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**THE USE OF OFFSHORE LABOUR BY AUSTRALIAN
FIRMS USING EWORK:
OPPORTUNITIES AND REALITIES IN THE GLOBAL
KNOWLEDGE ECONOMY**

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The Use Of Offshore Labour By Australian Firms Using Ework: Opportunities And Realities In The Global Knowledge Economy.

Abstract

The modern Australian economy has a very high proportion of tertiary sector workers compared to other developed nations, at almost 75 per cent of the total workforce. Recent Australian governments have sought to aggressively promote the notion that this sector is a strong foundation upon which to build an IT related 'knowledge economy'. Given that this sector is currently marked by high levels of casualisation, part-time and contract work, we are especially interested in whether IT-facilitated 'knowledge work' can contribute to growth in stable, well-remunerated and secure forms of employment.

This paper asks some preliminary questions about the extent to which the 'knowledge economy' project is realistic, especially in the context of a globalising service sector workforce. It uses the findings of the Australian EMERGENCE survey and case studies to explore forms of IT-facilitated service sector work that are popularly seen to offer potential for growth in both national and export markets. In particular we examine examples of jobs 'relocated' from Australia to Asia as well as those in which Australia has a competitive edge over such nations. We find that in many cases relocation is an incidental outcome rather than a deliberate goal of managerial decision making. For a variety of reasons we do not predict large scale loss of low-skilled jobs to Asian nations in the short term.

Introduction

Information and communications technologies (ICTs) increasingly offer a means for relocating work away from traditional industrial centres. The EMERGENCE study (Huws & O'Regan, 2001) identified a number of forms of eWork, including outsourcing to a separate organisational entity and the use of remote employees working collectively in remote offices or individually as teleworkers.

The growth of eWork can be seen as product of a number of forces. The cost of ICTs is continually driven down by technological advances such as computer-telephony integration, and by growth in the global computing and telecommunications industries. Forces behind this growth include globalisation of markets, trade liberalisation, deregulation of telecommunications in many countries, and the growing complexity of customer-supplier relationships. As well, businesses are using the new technologies to recreate relationships with customers (eg. through customer relationship management or CRM) and suppliers (eg. through web-based procurement and eOutsourcing practices).

Today, ICT costs are often a small part of business infrastructure costs, and the telecommunications portion is often relatively unaffected by the distance between source and destination. More critical sources of cost in many highly competitive industries are labour and office space. The costs to do with labour go beyond wage costs and may relate to high turnover in some locations and industries; the costs of travel to office or customer sites; access to expertise in some knowledge-intensive occupations; and the need for employees in some CRM functions to have certain social, linguistic or cultural skills or knowledge.

While new ICTs allow organisations to locate workers in sites where labour costs or other factors are more favourable, little is known about how managers make decisions that cause work to be relocated. The results of the EMERGENCE project in the EU suggest that work relocation is often a more or less incidental outcome of broader business changes (Flecker & Kirschenhofer, 2002). For example, companies may concentrate workers from multiple locations into a single one as a rationalisation strategy which may include outsourcing to an independent company or one with a shared ownership. A second strategy is where company expansion provides

opportunities in a new region; for example through takeover of a company with facilities in an area of cheaper labour. A third involves a decision to outsource to a company that happens to use a remote workforce. Flecker & Kirschenhofer, (2002) identify a number of variations of these types, for example involving isolated relocation of business units rather than major reorganisation of the company.

This paper presents preliminary findings from case studies of relocation affecting Australian businesses. The Australian political context is presently very focussed on employment growth in the tertiary sector. On initial appearances, eWork has the potential to impact on employment in two broad and politically important ways. First jobs may be gained or lost to international competitors. For example, call centre jobs relocated to India and data entry jobs relocated to China have received significant media attention, provoking commentary from union officials, politicians and the public.

Second, eWork may allow jobs to be transferred to rural areas, defined here as those outside the five mainland state capital cities. Although Australia is one of the most urbanised nations in the world, rural voters have traditionally held strong influence in elections and measures to boost regional development are politically important. Virtually all state governments have economic development offices giving considerable emphasis to attracting call centre work, for example by providing financial incentives, relocation assistance, tax breaks and other incentives. In some states, notably Tasmania, Victoria and Queensland, these have been focussed on rural as well as urban centres. A number of large rural towns and cities have also developed their own economic growth programs around IT-enabled services, including Bendigo, Ballarat and Portland in Victoria, Wagga Wagga, Newcastle and Wollongong in NSW, and Launceston and Burnie in Tasmania.

The relocation of jobs from CBD areas of large cities to either international or rural areas is thus likely to increasingly concern governments, union officials and local communities. At present little is known about the scale of such relocations and the forces driving it. The press has featured examples of relocation of call centre work to India and to rural communities in Tasmania. The dominant impression from these accounts is that jobs are abolished in CBD offices and recreated in offshore or rural regions where labour is cheaper. However, the EU EMERGENCE results (Huws &

O'Regan, 2001) suggest that 'relocation' may (a) result from broader expansionary or contractionary business decisions, (b) be driven by factors other than cost and (c) may impact on a wider range of business functions than just call centre and data entry work.

This paper examines these issues in the context of international eWork relocation between Australia and Asia. In particular Australia is geographically and increasingly economically connected to nations such as India, Singapore, Malaysia, the Philippines and China. All of these nations have rapidly developing ICT infrastructure and increasingly internationalised and deregulated business environments that encourage foreign investment and export. All have, for example, very rapidly growing call centre industries with a focus on both internal and external markets. All are competing for work in shared services facilities; India and to a lesser extent the others compete for software development; and China and the Philippines compete for data entry work.

In this environment, Australian managers increasingly see opportunities to use cheaper offshore labour for clerical and customer service work (eg., data entry and customer service) and certain knowledge-intensive occupations (primarily software development and support but possibly also creative work). Conversely, managers in Asian nations may increasingly find opportunities to use specialist skills in Australia that are not locally obtainable, for example in medicine and architecture. However, by far the greatest publicity has been over the possibility of losing Australian jobs to Asian nations with large stocks of lesser qualified and cheaper labour.

Our interest in the case studies below is to examine in detail the processes by which organisations come to relocate work and to draw implications for this image of a pending large scale loss of jobs – especially but not exclusively in low skilled occupations – to Asian nations. Before this, we provide some background to the Australian economy and some data on eWork trends from a recent survey of Australian managers.

The Tertiary Sector of the Australian Economy

The Australian workforce, more so than many in other developed economies, has been marked by long term growth in the tertiary sector. In the mid 19th Century it comprised 28 per cent of workers, at Federation in 1901 it reached 43 per cent, and

today it forms three quarters of the workforce. This has been accompanied by decreasing reliance on mineral, agricultural and pastoral production as technological innovations favour capital intensive rather than labour intensive production. At the same time the manufacturing sector has been consistently declining and is about twelve per cent of the workforce today.

The decline in both the primary and secondary sector workforces, particularly over the past quarter century, has had a very real impact in reducing jobs available to full-time male workers. The growth of female employment has been strong in the service sector, and mainly in part-time and casual employment (Dunlop and Sheehan, 1998, p. 215). While full-time employment remains the major form of employment in Australia today, the proportion of people employed part-time has been steadily increasing from about 11% of the workforce in 1970 to 28% in 2001. Despite this, there is evidence that Australian workers are working longer hours than ever before. Whereas for many decades working hours were steadily declining, recently global competition and employer demands for flexibility have produced a rather different reality:

“In 1996 the average full-time wage and salary earner was working almost the equivalent of half a day per week more than fourteen years earlier” (Dunlop & Sheehan 1998, p. 222).

Along with the increases in part-time employment and work hours there has been growth in what some analysts refer to as ‘precarious’ employment (Dunlop and Sheehan, 1998, p. 222; Campbell, 2000), more commonly called casual employment. The precarious nature of casual employment is illustrated by the Australian Bureau of Statistics definition:

“Casual jobs are commonly understood to be those subject to termination at short notice, not offering leave entitlements and with varying hours of work.” (ABS, 2000, 4102.0, p. 115)

In an international comparative study, Mangan showed that Australia has very high rates of casualisation. In 1999, almost 27% of employed Australians were employed as casual workers (Mangan, 2000, p. 29), compared with rates of only 19% a decade earlier. Campbell notes that:

“The number of employees who were classified as ‘casual’ in their main job almost tripled in the period from 1982 to 1999, rising from just below 700,000 to almost 2 million.” (Campbell 2001, p. 69)

At the same time, the incidence of self-employment has been rising and there has been a decline in public sector employment, historically more secure than private sector (see ABS, 1998 cat. no. 4102.0, p. 115).

In summary, the Australian workforce is very heavily based in the service sector and in general shows a strong move away from traditional full-time, long-term jobs towards casual, part-time and self-employed work patterns. In this context, we ask whether employers also see eWork as a means of achieving different sorts of 'flexibility' in the workforce. The size of the tertiary sector in Australia is a pointer to the potential significance of any such developments.

Trends in eWork: Evidence from the EMERGENCE Employer Survey

The Australian EMERGENCE employer survey involved a CATI survey of managers in over 1000 establishments (Standen & Sinclair-Jones, 2002). From this we estimate that 37.6% per cent of Australian establishments either employ or provide some form of eWork (p.14). Large organisations are the most likely to do so, at a rate of 53.6%.

The predominant functions that are eWorked, in terms of the proportion of establishments using them, are software development and support, customer service and data processing respectively. In each of these cases large firms are the predominant users.

The size and structure of these workforces in terms of gender, part-time status and casualisation are not easily established. We found that distribution of male and female workers in eSupplier establishments was fairly evenly balanced, with 43.5 per cent of establishments having more than 50% male workers in a function, while 43.4% had more than 50 per cent women. For establishments using remote offices, the proportion with a workforce of over 50% females was significantly higher at 61 per cent compared to 39% with over 50% males. Although remote office workforces were generally very small, the predominance of traditionally female dominated categories of customer service, telesales and data processing/typing suggests a higher level of female employment in eWork.

In terms of the location of eWork used by Australian establishments, arrangements that cross either state or national boundaries are still small. About 25 per cent of

instances of remote office or eOutsourced eWork cross state boundaries, and only about one per cent involve international relocation. Furthermore, despite the enthusiasm of local, state and federal governments to promote eWork as a means of regional economic revitalisation there is a tendency for relocation to be attracted towards capital cities rather than rural areas (p.13).

These and other data suggest that in many ways eWork in Australia does not radically alter the geographical pattern of more traditional work practices. This is seen clearly in the very small proportion of offshore relocations, and supports other anecdotal evidence that Australian organisations are not yet significant users of offshore labour.

Case studies of Australian eWork involving international relocation

The five case studies summarised below give some insights into how relocation of eWork out of or into Australia might affect Australian jobs, and its role in promoting a secure, gender-balanced and well remunerated workforce.

Case 1: Indian company buying Australian companies

This case involves a large Indian software developer. Our interviews with this company, and also with other major Indian software developers marketing in the US or Europe, suggest a widespread perception of Australian businesses as less adventurous in their outsourcing decisions, particularly in relation to purchasing services from the sub-continent. Indian informants suggested a number of perceived reasons for this hesitancy, most commonly: a general lack of experience amongst Australian businesses in international outsourcing; a perception amongst Australians that Indian businesses are affected by corruption; a concern amongst Australian businesses about quality, confidentiality and security; a preference for work to be done onshore; and an Australian business preference for dealing with representatives of similar cultural background.

In this case and the next the companies had an international profile and were aware of a market potential in Australia, but had experienced difficulty accessing this market. In both cases the companies found that the most effective strategy was to establish

operations in Australia, from which the bulk of production could be organisationally relocated back to India.

This organisation had tried to establish a branch in Australia in 1998 but in the following year experienced difficulty penetrating the market. In 2000 it decided to take advantage of the downturn in IT stocks and purchased major holdings in two Australian companies with established client bases, one in Sydney and one in Brisbane. The Sydney company had about 25 employees providing on-billing services to blue chip multinational Australian-based companies, offering entrée to a major market opportunity. The Australian workforce here now sits at about 10, with the majority of workers located in India.

The Brisbane company was larger with about 60 workers in the head office, a branch of about 100 employees in Canberra, and revenue of about A\$10M. It had been established for approximately 10 years and had a strong government client base. The Brisbane office has now grown to about 80 employees and it is estimated that approximately thirty per cent of the work is performed in India.

In both cases the company planned to maintain the existing workforce in order to present a local face, with the expectation that over a period of about three years the business would grow. Their strategy required an Australian front-end workforce to provide client contact, marketing, initial job design and ongoing project management, and an Indian back-end workforce to of software developers.

This case shows two forms of eWork relocation, a short term relocation of Indian workers to Australia - mainly to set up the Australian branch, and longer-term relocation of work to India. In both instances significant margins are gained as Indian workers, whether onshore or offshore, receive substantially lower compensation - typically only around 20% of their Australian counterparts. The Indian managers of this company found the Australian partners were sceptical about the extent to which margins could be reduced but are now convinced by the bottom line.

Case 2: Indian company establishing Australian branch

The second case examined a global company based in southern India that supplies applications and systems integration for customer contact management. It is now a

public company with significant foreign ownership and an annual turnover of approximately US\$12M. Established in the mid 1990s in India, it now has branches across the world, including the US, Australia, Singapore, Dubai and London, with 40-50% of its business remaining in India. Its customers are typically in banking and financial services, insurance and telecoms, and many require solutions across their international operations. It is one of only four or five companies that can provide such international services.

The company employs about 290 people, 100 of which are outside India - principally in non-core areas such as marketing, local project management and pre-sales. Of the 190 employees in Chennai 100 are software engineers. The Australian branch illustrates the company's operations well, with six employees, three Indian, being serviced by about twenty employees in India. As with the previous case, the Australian company predominantly provides local marketing, front-end presence and project management whilst the actual production is done in Chennai. Occasionally Indian workers travel to Australia for brief periods to consult directly with clients.

We estimate that the Indian workers are about four to five times cheaper than Australian workers. In addition, our respondents reported that software workers are technically better qualified and more readily available in India.

Case 3: Isolated relocation by an Australian company.

This case involved an Australia firm that integrates software and hardware services, with clients in the banking and finance sector. Founded in Australia in the early 1990s, it is owned by a Malaysian company and has a number of internationally located but locally managed branches in India, the Philippines, Singapore, Thailand, Malaysia and China, with its Head Office in Singapore. In Australia the organisation employs about 160 people with a revenue of approximately A\$80 million, with expectations of doubling this within the next two years. However, the expectation for this growth is that employment growth will be offshore, predominantly India and possibly the Philippines. About half of the Australian workforce are engineers, deploying and maintaining networks, the balance is evenly distributed between sales, administration and IT support.

One aspect of the company's business is the provision of security defence technology to protect networks; this is predominantly done remotely. This business requires credibility as an effective supplier of security. To achieve this, many companies use the marketing technique of 'ethical hacking' by which they demonstrate to the client that their existing system is in need of the company's services. This process requires advanced technical skills which are not in great supply in Australia and is extremely time consuming. For this reason the organisation chose to establish such a service in India, where there was an abundance of skills and relatively low labour costs. Rather than establish a facility from scratch, the organisation purchased a company in Bangalore delivering such work to US clients and employing 100 workers. These workers are paid the equivalent of A\$20,000 compared to A\$150,000 in Australia. This is an entirely male workforce with an average age of between 25 to 30.

The three cases above show how growing companies enter the Australian market by maintaining an Australian workforce to cover marketing, interface and client contact while at the same time taking advantage of the significantly cheaper and highly skilled India software development workforce. They show the difficulties in making predictions about the effects of eWork on national workforces. All three are growing businesses. The first two cases show growth in Australian jobs along with larger growth in Indian jobs. The opportunity to use eWork came about through the acquisition of a remote company already possessing the technological capability and remote workforce. In the third, a new function that had not previously existed in Australia was located in India using workers already employed by another firm there. If these three cases are not highly atypical, it seems likely that predicting the net effect of eWork on the software development industry in Australia is difficult. What can be said is that as the business expands, a greater proportion of the jobs created are offshore, particularly in India at the moment.

Case 4: ICTs used to retain jobs in Australia

This case concerns a Perth-based engineering firm specialising in building onshore and offshore oil and gas exploration and processing facilities, with a well-established international reputation. For a long time it has been supplied offshore facilities using its Australian engineering workforce (sometimes with engineering support sent offshore). However, recent developments in ICTs enormously increased its capacity

to transfer information quickly, allowing it to provide remote project planning and support, and to operate administrative functions while keeping the bulk of its skilled workforce in Australia. For example, the construction of an onshore gas processing plant in Western India is managed out of Mumbai but nearly all of the engineering work is done in Perth and sent online to the site. At the time of the interviews approximately 70 engineers were working on the project in Australia with another 20 in India. Furthermore, all the international procurement, accounting and much of the secretarial work are handled out of Perth. The site surveillance is also conducted remotely from Perth using video surveillance.

This company is interesting because its decision to employ ICT-facilitated information exchange and business administration is apparently more a result of idiosyncratic company practice than cost-benefit analysis. It is a Western Australian privately owned company with local loyalties. Although the Western Australian economy's strong emphasis on mining has produced a skilled and plentiful supply of mining construction and processing engineers, these are by no means in short supply in India. One informant managing the project in India expressed the view that there were adequate supplies of such labour in India but there was a company preference for using its own Australian workforce, and more than in other offshore projects Australian engineers were unwilling to relocate to India for other than short periods. Similarly, the informant felt that there were disadvantages to conducting accounting services and small procurement for the project remotely, particularly given the differences in Indian business practice and taxation. Both the technical and business administration functions could be obtained in India much more cheaply, but this was clearly outweighed by less tangible considerations such as loyalty to a 'home' location or workforce. The massive capital costs of this kind of project may also partly explain why the higher costs of a Perth-based workforce would be an insignificant factor in the company's profitability.

This case does not represent relocation of jobs away from Australia, but rather shows how ICTs extend opportunities for the Australian workforce in remote project locations. It demonstrates the role of psycho-social factors in business decisions. There is considerable reason to predict that such non-rational factors influence decisions to locate employees in remote locations in other forms of eWork such as telework (Daniels, Lamond & Standen, 2000).

Case 5: High skilled jobs created in Australia through ICT-enabled outsourcing

In this case an Australian organisation expanded offshore by supplying a niche market with a highly skilled local workforce. It began as a publicly listed company on the Australian and German stock exchanges, with many of its initial investors located in Germany. It provides high quality medical services for expatriate employees, tourists, corporations and wealthy local residents in countries or markets where there is little or no high-quality medical infrastructure. The organisation has six clinics in China, two in Thailand, and one in Indonesia and is planning expansion in to Vietnam, Korea and India, while three clinics in Malaysia had closed as a result of local competition. The clinics are established with state-of-the-art facilities and are staffed by between two and five full-time locally-licensed medical practitioners with wide general experience, many trained in the US, UK or Australia.

In these clinics ICTs allow a GP to access specialist services, for example an orthopaedic surgeon, cardiologist, skin specialist or obstetrician. Each clinic has ISDN connections and video-conferencing facilities which enable the local practitioner to transfer on-line x-ray information, cardiograms, obstetric case histories, and so on. The information is sent directly to a consultant specialist's own rooms in Perth or the organisation's video conferencing facility. The company has 85 specialists on call around the clock. None of these works exclusively for the organisation. The capacity to provide fast high-quality specialist services into these localities provides the organisation with a huge marketing edge in such countries.

This business has not created significant employment opportunities in Australia; at present the job growth opportunities are in the country consuming the service. It is however, an interesting illustration of the diversity of opportunity which the ability to electronically transfer knowledge presents. The company has recently begun working with a large American company servicing airlines with in-flight medical advice for emergency cases, and sees this as an avenue of expansion. Australia is considered to be a world leader in telemedicine and has an international reputation for high quality medical education. Because of this, it is a focal area for the government in promoting a 'knowledge economy'. However, the extent to which this kind of industry can create large-scale employment remains to be seen.

Case 6: Low skilled Australian jobs moving to China through ICT-enabled outsourcing

In this case an outsourcing company sends data-entry work to a facility in Harbin, China. This organisation has only two Australian employees (joint-partner owner managers) and about 500 operatives in China. The Chinese operatives are predominantly young (average age 24), single and female with a high school certificate and a minimum of six years English. Its major clients are finance and insurance sector organisations, and it also services contracts from New Zealand and England. All the marketing and sales jobs are outsourced to private contractors.

The majority of the work is sent offshore digitally, often via document imaging. Hard copy data (about five to eight per cent of the jobs) is sent to China in air satchels and the completed files returned electronically.

All data is entered twice and checked by software for discrepancies which are then verified by a senior operative. These operators specialise in different kinds of information, for example, first names, last names, or occupations. Thus the process is highly Taylorised in its attempts to increase accuracy rates. There is also a security advantage: by separating fields of each record no one operative can identify enough information to be able to match names with, for instance, credit card numbers and so on. This was seen as a marketing advantage for many security-conscious firms.

The operatives all live on site and come from far away villages and towns. They work a five day, forty hour week organised in shifts, and are paid according to output in terms of both quantity and accuracy. They come from an abundant supply of labour that can be accessed at short notice. The key stroke rate is said to be fifty per cent faster than that of Australian workers and the turnover rate is low, with most staff lasting about four years. Rates of pay are obviously very different although we do not yet have figures for these.

The company sees its location in Australia as a huge advantage in the local market. Whilst they have competitors from the US and elsewhere, their local presence gives them an advantage over foreign outsourcing companies. As with the software examples above, it seems that Australian businesses prefer to have local personal contacts rather than an entirely telemediated link. Their placement in the local

Australian time zone is also a great advantage over US suppliers, with a minimum of eight hours difference. Australian managers' preference for English speaking and culturally similar suppliers gives the local presence an advantage over companies based in China or India. The low value of the Australian dollar has also been a great advantage: this firm provides services at half the price of a US firm.

The degree to which data entry can be broken into the smallest of components using digital technologies makes the use of offshore workers, even without English skills, highly feasible and enormously profitable where there are large supplies of labour. Whilst this company is in its early stages of development, it presents a very clear example of how outsource suppliers can guarantee, security, confidentiality and quality as well as price advantages from the use of offshore labour.

Call Centres

Our case studies did not include an offshore customer service centre facility, a call centre or contact centre. The employer survey is consistent with media reports in suggesting this as the business function responsible for the largest number of job relocations within Australia. At present it seems that, although some companies have relocated customer service offshore, there is currently still a strong attachment to location in Australia. A publicly well-known example is that of GE finance, managers of the credit card of the largest national retail chain, who received adverse publicity for relocating call centre jobs to India some years ago. At present strong public hostility to banks and some other financial institutions has made them particularly sensitive to public image issues. In part this has been due to the closure of many bank branches in small towns and the consequent loss of jobs in past years. Thus, where relocation has recently been considered rural Australian areas have been given some priority.

Similarly, outsource providers servicing Australia's national telecommunications provider (Telstra), now partly privatised, have also received public criticism where regional services are perceived to be downgraded. The federal government sector is also a large generator of customer service employment and its commitment to national employment growth and regional revitalisation would negate the opportunities for offshore relocation.

Despite these issues of public image in the banking and public sectors, at present many customer service outsource providers indicate a sense of optimism about Australia's potential as a customer service provider to the US and other parts of the Asia-Pacific region. Australia has one of the region's most sophisticated and fastest growing call centre industries, having access to a multilingual and well-educated local workforce and enjoying the advantage of a weak exchange rate for the Australian dollar. Australia also has high levels of technology adoption and a strong 'teleculture' and 'e-culture'. The size, quality and international focus of this sector combine with managers' nervousness over the public relations issues when Australian jobs are lost, and their lack of familiarity with Asian business cultures, to reduce the attractiveness of offshore alternatives: we have encountered few examples of offshore relocation of call centre work.

Conclusion

Our survey data, and the evidence from the cases above, suggest that offshore eWork relocation is unlikely to create a significant job *loss* in the near future. However, as with any industry growing at the same time as technology changes patterns of production, it is dangerous to confuse job loss (or even slight job growth) with the loss of *potential* jobs created in offshore locations that would have been created in Australia if new ICTs had not existed. Most commentators agree that the growth of the global customer service industry does offer very real opportunities for job growth - at least in the short term. Thus the real measure of Australia's success may not be job numbers at any point in time but its ability to create (or attract from offshore) *growing* firms, whose expansion may include both local and offshore workforces.

The cases here have shown Australia's advantages in terms of knowledge-intensive skills in engineering and medicine, for example, and in terms of the business and cultural environment that allows companies to use Australia as a front office for outsource workers in Asian countries, for either domestic or international markets. The cases have also show Australia's disadvantages in terms of the huge wage differentials with, for example Indian or Chinese workers. Both skilled and unskilled labour are significantly cheaper in these locations, and neither ICTs nor the need for offshore management of these workers negate these costs.

We have also seen that these business issues are nested in issues of the cultural, linguistic and psycho-social compatibility of remote workers and the office employing or buying their services.

When all these factors are considered, Australia's chances of growing a Knowledge Economy on the basis of the three most frequently outsourced functions - software, data processing and customer service - seem limited. In the software sector, Australia doesn't have the capacity to produce quantities of well-priced labour sufficient to compete with India, China or the Philippines. In the case of data processing, the work can be successfully Taylorised and skill levels reduced so much that Australia cannot compete through supplying secure or well-paid jobs.

In the case of customer service, there may be some opportunities for gaining jobs by competing in the global market on the basis of economics, skill levels or business environment. However in the tertiary sector generally jobs are typically not well paid relative to the skills of workers, have significant levels of casualisation, and are often part-time, and our anecdotal knowledge of the Australian call centre industry also points to such low-quality jobs.

The most positive cases involve very highly-skilled workers in niche areas where Australia has internationally-competitive expertise, such as engineering and medicine.

While to date we have not found large scale job losses to Asian or Pacific nations with lower labour costs, the signs are that the near future holds more potential for Australian job loss than job creation through eWork. However, the jobs created may be of greater value than those lost.

Finally, we must end with the caution that there is no firm empirical basis from which to make such predictions. Any attempts to collect such data must take into account the complexities outlined here, seeing eWork job location as often an incidental outcome of other business process developments, and one which may both create and destroy local jobs in an individual case of expansion or contraction.

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