

THE IMPACT OF ICT ON KNOWLEDGE INTENSIVE SERVICES: AN AUSTRALIAN EXPERIENCE

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ABSTRACT

This paper reports on the impact of ICT in general, and the Internet in particular, on the Business and Professional Services Industry in Australia. It illustrates some different ways in which modern Information and Communication Technologies, especially the Internet are used to access markets, build networks and share information. Examples from banking, telecommunication, architecture, legal, marketing, and accounting are used to illustrate the report. Finally, main issues and challenges for the future are identified.

1. INTRODUCTION

The twenty-first century is seen as closely associated with a new industrial order in which service-oriented, virtual and agile organisations with empowered capable workforces will be the centrepiece. Service-oriented organisations are focussed on value creation through the enrichment and retention of individual customers. They provide services which are knowledge-based and which embody new types of social relationships with customers and resource providers.

Service industries have become increasingly important for world economies both in terms of output and employment. A recent OECD report shows that about two thirds of GDP growth in the member countries resulted from growth in the services sector. Most employment growth was also in services (OECD, 2001).

Traditionally, service sectors have been characterised by poor productivity and low levels of innovation. However, this is rapidly changing. Most recent evidence on performance of the service sector shows that services are increasingly a dynamic part of the economy (APEC, 2001). Many experience rapid productivity growth, some are innovative and the new jobs in the services sector increasingly require skilled personnel.

An important driver of more productive and innovative services has been the higher level of investment and the application of information and communication technology (ICT). As a result, service companies have greater access to markets. This in turn creates greater competition, which then forces organizations to raise their efficiency or innovate to respond to their competition. ICT in particular, enables productivity improvements in many sectors including transport, communications, wholesale and retail trade and financial services. Knowledge intensive services such as R&D have become more innovative as a result (Kavanagh, 2001).

The main objective of this study is to examine the impact of ICT on one specific service industry segment, Business and Professional Services (BPS), as it is believed that this segment is particularly relevant for a knowledge-based economy in Australia.

2. THE ROLE OF BUSINESS AND PROFESSIONAL SERVICES IN OVERALL ECONOMY

Business and Professional Services (BPS) can be described as the provision of human value-adding in the form of labour, advice, managerial skill and intermediation; the use of intellectual capital or intangibles to create value; and/or the conversion of knowledge into something valuable such as intellectual capital (DITR, 2001).

BPSs include a range of services – from legal, accounting, engineering and architecture professions to business management and computer services. The transformation of knowledge into valuable advice is what defines the almost unique role of business and professional services. Essentially, firms in this sector solve problems for their clients.

BPSs are closely associated with the overall economic performance of the economy. They have a dynamic relationship with many other sectors of the economy and add considerable

value. BPSs play a direct role in enabling other economic sectors to become more innovative and in raising productivity.

The BPS industry is one of the fastest growing industries in Australia. According to the recent BRW report (Kavanagh, 2001) property and business services have now ended the 50 year long period where manufacturing was the biggest contributor to GDP. In addition, service industries continue to drive jobs growth. Micro-economic reforms, higher rates of investments in technology and greater job output all contributed to the current period of productivity improvement. According to the same report, there is little hope of halting the decline in those regions that miss out on these opportunities.

3. ICT IN AUSTRALIAN BUSINESS AND PROFESSIONAL SERVICES

Information and Communication Technologies have already had a major impact on all aspects of the service economy in Australia. It is expected that future trends in ICT will further affect how the service sector evolves. Although the exact outcomes are currently difficult to determine, three main factors appear to be particularly important: (i) disintermediation associated with e-commerce and the Internet, (ii) services virtualisation and (iii) disembodied services (OECD, 2001).

With the rise of the e-commerce and the Internet, firms in the service sector can deal more directly with customers without any need for middlemen. By interacting electronically, firms can gain more knowledge about their customers' wants and concerns, and also address post-purchase requirements. With respect to virtualisation, the key issue is how much physical presence is required, and to what extent services need to be co-located with consumption. This may vary depending on the type of service company. Physical presence and face-to-face contact may also remain important for some aspects of knowledge sharing and establishment of trust and friendship. Finally, the rise of the Internet and intranets as new instances of disembodied innovation, is expected to have a big impact on new forms of service organisation and delivery.

The small nature of BPS in Australia affect its resource constructs (DITR, 2001). As a general rule smaller firms have no adequate resources to exploit advantages. However, there is growing pressure to compete through the use of e-commerce. The recent Yellow Pages survey shows that nearly all companies in the sector own a computer and use it, and nearly all are connected to the Internet and use it.

Using e-commerce, professional services firms are able to effectively utilise their intellectual property to service clients remotely. However, there are a number of factors that determine how suitable a particular industry is to the World-Wide Web (WWW). These factors include: (i) the importance of speed to market in the particular industry, (ii) whether the WWW is friendly in terms of the type of knowledge required and (iii) the difference in relative wage rates of competing professionals.

The levels of suitability differ among accountants, lawyers, management consultants, engineers and software developers. Accountants may benefit from codified knowledge, lawyers and management consultants from high speed delivery, engineers and software developers from all aspects of WWW. The following section provides examples of successful

ICT based BPS in Australia collected from various sources (Handzic, 2002; Rollo and Clarke, 2001; DITR, 2001; Standards Australia, 2002).

4 EXAMPLE OF ICT USE BY AUSTRALIAN BPS

The *Westpac Bank* ranks among the top ten companies on the Australian Stock Exchange. The Bank boasts one of the largest centralised Oracle Financial systems in the world, and relies on an intranet and web-enabled Oracle Financial Analyser software to provide critical financial performance information to its managers. Westpac has taken advantage of the latest technology to develop a system known as Connect to record and store all of its core reports in a globally distributed database. Connect captures key contacts and automatically directs new information and news about customers to the relevant people in the Bank. The benefit of the Bank's ICT strategy can be seen in the high percentage of Australia's top companies' which have nominated Westpac as their preferred banking partner.

Telstra Corporation is the largest telecommunications company in Australia, and the most significant company in the high-technology sector in the Australian economy. The company has launched a number of successful "KnowHow" initiatives (iVelocity, iRadio, 2HoursofPower, WebLessons, WebLectures, iKnowAllQuiz) to increase sales of its products and services. The role of these technology-enabled initiatives is to rapidly build and transfer knowledge to the sales force about the company's emerging products, services, and business solutions. The monetary value of KnowHow assessed by internal review indicates estimated savings of millions of dollars per annum through the ability to find quality information more rapidly, minimisation of duplicate creation of sales tools, and avoidance of duplicate training developments.

Among other interesting ICT supported knowledge services at the national level, is the first *Australian Government* web-enabled building project for the design of the Australian embassy in Berlin. Using web-collaboration tools, Australian architects supplied drawings to Berlin based counterparts handling refurbishment. In the legal profession, *OZ Netlaw* is a community based legal practice providing free information about the Internet and ecommerce related law. *OZeTrain* is an online marketplace for professional training services. The *Australian Securities and Investments Commission* and the *Australian Taxation Office* have e-enabled a number of routine tasks that formerly required professionals to perform. However, in the context of software services, Australian firms offering competing services are challenged by India as a low cost source, and there will be a need for these firms to identify and exploit any and all competitive and comparative advantages available to them.

5. ISSUES AND CHALLENGES FOR FUTURE

The brief outlines of various ICT initiatives among local BPS companies in Australia presented earlier when taken together reveal some interesting trends. The most extensive initiatives involve large and often geographically-distributed organisations using ICT to attempt to enhance the distribution of various business information or improve access to advice from internal experts for particular groups of employees. The information distributed ranges from customer information through to information about new products and services. These initiatives can be seen as organisations striving for productivity improvements by streamlining their internal information flows and knowledge transfer mechanisms. Similarly, the Australian Government's web-enabled building project shows ICT being used to enhance inter-organisational information flows between collaborating professionals. However, the ICT

initiatives that directly support either better access to markets or better interactions with clients appear to be comparatively smaller and generally provide less functionality than in-house or collaborative ones.

Although for particular client-focussed services there may be compelling reasons for face-to-face service provision rather than technology-enabled, this is certainly not the case for all client-focussed business and professional services. It does seem that many BPS organisations currently lack confidence in ICT in terms of supporting client interactions or access to markets. This situation appears to be prevalent in other Australian business sectors such as retailing (Sauer and Burton, 1999) and insurance (Costello and Tuchen, 1998), both of which have much more tangible or codified products compared to many of those in the BPS sector. It is likely that a lack of appropriate business models for ICT service provision to clients is as much of a problem in the BPS sector as related issues are in the retail sector (Sauer and Burton, 1999). The apparent caution of BPS organisations may also be related to perceived security concerns with Internet technologies themselves which, from time to time, are heavily publicised when specific problems or breaches occur (Long, 1998; Australian PC World, 2002).

The adoption of ICT to improve in-house operations undertaken by some of the larger BPS organisations should also allow them to develop greater understanding of how this technology can be effectively used and managed. Once internal use of ICT is fully established and mature, these organisations are likely to be at the forefront of providing ICT-enabled services to their clients. Because of their size, these organisations are also likely to have the infrastructure to resolve many Internet security and privacy concerns. This would likely be achieved by implementing or fully utilising encryption techniques and secure systems, such as Telstra's SureLink for online financial transactions (Long, 1998), as well as supporting these facilities with ongoing monitoring. Smaller BPS providers would need to form alliances with third party technology support companies to offer comparable services.

Although the supply of ICT-supported business and professional services is currently limited, such approaches appear particularly well suited to service delivery in rural Australia. Indeed, surveys indicate that geographically-isolated small businesses such as farms are acutely aware of their need for improved communication services, such as broadband (Madden *et al*, 2000), through which ICT-enabled business and professional services could be supplied. Hopefully in the near future, the upgrading of rural communication networks will prompt BPS organisations to begin offering at least some of their client services via the Internet or extranets to help satisfy the needs of rural businesses.

6. REFERENCES

APEC (2001). *The New Economy and APEC*. Singapore: Asia Pacific Economic Cooperation Secretariat.

Australian PC World (2002). "Computer crime wave strikes Australia". *Australian PC World*, July, 14(1).

Costello, G.I. and J.H.Tuchen (1998). "A comparative study of business to consumer electronic commerce within the Australian insurance sector". *Journal of Information Technology*, 13, 153-167.

DITR (2001). *The Internet's Impact on Global Supply Chain: The opportunities and challenges for Australian industry*. Department of Industry, Tourism and Resources (DITR), Australia.

Handzic, M. (2002). *A Review of Knowledge Management Practices*. SISTM Research Information Paper Series No: RIPS2002-B. Sydney, Australia: School of Information Systems Technology and Management, University of New South Wales.

Long, G. (1998). "The new big thing". *Australian PC World*, March, 62(4).

Kavanagh, J. (2001). "The State of the Nation: Fastest, States, Biggest, Productivity". *Business Review Weekly*, March 23, 62-78.

Madden, G., S.J.Savage, G.Coble-Neal, and P.Bloxham (2000). "Advanced communications policy and adoption in rural Western Australia". *Telecommunications Policy*, 24, 291-304.

OECD (2001). *Innovation and Productivity in Services*. France: Organisation for Economic Co-operation and Development (OECD) Publications.

Rollo, C. and T.Clarke (2001). *International Best Practice: Case Studies in Knowledge Management*. Standards Australia International Limited.

Sauer, C. and S.Burton (1999). "Is there a place for department stores on the Internet? Lessons from an abandon pilot". *Journal of Information Technology*, 14, 387-398.

Standards Australia (2002). *Knowledge Management Case Studies*. Standards Australia International Limited.