td>
</tr>
<tr>
<td>6 Manager Attributes</td>
<td>6 Management Commitment</td>
<td>Our management team has a very good grasp of the details of the operations of the business</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>7 HR &amp; Human Capital</td>
<td>9 Learning and Monitoring Systems</td>
<td>Our staff all receive comprehensive in-house training (apart from training required by regulation)</td>
<td>30</td>
<td>.790</td>
</tr>
<tr>
<td>8 Resource Awareness</td>
<td>9 Learning and Monitoring Systems</td>
<td>We continually invest in upgrading and improving our systems</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>9 Operations</td>
<td>9 Learning and Monitoring Systems</td>
<td>We are very good at using our information systems to help us to monitor our business</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>9 Operations</td>
<td>9 Learning and Monitoring Systems</td>
<td>We have very clear operating procedures to make sure that our business runs very efficiently (for areas other than those covered by regulations)</td>
<td>37</td>
<td></td>
</tr>
</tbody>
</table>

This grounded approach that investigated innovation behaviour in these small service businesses indicates that innovation capability can be described by two dimensions that reflect management commitment and grasp of the business, and the learning and information monitoring systems.
DISCUSSION

As a general comment, this exploratory research identified IC factors not previously identified in IC scales developed for the manufacturing sector. This suggests that there may be major differences between manufacturing IC and service industry IC. In addition, because there are many types of services sectors, it may also be that IC differs across service sectors thereby requiring different IC scales pertinent to different service sectors. This, however, is beyond the scope of this research. The IC scale developed in this research, however, is a step toward a better understanding of IC across a range of service sectors.

Whereas prior studies developed IC scales primarily based on a review of the literature, the approach adopted in this research was more comprehensive in that while the relevant literature was reviewed and formed a context for the research, scale development was also informed by the relevant participant feedback, commentary, and questionnaire responses. Thus, the scale developed in this research emerged through a comprehensive modified grounded theory process involving incorporation of aspects of the literature, depth interviews with hotel managers, development of a questionnaire which was piloted, and then the use of the modified piloted questionnaire to collect data from the target population.

After starting with 46 items spread over nine dimensions (based on the literature review and depth discussions with hotel managers and owners), these were distilled down to a two-factor, 6 item solution. The results suggest that in the hotel industry, IC is founded upon manager attributes and operations issues. Key manager attributes include: management hours committed to the business, and grasp of the details of running the business. Key operations issues that are important in facilitating innovation include: staff training, systems structure, improvement and implementation.

The nature of these dimensions appear to be largely operational. That is, they seem to reflect that what is important in innovation is to have a smoothly running business with adequate management, trained staff, up-to-date systems that staff know how to use, and where management knows how to run the business competently and smoothly. These capabilities appear to be consistent with the nature of innovations that were identified in the first qualitative stage of this study; these were primarily incremental and continuous improvement innovations to build existing revenue streams, with very few examples of innovations that resulted in new revenue streams (radical or “newstream” innovations, (Kanter 1989)). These therefore appear to be the capabilities needed to support continuous innovation (incremental improvement) across existing business activities, rather than breakthrough or radical innovation. This conclusion supports the suggestion that “there may be different emphasis on elements required for radical versus incremental innovation” (Lawson & Samson 2001, p. 396). This conclusion also supports the proposition from the operations management field that there are two different “innovation management archetypes” with different capability requirements (Bessant et al. 2005, p. 1371). That is, the research in this study has identified the capabilities needed to support “steady state” innovation, rather than discontinuous innovation.

Although we believe the approach adopted in this research was robust, we believe that the credibility of the final IC scale would benefit from data collected via a national survey. As such, the next stage in this research is to undertake a national survey of hotel managers to validate the IC model developed in the stage 1 research. This is underway in Australia with the support of the national Australian Hotels Association.

Research Contributions

The research makes a contribution in two ways. At the theoretical level, it contributes toward our understanding of IC in the hotel services sector. Previous studies have focused on developing IC scales primarily for the manufacturing sector. This research therefore contributes toward a more holistic theory of IC. At the practical level, the research provides the basis for the development of an IC diagnostic instrument that could form the basis for practitioner run workshops in helping hotels understand areas for improvement in their operations in terms of innovation capability. Since there is a strong link between innovation and firm performance, such workshops may be of interest to government policy makers who look toward developing policy that contributes toward developing the industry.
SUMMARY

The purpose of this research was to contribute toward the development of a services sector IC scale. It is acknowledged that there are many services sectors and that there may be a need for the development of IC scales for different service sector groups. To date, while IC scales have been developed for the manufacturing sector, there is a dearth of service sector IC analysis and scale development.

The approach adopted in this research is to contribute toward a better understanding of IC in the services sectors by starting with scale development in one services sector: the hotel sector. Using a modified grounded theory approach based on existing theory but augmented with depth interviews with hotel managers, an IC scale for the hotel services sector was developed, piloted, and tested using a sample derived from the population of hotels in South Australia. The result was a two factor-six item solution. The next stage of the research is to undertake a national survey of hotel managers to validate the model.

REFERENCES


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