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A study on the
knowledge-based economy
April 2009

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This economic report was commissioned by Cognisco, and was written by Professor Paul Mizen, University of Nottingham and External Fellow, Centre for Growth and Business Cycle Research, University of Manchester.

Disclaimer: The views are those of the author and not necessarily those of the University of Nottingham or the University of Manchester.

£19bn was lost by business in 2008 due to employees not having sufficient knowledge or information to do their job correctly.

When Sir Francis Bacon said "knowledge is power," he should have added that it was a commodity in the hands of each and every one of your employees. Its value needs to be focused and unlocked if your employees and organisation are to reach full potential.

Employees are the lifeblood of every organisation, no matter how large or small, and they ultimately determine the future success of a company. But how do employers know what their employees know and whether or not they have the underlying knowledge to truly understand their job?

This is where knowledge development comes in - working with employees to ensure they have an absolute clear understanding of their job role, as well as the necessary accompanying knowledge to apply it with confidence and avoid putting the company at risk. If a business lacks a proper knowledge development solution, then it is setting itself up to become less competitive and lose substantial revenue. In fact, according to analyst firm IDC, businesses are already losing £19 billion annually because of employee misunderstanding. This statistic is staggering and particularly detrimental during hard economic times.

Cognisco has commissioned the following economist-led study to help businesses avoid such unnecessary losses and increase their awareness of the growing importance of a knowledge-based economy and its effects on growth and productivity - when businesses optimize employees' skill sets, they are ultimately increasing their productivity. Economist Paul Mizen, professor at the University of Nottingham; and external fellow at the Centre for Growth and Business Cycle Research at the University of Manchester, has developed a thorough and compelling piece on the subject, combining his personal expertise with that of unpublished research from leading global organisations such as the World Economic Forum, the British and US Chambers of Commerce, and the Organisation for Economic Co-Operation & Development (OECD). The study examines the topic from three overarching angles, including the increasing globalisation of the world economy, the expansion of a knowledge-based economy and a greater reliance on knowledge-based services.

Through this study, Cognisco hopes to help businesses globally understand the importance of investing in their employees, not only from the standpoint of driving a more successful entity for themselves, but also for sustaining the economy around them. While our ambition is big, businesses must never forget that their success starts with their employees and the underlying knowledge they possess.

We also hope this study will highlight the benefits of *KNOW™ - an approach to being the best a person can be within any defined role, function, organisation or industry. *KNOW is a way for business to improve their overall performance by gaining unique insights into their employees' knowledge and understanding of their job roles, so they can stay ahead of changes. Now, more than ever, executives need to implement new ideas for managing their businesses more effectively by leveraging their investment in their employees.

"Only when we truly know something can we have the confidence to act securely."

Mary Clarke

Mary Clarke, CEO Cognisco
April 2009

Only when we truly know something can we have the confidence to act securely.



Executive summary

In today's economy, the emphasis on knowledge as a commodity is becoming increasingly pronounced. A lack of investment in people and their knowledge development will threaten the ability of many leading industrialised countries to maintain global competitiveness in the post-recession economy.

Top performing economies, including the US and UK, are reducing focus on knowledge development, coaching and mentoring, and other human capital investments, with more firms reporting a decline than an increase in investment in staff development in 2008. In contrast, fewer firms in the Asian market are planning to decrease training budgets and investments in staff, and are instead coping with the economic downturn in other ways. These findings suggest that emerging market countries will be well-positioned to overtake industrialised countries when the economy improves. According to the Global Competitiveness Report 2008-2009, compiled for the 2009 World Economic Forum in Davos, an inadequately trained workforce was a highly rated problem-factor in doing business in the US, the UK, and many other European countries. In comparison, fewer felt this was a major concern in developing markets such as China, India and South East Asia.

This report argues that three current global business trends are making the investment in people an important priority for businesses hoping to maintain competitiveness and improve productivity. These trends are:

- The increasing globalisation of the world economy - more firms are engaging in joint ventures, foreign direct investment (FDI) and offshoring, particularly in emerging markets such as India and China.
- The expansion of the knowledge-based economy - more firms are increasing emphasis on R&D, and knowledge has increased in economic importance as ideas and intangible assets are becoming the basis of new products and services.
- Greater reliance on knowledge-based services - more industries that were previously not centred on knowledge based activities are now offering increased support services that put a heavier emphasis on knowledge and the necessity of knowledge development.

Investment in employees and their knowledge development is an important priority. Those countries that cut investments in people are undermining their future success and their ability to survive and recover from the recession.

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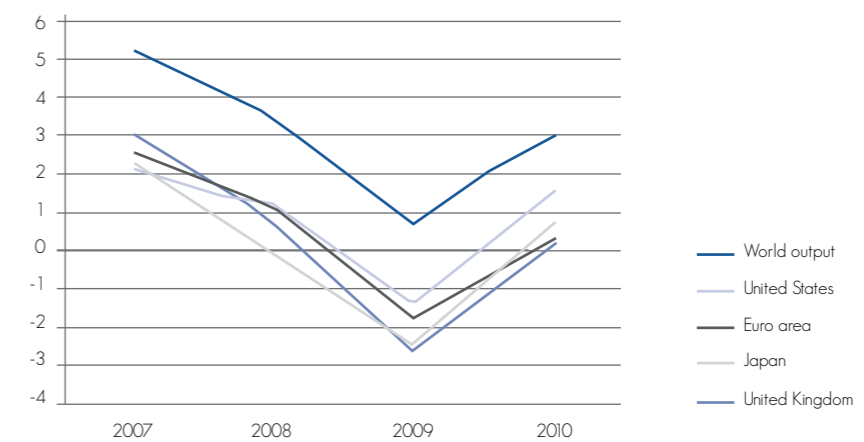


The severe global economic situation

The world economy is facing its toughest test in 60 years - output has not fallen as sharply since the end of World War II. The United Kingdom and the United States have fared particularly badly due to their reliance on financial services. The US economy shrank by a staggering 6.2 percent in the last quarter of 2008, and the UK economy contracted by 1.5 percent in the same period, the sharpest drop since 1980. Other countries that rely on exports to these countries have also been hit hard. Japan has seen a 10 percent fall in industrial output, the largest fall in 50 years of recorded data, and Germany has experienced its slowest growth since reunification.

Annual GDP growth rates for the United States, Euro area, the United Kingdom and Japan are given in Chart 1. Estimates for the Organisation for Economic Co-operation and Development (OECD) countries indicate that 8 million people will lose their jobs in the recession. Firms in all the major economies are registering their gloomiest outlook for orders, profitability and employment since the early 1980s, and in some cases since the business confidence surveys began 20 years ago.

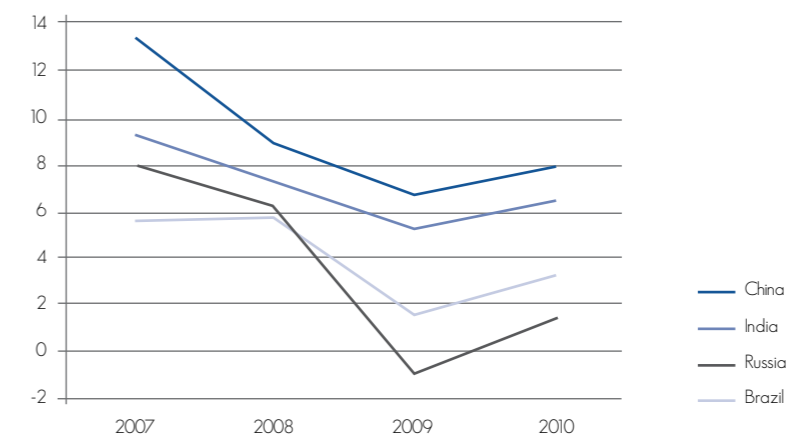
Chart 1: Annualised nominal GDP growth rates by percentage



Source: IMF

Meanwhile, China and India are expected to continue to grow, albeit at the slower rates of 6.7 percent and 5.1 percent respectively in 2009, compared to 9.0 percent and 7.3 percent respectively in 2008. Chart 2 shows the projected growth rates for GDP for Brazil, Russia, India and China, which fall but remain positive for all countries but Russia. Estimates of future GDP growth rates by Goldman Sachs for the major economies project that China will overtake the US and Europe by 2050 as its economy expands to \$44.4tn. The US and Europe will both rise to \$35.2tn and Japan to \$6.6tn, just above Brazil and Russia at \$6.0tn and \$5.8tn respectively. China's share of imports in major world markets has risen from 5.2 percent to 20.8 percent in Japan, 3.1 percent to 13.8 percent in the US and 2.5 percent to 10.7 percent in the EU in just 15 years since the early 1990s.

Chart 2: Projected growth rates for GDP by percentage



Source: IMF

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A worrying decline of investment in employee development

Firms are exposed to increasingly competitive markets which are open to businesses from other industrialised countries and emerging market economies. Firms in high tech areas such as computers, instruments, aerospace, electrical and pharmaceutical industries have higher import penetration measured by the percentage share of imports meeting domestic demand (> 30 percent) than low tech industries like food and drink industries, paper and printing, metal manufacturing and natural materials processing (< 20 percent). Investment in cost saving and productivity improving methods is vitally important in all industries.

Yet evidence collected by the British Chambers of Commerce Quarterly Economic Survey (2008) - the UK's largest private quarterly survey of business covering over 5,000 businesses from every region of the country - reveals firms are cutting investments. The report for 2008Q4 shows that firms that were investing earlier in the year are now cutting back investments in plants, machinery and training due to the pessimistic outlook for sales, orders and exports. Reporting the balance of positive to negative replies about investment intentions, a negative net balance of manufacturers (-22 percent) are investing in plant and machinery and (-6 percent) in training. In services the figures are worse at -27 percent and -11 percent respectively. At just the time when investment is needed, firms are cutting back.

In the United States, the National Association of Business Economics' (NABE, 2008) quarterly industry poll, recorded that the majority of respondents expected output to contract even more in 2009 than it did in 2008. The industry survey revealed the worst business conditions since records began in 1982, indicating that a larger number of respondents had cut investment in 2008, and only 16 percent plan to raise investment spending in the next 12 months. According to The Corporate Learning Factbook 2009, average training expenditures per employee in the United States declined by 11 percent from 2007 to 2008. Large and middle sized companies employed fewer training staffers per 1,000 learners, 3.4 compared to 5.1 a year earlier, and 4.9 per 1,000 learners compared to 7.0 in 2007.

In Germany the influential CES Ifo Manager Survey on "Employment" for February 2009 reported that 12 percent of manufacturing firms were cutting back investment in staff development and training while 63 percent were keeping the level of investment static. Just 11 percent were increasing their investment. Similar figures were reported for construction, retail and wholesale industries and services, where investment was being cut by 4 percent, 16 percent and 7 percent respectively. The survey draws on responses from 650 firms and provides an important indicator of business confidence.

By comparison, the Economist Intelligence Unit's Asia Business Outlook Survey, February 2009, surveyed 301 firms across sectors in China, Hong Kong, Japan, Korea, Malaysia and Singapore, and reported that measures were being taken there to cope with the recession, (see Economist Intelligence Unit, 2009). These measures included cutting business travel costs, reducing inventories and streamlining other budgets. A minority of firms (just over 40 percent) said that they would cut their training budgets in response to the recession, which was low in the order of priority compared to other measures. This contrasts with the industrialised countries, where a larger number of firms are cutting investments in employees rather than increasing them.

The failure of top industrialised countries to invest in human capital development is already proving to be a barrier to businesses. According to the Global Competitiveness Report 2008-2009, compiled by Klaus Schwab and Michael Porter for the 2009 World Economic Forum in Davos, 12.1 percent of respondents cited that an inadequately trained workforce was the most problematic factor in doing business in the US, compared to 9.9 percent in the UK. In comparison, only 6.2 percent of respondents felt lack of knowledgeable employees was a barrier to doing business in China and just 4.8 percent claimed it was an issue in India. Table 1 shows many European countries such as Denmark, Switzerland, the Netherlands and Norway have top 10 rankings (out of 134) for the 'extent of staff training' as a contributor to their competitiveness index. But Singapore, Japan and Korea are placed above Finland, Germany and Belgium, while Taiwan and Malaysia are placed above the United Kingdom and France in this table. Hong Kong, India, China as well as the Czech Republic, Slovak Republic and Slovenia are placed much higher than Spain and Italy, which are below the world average.

Table 1: Extent of investment in employee development

Extent of staff training: the general approach of companies in your country to human resources is (1 = to invest little in training and employee development, 7 = to invest heavily to attract, train, and retain employees)

Countries	Extent of staff training	Rank	Competitiveness score*	Rank*
Denmark	5.9	1	5.58	3
Switzerland	5.8	2	5.61	2
Singapore	5.7	3	5.53	5
Sweden	5.7	4	5.53	4
Japan	5.5	5	5.38	9
United States	5.5	6	5.74	1
Norway	5.4	7	5.22	15
Netherlands	5.4	8	5.41	8
Iceland	5.3	9	5.05	20
Korea, Rep	5.3	10	5.28	13
Finland	5.2	11	5.5	6
Germany	5.2	12	5.46	7
Belgium	5.1	13	5.14	19
...				
Taiwan, China	5.0	16	5.22	17
...				
Malaysia	5.0	20	5.04	21
Ireland	5.0	21	4.99	23
United Kingdom	4.9	22	5.3	12
...				
France	4.9	24	5.22	16
...				
Czech Republic	4.7	28	4.62	33
Hong Kong SAR	4.7	29	5.33	11
...				
India	4.6	34	4.33	50
...				
Slovak Republic	4.4	40	4.4	46
...				
China	4.4	42	4.7	30
Slovenia	4.3	43	4.5	42
...				
Brazil	4.3	46		
...				
Spain	3.9	63	4.72	29
...				
Italy	3.3	109	4.35	49

SOURCE: Schwab, K. and Porter, M.; The Global Competitiveness Report 2008-2009; World Economic Forum; Geneva; 2008.

* The last two columns correspond to the Global Competitiveness Index rankings 2008-2009.

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Global changes make investment in employee development essential

This report argues that the decline in investment in employee skills and development is troubling for competitiveness and productivity. While it may be a rational economic decision for firms to reduce investment in physical capital such as raw materials, inventories, and plant/machinery while demand is slack, reducing investment in employees will limit the ability of firms to maintain competitiveness and benefit from opportunities after the recession. Investment in the quality of the workforce, and best practice for staff development, is a key contributor to productivity and maintaining competitiveness.

Traditional views of growth developed in the 1950s argue that additions to labour or capital alone make diminishing contributions to growth (see Box 1). With technical progress it is possible for firms to improve the efficiency of their workforce and grow faster. New growth theories developed in the 1980s show that there are greater gains from investment in key drivers such as infrastructure, education and employee development, which explains why countries with policies to enhance these features grow faster. More recently, our understanding of the sources of growth has developed further - we now know that growth is not just driven by competitive advantage due to lower costs or expertise. There is substantial growth due to trade within industries based on product varieties. France exports Renault cars to Germany, while Germany exports Volkswagen cars to France.

The world has changed substantially since the 1950s, but there are three important reasons why firms need to invest in their employees to capture opportunities and avoid obsolescence in their existing markets.

Box 1: Economic growth theory

Neoclassical growth

Economic theories of growth were developed in the 1950s to explain why some economies were richer than others and why incomes appeared to increase over time. The starting point for these models was the neoclassical model, in which growth of output depends on growth of the labour force, increases to physical capital, technological change and improvements to human capital. The latter are inputs to the production process that determine exactly how economic resources are transformed into goods and services. Adding inputs of one of the factors - labour or capital - without an increase in the other will lead to diminishing marginal returns, so each additional unit will contribute less than the previous additional unit to the growth of output so long as inputs of other factors do not change. Even if all the factors are increased in proportion the growth rate will be at best proportional to the increase in the inputs. These theories explained that some economies are richer than others because they have greater endowments of labour or capital, or better technology. They suggested that incomes rise because inputs of factors - particularly physical and human capital which can improve the amount of output each person employed can produce - increase over time. But these theories have a major fault: large differences in physical or human capital are required to explain the observed differences in output between countries or over time.

One way to allow for growth without requiring large increases in physical and human capital is to allow for technological progress. Introduction of new technologies makes employees more efficient, so that over time, they are able to produce much more output per head than their predecessors were able to produce. Examples of this kind of technological progress abound and include manufacturing technology (Henry Ford's production line), transportation (Frank Whittle's jet engine), information and communication technology (ICT) (Microsoft's Windows operating system). These kinds of technological progress are embodied in the sense that they are embodied in the new innovations; but there are also more subtle disembodied kinds of technological progress that involve improvements in management, skills and organization.

Endogenous growth

A paradigm shift occurred in the 1980s when Paul Romer proposed that technical change is not driven by factors outside the growth model, rather, as he put it technological change is explained by responses within the model itself, in other words growth is endogenous. This produces benefits to capital investment (externalities) that improve the output growth of other firms as well as those that actually make the investment. For

Reason 1: The world economy is increasingly globalised

The world economy has been extensively globalised since at least the 1990s, and arguably well before that. We have noticed its effects as emerging market economies have begun to catch-up with industrialised countries, adopting similar technology with a lower cost base. Globalisation potentially enables firms to exploit comparative advantages such as lower land and labour costs, and technical know-how, while also providing access to supplier and customer networks. Globalisation has accelerated the diffusion of technology as more firms engage in joint ventures, foreign direct investment (FDI) and off-shoring, particularly in emerging markets such as India and China. The high level of FDI into these countries has brought with it new technology and skills. A recent study by Blake et al. (2009) based on a firm-level dataset for Chinese manufacturing companies, shows there are productivity spillovers to Chinese firms as multinational enterprises (MNEs) engage in FDI. Research and development, design, manufacturing, marketing, sales and after-sales servicing are now conducted in many countries as part of a global value chain. A recent report by Gorg, Greenaway and Kneller (2008), using data from 66,000 UK firms during the period 1996-2004, found off-shoring improved productivity, output, employment levels and exports, with major gains seen in the manufacturing sector. Firms that do not obtain or maintain necessary skills through workplace education will find themselves excluded from the global value chain.

High technology firms tend to be more affected by globalisation and the trend towards production in a global value chain, while low-tech or SMEs are less affected. There are many dimensions in which firms must develop their capabilities, including in the use of new technology, production methods and engagement with global supply chains and networks. No less important is a commitment to investment in learning and development to ensure employees and management are confident, competent and skilled to carry out their roles. Without this investment in employee development and organisational change, firms will become disengaged from the globalised economy, and they will see lower productivity and higher costs compared to their competitors.

Box 1 continued.

example the development of an infrastructure such as high speed internet support or a transport hub might allow all firms to grow. Examples of this in practice abound, e.g. the 'Webworks' initiative in Ireland (<http://www.webworkscork.com/>) offers a facility to support technology based export companies providing fast internet, e-business, and management support. Provision of education or skills training can also provide this benefit. Growth between countries and over time can be explained by externalities from investment in new technology.

In his book *Inside the Black Box: Technology and Economics*, Nathan Rosenberg shows that another important driver of this process is research and development (R&D). R&D responds to economic signals such as changing relative prices; hence, as oil prices increase, firms find more efficient ways to produce goods or operate equipment. R&D also occurs to make technological breakthroughs when there are economic incentives to do so. A pharmaceutical company may innovate to ensure it has new patented products to generate revenue streams in the future as old patents expire. Although technology breakthroughs are often associated with production processes or products, they can involve better use of employee skills or retraining to follow best practice.

If there are gains to growth through technology improvements then an important issue is how technology spreads between and within organizations or countries. Within organizations the diffusion process was understood in the 1940s to flow downstream from upstream activities i.e. from R&D units to development, production and sales. More recent experience of Japanese car manufacturing has suggested that there are considerable gains from learning by doing at the production stage, and involvement of downstream units in feedback to the upstream units improves innovation. US and European manufacturers have learned from Japanese competitors by following best practice, and in some cases have formed joint ventures to import new methods of innovation. For emerging economies, joint ventures with multinational companies (MNCs) have delivered innovation into their activities, raising their output and profitability. As Michael Porter has noted in *The Competitive Advantage of Nations*, the MNCs have gained from lower production costs, while the collaborators in emerging economies have gained new knowledge. Technology diffusion is neither quick nor costless, and as Richard Nelson and Sidney Winter have found in *An Evolutionary Theory of Economic Change*, transfer of new technology also requires acquisition of tacit knowledge, such as new employee skills, work practices and knowledge. Investment in new technology also requires investment in skills and training.

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Reason 2: The expansion of the knowledge-based economy

The world economy is increasingly a knowledge-based economy due to four global trends: 1) the knowledge base has grown as firms engage in more R&D; 2) knowledge has become more important economically as ideas and intangible assets have become the basis of new products and services; 3) globalisation has helped diffuse knowledge and reduce differentials between developed and emerging nations; and 4) greater governance of intellectual property rights in trade will ensure the gains from innovations can be reaped commercially. According to Fauth and Brinkley (2009) survey, evidence shows that nearly 40 percent of high or medium-high tech manufacturing jobs involve knowledge intensive activities, and a further 30 percent involve some knowledge activities. This is partly because the knowledge economy brings about skills obsolescence at a faster rate. Businesses need to up-skill their workforce and improve management.

Knowledge improves minimum acceptable standards and underlines the importance of 'quality advantage,' which is the ability to meet some minimum standard for product excellence, delivery and customer service. This standard will be defined in different ways for different sectors, but inability to meet it will cut out even low cost producers from the market. The development of the knowledge-based economy underlines the importance of productivity and a 'quality advantage.' The former reduces costs and maintains competitiveness, while the latter ensures that the firm has a product that has a higher specification than those of its rivals.

Firms that wish to compete in a global market must address both, as one without the other is insufficient. Our understanding of how a firm maintains a 'quality advantage' over competitors involves forward thinking to build in flexibility to move into new markets as existing technologies are mastered by emerging market firms with lower costs, Sutton (2009). This includes investment in capabilities that are transferrable, involving all aspects of intangible investment in R&D, software, technology and employee development and change.

A recent report by Brinkley (2009) from the Work Foundation confirms the importance of this point. It argues, "The manufacturing workforce is changing to reflect the greater emphasis on intangible assets and service oriented functions. This is partly driven by technological change. But it is also part of the increased investment in knowledge-based assets and the shift towards value added service activities." (pp.26-7). Since the world economy is increasingly knowledge-based, investment in knowledge will be essential in creating competitive advantage in the future. Tables 2a and 2b show how growth of internet use and penetration in emerging markets and transition

economies has outstripped Europe and North America in recent years. The internet was once the cutting edge technology, but it is increasingly the norm, even in developing countries (UNCTAD, 2008). It is now the use to which the internet is put that creates an advantage for businesses. Evidence in Bresnahan et al. (2002), Black and Lynch (2004) and Lynch (2007) finds businesses that invest in the continued development of their workforce will be able to make the best use of ICT technology and will experience the largest productivity gains. An OECD survey of 217 firm-level case studies covering 20 industry sectors across 11 participating countries concluded that ICT can improve adaptability, quality of service, delivery times and new product development. The survey for firms in Canada, France, Italy, Korea, Mexico, the Netherlands, Norway, Portugal, Spain, Sweden and the UK found companies that reaped the most benefits engaged simultaneously in investment to improve workers' knowledge and in changes to management practices (OECD Electronic Commerce Business Impacts Project).

Table 2a: Use of the Internet

% change in internet use	2003	2004	2005	2006
World	16	20.7	16.2	12.4
Developed World	7.3	15.6	7.5	6.8
Asia	4.2	28.7	7.4	2.8
Europe	13.4	12	7.7	10.7
North America	3	14.4	7.2	4.6
Other	8.1	14.5	10.4	9.2
Emerging Economies	28.8	26.1	28.6	17.9
Transition Economies	78.3	52.2	17.9	25.5

Source: UNCTAD Information Economy Report 2007-8

Table 2b: Penetration of the Internet

% change in internet penetration	2003	2004	2005	2006
World	14.6	19	14.5	10.9
Developed World	6.3	15	6.7	6.3
Asia	4	28.6	7.3	2.6
Europe	12.3	11.7	7.2	10.4
North America	2	13.3	5.6	3.7
Other	6.9	14.1	9.1	8.1
Emerging Economies	27	24	26.5	16.1
Transition Economies	78.8	52.2	17.1	25.6

Source: UNCTAD Information Economy Report 2007-8



Reason 3: The blurring of old boundaries

As a result of globalisation and the expansion of the knowledge economy, the distinction between old boundaries, such as those between the manufacturing and services sectors, is being blurred. Manufacturing firms increasingly offer after-sales services and financing, and new opportunities for manufacturing firms lie in these knowledge-based areas. For example, HNA Group, a major shareholder in Hong Kong Airlines, signed a US\$1.2 billion contract on 27 February 2009 for Trent 700 engines to power 20 Airbus A330s from Rolls Royce, and the contract included a long-term services agreement for the engines. Besides aerospace industries, other sectors such as high-tech, financial, business and health services, education and culture also rely heavily on knowledge-based activities for production and associated services.

The Leverhulme Centre for Research on Globalisation and Economic Policy at the University of Nottingham reports that 25 percent of all exports and 40-45 percent of exported technical related or trade services originated from manufacturing companies (see Hijzen, Pisu and Upward, 2006). These service contracts can be sustained even if exports of manufactured goods decline, providing resilience to the recession. Greater reliance on knowledge-based services diversifies the activities of manufacturing firms and may limit costly redundancies. It can also increase value added, as the share of high tech value added in total for manufacturing has increased steadily over the last 30 years.

There is also a blurring of boundaries between firms. Multi-national Enterprises (MNEs), have large investments in knowledge based assets, such as R&D, brands, and patents or intellectual property. They will often share knowledge with joint venture partners and bring best-practice to their collaborators in global supply chains. MNEs often support larger in-house training programmes and participate in large networks. There is evidence of a feedback process between extent of offshoring by firms and their skills-upgrading requirements in results reported by Becker et al. (2007).

Small to Medium Enterprises (SMEs) participate by offering specialised products or services to MNEs and can be more flexible or offer a more tailored service than larger firms. SMEs also outsource and offshore their activities in order to reduce costs and concentrate on more complex core tasks that yield higher value added. Case studies by the United Nations and the OECD comparing businesses in emerging market and industrialised countries found most businesses in automotive, instruments, software, leisure, and entertainment industries to be aware of the importance of the global value chain. It suggests that the leading firms understand their position in the new value chain and know how to profit from it.

Employee development

Employee development programmes improve education, skill levels and help match employees to tasks. For many employers it is now critical to ensure that employees understand their job description, the changing nature of their business and the industry. It applies to workforce and management and can require reorientation of the organisational structure to meet new challenges.

Haskel, Hawkes, and Pereira (2005) find that higher productivity and higher skills can be linked to some degree. All investigators acknowledge that it is difficult to measure productivity and skills levels accurately, although greater efforts are being made to improve measurement. Nevertheless, firms are convinced that investment in employee development is the path to improve performance and competitiveness. There are many examples of firms that invest in employee development, but a prominent example is Rolls Royce, a major manufacturer of aero engines for the global aerospace industry with nearly 40,000 employees in 50 countries and a turnover of £7.4 billion in 2007. Rolls Royce has established a Centre for Vocational Excellence in Lean Manufacturing in collaboration with the union Amicus. Since 2003 this has enabled the manufacturer to increase productivity and introduce new business methods. In addition, because the company is seeing a larger share of value added from aero-associated services, there is a need to reorganize the business structure, management and skill deployment to reflect this change. In a submission to the House of Commons Select Committee on Innovation, Universities and Skills in May 2008, House of Commons (2008), Rolls Royce stated that it invests approximately £30m on training and vocational education annually for its workforce.

The Chartered Institute of Personnel and Development (CIPD) finds from its workplace research that skills acquisition in isolation does not automatically generate higher productivity, CIPD Economic Labour Report (2007). Skill development is likely to be more productive when combined with other management practices, such as a review of performance and reward, assessment of job design, flexible working practices and effective communication. It has found that there is a need to identify necessary skills for better organisational performance and productivity, linking skills development to training programmes.

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An ongoing audit of the skills sets of existing staff versus the requirements of the business in their role is essential. CIPD research also emphasizes development of management in this process. Evidence from a survey of 700 CIPD members in 2008 showed that nine in 10 respondents believed management or leadership development was critical to increasing their business over the next two years. A recent UK government report by the Department of Business, Enterprise and Regulatory Reform (BERR) agreed with this, stating that 'Firms can raise productivity when they make better use of the skills that they have at their disposal, deploying them more effectively across different parts of their organisation. Central to this is strong leadership and management.' (p.79) BERR (2008).

It is easy for businesses to overlook that development and training involves management. A study by the Centre for Economic Performance and McKinsey & Company (2008), of management contribution to the effectiveness of the firm examines more than 4,000 medium-sized manufacturing operations in Europe, the US and Asia. It finds that firms that make efforts to apply proven management practices perform better than those that do not apply these improvements. This suggests management improvements will deliver productivity gains. MNEs have a particular role to play in this process since wherever they are found they tend to outperform local businesses and improve average performance of domestic firms. The results were derived from interviews over 18 subjects in three general areas, including shop floor operations, performance management and talent management. Interviewers scored businesses on a 1-5 scale based on performance. Positive scores on each question are strongly correlated with performance, including high productivity, profitability and growth.

What's more, if a business does well in one area, it typically does well in others. According to the study, a single point improvement in a management practice score results in an increase in output equivalent to a 25 percent increase in the workforce or a 65 percent increase in physical capital. This seems remarkable, but it demonstrates that adopting the right methods of operation across the board, and especially in management, is critical in improving productivity and growth for a business. Table 3 makes comparisons between countries based on management performance. The results place the United States, Sweden, Germany and Japan above the UK, France and other European countries, with China and India at the bottom of the list. Differences in the figures are not substantial (the top average score was 3.25 while the bottom average score was 2.62), but small differences account for substantial productivity differentials, and the report's authors note that the top four and bottom three countries are statistically distinct groups from the middle group.

Table 3: Average management score by country

Country	Average management score
United States	3.25
Sweden	3.16
Japan	3.15
Germany	3.15
United Kingdom	3.00
France	2.98
Italy	2.98
Poland	2.88
Portugal	2.73
Greece	2.65
China	2.62
India	2.62

Source: CEP/McKinsey Co 'Management Practice and Productivity: Why They Matter' 2007

Conclusions

A lack of investment in people and their knowledge development will threaten the ability of leading industrialised countries to maintain global competitiveness in the post-recession economy. It is already evident that the US, Germany and the UK are investing less in knowledge development and training since firms reported a net decline in investment in staff development in 2008. This contrasts sharply with the response to the downturn in Asia, where firms have not made cuts to human capital investment a priority.

According to the 'Global Competitiveness Report 2008-2009, compiled for the 2009 World Economic Forum in Davos, an inadequately trained workforce was a highly rated problem-factor in doing business in the US, the UK, and many European countries. Not all firms have cut investment in employees, however. Many forward thinking companies have engaged in new skills training in order to develop their capabilities for current and future opportunities. This report argues that three trends make investment in people an important priority for businesses hoping to maintain competitiveness and improve productivity. These are the increasingly globalised economy, the expansion of the knowledge-based economy and the greater reliance on knowledge-based services.

Investment in knowledge development is an important priority. Those countries that cut investment in people are undermining their future success and their ability to survive or recover from the recession.

About Paul Mizen

Paul Mizen is Professor of Economics at the University of Nottingham and an external fellow of the Centre for Growth and Business Cycle Research at the University of Manchester. A former Bank of England economist, he has been engaged in economic research for a number of universities, central banks and international organisations such as the International Monetary Fund and the United Nations. His research has been published in the leading international journals.

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