

India's Software and IT Services Sector

A Teacher to Treasure

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This paper outlines a new and important role for the software and information technology services sector in India's economic development. It argues that this sector brings world-class IT and western expertise on how to use it, which leads to rapid improvements in Indian firms' ability to compete in world markets. This depends on the transfer of tacit knowledge that developed country firms have accumulated through years of experimentation and experience; knowledge that these firms generally do not want to share. Acting as an indirect route for this knowledge to reach Indian firms, the software and IT services sector should be both treasured and nurtured.

Since the 1990s, India's software and information technology services (swis)¹ sector has been a high profile, but often controversial, participant in a dramatic worldwide wave of increasing information technology (IT) production and use. Globally, investments into IT have been sufficient to double information processing capacity per capita every 14 months (Hilbert and López 2011), and so to bring large increases to output and productivity in many developed-country firms (Sadun and Van Reenen 2006).

The Indian swis sector's role has been to marshal the country's well-educated and relatively low-paid workers for the purpose of producing IT for firms (Athreye 2005). Supported by tax breaks and other government incentives, this strategy has enabled the sector to become the largest and fastest growing developing-country exporter of swis (UNCTAD 2009: 77-78). In turn, this has brought ever increasing contributions to India's gross domestic product (GDP), attractive employment for a large number of educated workers, and significant amounts of foreign exchange.

However, there remains much scepticism over the sector's wider development impact. Foremost amongst the concerns raised is the idea that the export orientation in the swis sector has meant a relative neglect of Indian firms that want to use IT, and so a missed opportunity to bring large increases in productivity and output to the country (Heeks 1996). There are also worries that the sector's absorption of so much of the country's skilled labour may be detrimental to other sectors (Joseph and Harilal 2001).

To this ongoing debate, this paper adds evidence that the sector has begun to play a new and important positive role in bringing technical catching up to Indian firms. This new role has come about because in recent years the sector has been doing much more work to assist domestic firms to effectively use IT. Since 2005-06,² sales of domestic swis have been increasing rapidly, and in 2011-12 they reached a very substantial Rs 77,100 crore (NASSCOM 2012a).

These projects often provide more than just basic IT. swis firms working in the domestic market package IT with consultancy advice based on their experience in developed countries and often combine innovations for the Indian context with the newest IT technologies. Together, this package outperforms other IT purchases (Kite 2012) and brings concrete improvements in Indian firms' ability to compete successfully, both at home and abroad. In parts of several key sectors like banking and telecommunications, it has

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even led to stronger IT capabilities than those found in developed countries.

This new role for the sector constitutes a rare and precious opportunity for the Indian economy which must be supported and developed. As with knowledge on other advanced uses of technology, expertise on how to use IT is context-specific, with decisions on how to implement the technology often being heavily dependent on the particular processes that an individual firm follows. This means that it is difficult to codify the knowledge, and learning it requires experience in specific IT-using industries, or, at the very least, extensive training from someone with that experience.

In general, developed-country firms cannot be expected to willingly offer these insights directly to potential competitors in India. The fact that they have been willing to share knowledge with swiss companies, which in turn apply the lessons in India, is an important and rare conduit of this kind of tacit knowledge. Seen in this light, the sector's role in disseminating the newest IT and western knowledge about how best to use it, is invaluable to India. The process described here needs to be supported through government policy. To that end, there is an urgent need to redesign tax breaks for the sector to specifically reward swiss work throughout the domestic economy.

The remainder of this paper is laid out as follows: Section 1 reviews the literature on the swiss sector's potential and actual role in India's development; Section 2 introduces and details the evidence of its new role; Section 3 discusses the unique features of the sector that make it suitable for such a role; and Section 4 concludes with policy and other implications.

1 Debates on the Sector's Role and Potential in India

Despite its many high profile achievements, literature on the IT sector³ in India is critical of its export-led pattern of growth and sceptical about its impact on economic development. In 2011-12, the sector employed 2.8 million IT professionals and contributed 7.5% to India's GDP (NASSCOM 2012b). But, if research on developed countries is a good guide, even these substantial benefits are small relative to the huge potential available from the technology being used to improve production methods (Nordhaus 2002).

What this means is that the export orientation that prevails in the IT sector represents a tremendous lost opportunity. The swiss that are exported and sold to firms in developed countries provide productivity gains in those countries, not in India. This not only fails to improve Indian production capabilities, but it extends the lead of the developed countries and reduces India's ability to successfully compete (Balasubramanyam and Balasubramanyam 1997; D'Costa 2003; Heeks 1996).

This is not the only downside. The IT sector absorbs India's educated workers in large numbers and provides them with opportunities to migrate to the United States (us) and Europe (Saxenian 2005). Joseph and Harilal (2001: 3268) argue that this results in other domestic sectors being starved of key skills or being forced to pay significantly higher salaries for technically educated employees. Taking all these concerns into consideration, it is not surprising that there is now mounting

opposition to the sector's ongoing government support (Chandrasekhar 2010) and widespread agreement that India's development would be better served if the sector focused more on facilitating IT use within India and less on exporting to the west (Chandrasekhar 2001: 1; Dahlman and Utz 2005: xxix; D'Costa 2006: 8; Heeks 1999: 9; IMF 2001:108; Kumar and Joseph 2005: 99).

But, even a significant turn to providing swiss in the domestic economy rather than abroad would not fulfil the sector's full potential. Better still would be if the swiss sector were able to bring foreign expertise to bear in India and so bring the best technology and applications available around the world back home. This would move Indian firms towards technical parity with market-leading companies in developed countries, which would vastly enhance their ability to compete in global markets, to make profits, to invest, and to grow.

This kind of movement towards parity with technological leaders has long been recognised as attractive in the literature on growth in developing countries (List 1841; Gerschenkron 1952), though it is also a possibility that many argue is difficult. The problem is that knowledge about technology and how best to use it in a particular industry is hard to come by.

Pioneers in a particular sector often come to it through a long process of experimentation typically involving many expensive failures. Budding producers who come later have two equally difficult options: The first is to go through an experimentation process for themselves, though this is difficult in the absence of protected markets because consumers will prefer superior products offered by the pioneer, and later producers may not stay in business long enough (Chang 2002).

The second option is to learn from the pioneers. This is also problematic because pioneer firms do not want to share knowledge and give away their competitive advantage. Even where later producers have supplier or buyer relationships with more advanced firms, examples of knowledge sharing and consequent growth are the exception rather than the rule (Kaplinsky 2000).

If these difficulties in acquiring knowledge about technology can be overcome, the literature identifies one more enticing possibility: the potential for later producers to overtake pioneers in their technical capabilities. It is a possibility that exists where adoption of a particular technology is path-dependent and where there is rapid technical change (Abramovitz 1986).

These two conditions are met with IT, because as firms purchase and use their IT systems, they influence the costs and benefits of different types of subsequent purchases. The more accustomed a firm becomes to using a particular system, the higher the costs of changing it. Employees have to be retrained and given time to become familiar with a new system and any processes dependent on the old system have to be redesigned. On the other hand, the benefits of not changing the IT system, but simply expanding the existing familiar system are high.

This path dependence, combined with the rapid technical change that IT continues to experience, presents a problem for early adopters, and an advantage for late adopters (Abramovitz 1986; Arthur 1994). Early adopters become familiar with an

early, inferior version of the technology and, thus, find it costly to replace that version with an improved product. Later adopters can immediately purchase a later, better version and so surpass the pioneers.

It is this tempting potential against the backdrop of almost universal difficulties in catching up that makes the evidence detailed below so interesting. Section 2 shows that the swis sector is now doing much more work with Indian firms, and that this includes bringing significant learning, often catching up, and sometimes even overtaking of western firms' technical capabilities.

2 A New Role in the Domestic Economy

The swis sector's ability to act as a conduit of knowledge about IT into India depends in part on its history, the niche it occupies and the experience it has accumulated. The sector specialises in selling IT to firms rather than consumers, and throughout its history it has been focused on firms in western countries (Kumar and Joseph 2005: 99, Schwabe 1992). Through years of experimentation, these western firms have settled on ideal ways of using IT to improve their productivity and competitive positions.

2.1 The Domestic SWIS Sector

For many firms, the ideal is to design and install software systems that collect together all their information, and then make it available to all the staff. This offers the opportunity for better informed decision-making throughout the organisation, lessening the need for senior managers to provide direction (Bresnahan, Brynjolfsson and Hitt 2002: 342; Brynjolfsson and Yang 1996: 189). It also means firms can quickly and easily monitor the progress of workers, suppliers and processes, thus saving again on supervisory staff, and offering the opportunity for fast identification of necessary or valuable process improvements (Perez 1985: 449; Brynjolfsson and Yang 1996: 208).

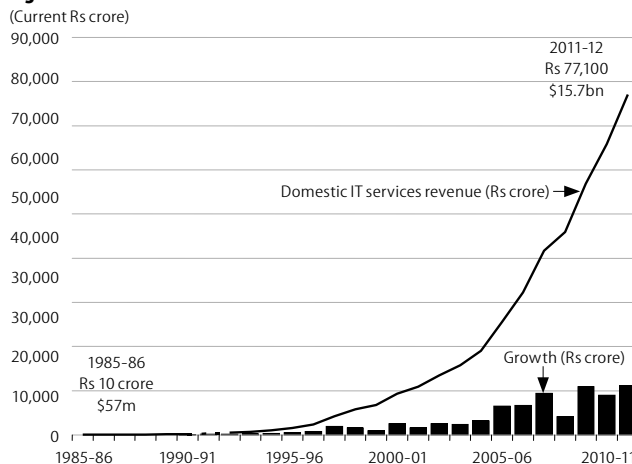
The role of Indian swis companies has traditionally been to offer cost savings on low-skilled aspects of creating and maintaining such systems (D'Costa 2004: 63). More recently though, they have also begun to carry out more advanced tasks, such as designing and implementing new software systems (NASSCOM 2008b: 203).

This positioning and experience has become relevant in India in recent years because domestic firms are now also beginning to use IT to improve their internal processes. There remains a relatively low penetration of personal computers amongst consumers in the country, and so only nascent demand for domestically produced consumer applications.⁴ But, buoyed by strong economic growth and an increasingly numerous middle class with money to spend, many large- and middle-sized Indian firms have found themselves in a strong position to invest and grow. They have identified IT as important to their ability to compete in the increasingly open markets, and they have turned to the swis sector for support (NASSCOM and IDC 2006: 18).

Figure 1 plots the sector's revenues from the domestic market, as published by the National Association of Software

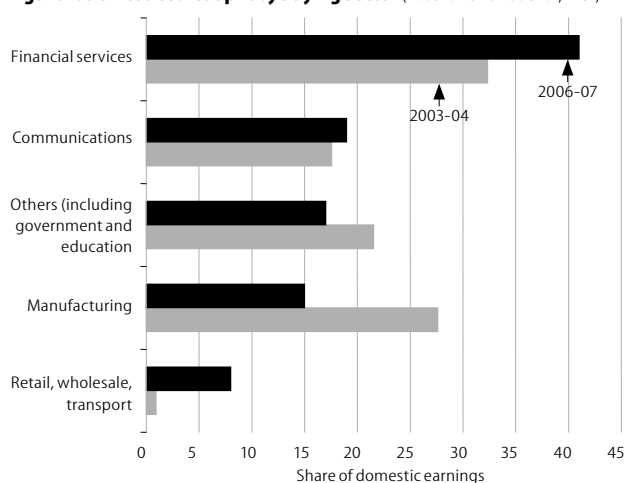
and Services Companies (NASSCOM), since the 1980s. The line plots the revenues collected from domestic clients in current Rs crore, and the bars show growth in the same revenues. The chart clearly shows acceleration in the swis sector's activity in the domestic market during the last five to eight years.⁵ Sales from the sector in the domestic economy reached an estimated Rs 77,100 crore in 2011-12 (NASSCOM 2012a), and since 2005-06, the average annual revenue growth was Rs 8,267 crore.

Figure 1: SWIS Revenue for Indian IT Sector from Domestic Market



The original source of all data is NASSCOM, which estimates that it reflects the revenues of 95% of the formally registered SWIS sector. The data up to 2009-10 was published in US currency and has been converted by this author into rupees using exchange rates from the Reserve Bank of India (2012). The dotted line denotes two missing data points in 1991-92 and 1992-93. 2011-12 is estimated by NASSCOM as at June 2012. Sources: Athreye (2005: 34); Hanna (1994: 100); Heeks (1999: 2); Kenney and Dossani (2002: 237); Kumar and Joseph (2005: 94); NASSCOM (2008a: 1; 2009a: 6, 203; 2011:7,8; 2012a); Sridharan (2004: 34, 37).

Figure 2: Domestic Sales Split by Buying Sector (2003-04 and 2006-07, in %)



Sources: NASSCOM (2008a: 1; 2009a: 203); NASSCOM and IDC (2006: 18).

Figure 2 shows that these projects have taken place in important strategic sectors. It shows a breakdown of domestic swis revenues by buying sector in both 2003-04 and 2006-07. In both these years, the major private sector purchasers of swis included communications, finance, manufacturing, and retail and logistics. These industries match very closely with those that have been found to use IT intensively in other developed and less-developed countries (Baily and Lawrence 2001: 309, Hanna 1994: 40).



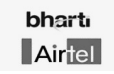











They are also sectors which play an important role in other domestic industries through linkages. The manufacturing sectors which are the largest buyers of swis, such as chemicals, machines and computers, are also those which produce inputs to other manufacturing processes (Kite 2012). Similarly, the sectors that purchase the most swis, finance and communications, offer services that are relevant to all types of economic activity and so are strongly linked to the entire economy (Hansda 2001).

The swis projects that make up the numbers in Figures 1 and 2 often involve the IT firm taking full responsibility for the design and delivery of their clients' systems. Indian firms have much less experience with the technology than their equivalents in the West and many have smaller IT departments. As a result, they rarely have either the appetite or the capability to design and implement IT strategies for themselves.

2.2 'Full Package' SWIS Projects

In a survey of 394 Indian firms undertaken in 2005-06, NASSCOM and IDC (2006) found that the solution they are increasingly reaching is to ask their IT company partners to act as a "services vendor". That is, to design a software system, supervise provision of its components, ensure that it works properly in situ, and provide maintenance, support and upgrades on an ongoing basis. Of all IT activities taking place in the surveyed firms, it was these "full package" projects, exemplified by the seven case studies in Figure 3, that were most often outsourced rather than kept in-house (NASSCOM and IDC 2006: 13).

Figure 3: Examples of 'Full Package' SWIS projects in India (2003-08)

Year	Client Firm	Client's Business	SWIS Firm	Project
2003	 State Bank of India	Banking	 TATA CONSULTANCY SERVICES	5 year implementation project, plus ongoing support for new core banking system (accounts, transactions, ATMs, internet banking). Moving from a branch-based system, where a customer's records are held only in his branch, to a bank-based system where a customer can use any branch.
2004	 bharti Airtel	Mobile Telecoms	 IBM	10-year contract for hardware, software and IT services to cover billing, customer relationship management, data warehousing, email, Intranet services, IT helpdesks, disaster recovery.
2005	 ASHOK LEYLAND	Manufacture of large motor vehicles	 WIPRO	30-month contract for strategic cost reduction. Includes supplier management and dynamic pricing, training the purchasing team to use best-in-class purchasing practices and technologies, and assisting with building databases to inform these tools.
2005	 YES BANK	Banking	 WIPRO	7-year deal for outsourcing of entire technology requirement. Includes implementing core infrastructure and hardware, branch rollouts, networking, data warehousing, and disaster recovery.
2006	 fieldfresh	Export of agricultural products	 ramco	Supply-chain management requirement, including financial, inventory, sales, procurement, and corporate performance management. Tailor-made components including aircraft space availability, farm accounting, transportation-related requirements, and farm maintenance.
2007	 Indian Police	Policing	 HCL	Solution to track telephone calls made in 18 cities, and to record complaints registered by phone. Automated police control rooms, improvements in communications with police response vehicles. Conferencing facilities with control rooms in different cities. 24/7 response facilities.
2008	 ACDI/VOCA	Non-profit international development.	 Infosys	Supply chain management from profiling of farmer clusters to crop planning, scheduling, tracking and forecasting. The application allows farmers to access technical information including database searches for data and images, access to region-specific weather updates and market information, i.e., daily sales volumes and average prices.

Sources: Adapted from CII & Accenture (2006); Dataquest (2008); *Hindu Business Line* (2006); Infosys (2008); Narter (2010); NASSCOM and IDC (2006).

IT companies working in India welcome the responsibility that comes with full package projects for two reasons. The first is that, around the world, these types of projects are well paying and highly profitable, and an experience with them helps IT companies win similar contracts elsewhere (Bharati 2005: 75). The second reason is that, in India, taking responsibility for the whole system comes with a new method of paying for swis and a new way of organising its production. Full package deals in India are often structured so that the IT firm gets paid for outcomes of the system, such as successful uses of its functions, rather than inputs to its production, such as person hours spent building it (Prabhakar 2010: 8). This is desirable for IT firms because the daily or monthly fee that one of their employees can earn in export markets is too high for domestic clients to match (Heeks 1996: 115-136).

According to the IT company managers who were interviewed for this research,⁶ moving to outcomes-based payment enables projects in the domestic market to be delivered in a much less labour intensive way. They can reuse methodologies, previously built applications and tools from earlier projects, and they can automate repetitive tasks. With these shortcuts, they can redeploy fewer workers away from higher paid export work. As a result, they can charge prices that enable growth in the domestic market, whilst still retaining strong profit margins.

2.3 'Global Best Practice'

The fact that there are benefits to both IT firms and IT buyers, if the IT firm takes responsibility for outcomes, does not mean that Indian client firms hand over that responsibility lightly. To the contrary, IT companies are obliged to make a great deal of effort to demonstrate that they can deliver outcomes reliably and effectively. In NASSCOM and IDC's (2006: 29) survey, 71.5% of the 394 surveyed firms cited either provision of demonstrably skilled personnel, or demonstrations of return on investment as being the most important factor in choosing a swis provider.

The IT company interviewees explained that swis clients take a big risk when they begin to re-engineer their processes. Taking that risk is much easier if the IT company can demonstrate past experience with successful companies in their particular industry. A typical comment was that Indian clients "are looking for value for money, but it is more about credentials, past experience, reference, assets, and methodologies that you bring to the table" (interview with head of India market practice at international IT consulting firm, 27 February 2009, Bangalore).

In a speech given to the IT industry's conference in 2009, Alok Kumar, senior

vice president (svp) with responsibility for IT purchasing at Reliance Industries Limited,⁷ went on record as saying that even experience in the relevant sector is not enough. To win domestic contracts, swis firms need to be able to show that they understand the workings of the most successful firms in the client's industry. He explained that keeping swis in-house almost always works out cheaper for the Indian buyer, so his company only buys swis from specialist IT companies when keeping it in-house means "best practice doesn't come". He said, "We are not only cost conscious, we are heavily quality conscious... it [the IT and servicing we buy] has to be in line with global best practice" (NASSCOM India Leadership Forum, 13 February 2009, Mumbai).

The interviewees from IT firms were clear that this "global best practice" almost always comes from developed countries, particularly the US and Europe. In most of the sectors they work with, western firms have been using IT for much longer than their Indian counterparts and as a result have far more experience with the kind of complicated systems that Indian firms want to use. The chief executive officer (CEO) of a mid-sized IT firm illustrated this point with the example of his company's involvement with the National Health Service (NHS) in the UK. Through several export projects with the NHS, they experienced and solved many of the issues that occur with managing hospitals' and patients' records in a large health service. These experiences were subsequently useful in a sales pitch to healthcare providers in Mumbai, who insisted on finding a partner with relevant experience from the West (interview on 17 February 2009, Mumbai).

2.4 Adapting and Innovating in India

Along with applying lessons from their experience in developed countries, IT firms working in India need to be able to innovate. Lessons from experience in developed countries cannot usually be applied directly; the knowledge must be transformed, adapted and recombined into new, appropriate, applications (Muller and Zenker 2001).

One of the most important differences that must be accommodated as western knowledge on IT is adapted for India is the sheer scale of the country's land mass. For example, the State Bank of India (SBI) deal, described in Figure 3, automated the workings of a bank that is roughly the same size as three of the biggest banks in the US put together. At the time of the project, SBI had 17,385 branches and 20,000 automated teller machines (ATMs) (Narter 2010: 3, 6). An interviewee who worked on it described it as a "massive challenge" because the branches and ATMs that needed to be linked covered such a large physical area. Innovation took place "to make sure backups were safe, for example where there might be floods or other risks", and solutions involving satellite systems not yet in use in the West were investigated.

Tiwari and Herstatt (2012) point out another reason why innovations are needed in Indian swis projects: India is poorer and far more populous than most developed countries and IT systems must, therefore, serve a larger number of customers at a much lower cost. When interviewees talked about the

innovations that they undertake to achieve these aims, it was clear that these considerations challenge IT professionals to get the best from the technology, and as a result, they are both interesting and exciting:

The number of people in India is just amazing. Ten million transactions a day, 70 million accounts. When you test, when you configure, when you adopt, when you test your product, you really, really gain some wonderful experiences in what I call performance engineering in systems. "How do you get the maximum out of the systems?" [Interview with svp for India market for large IT firm, 17 February 2009, Mumbai].

There are two major reasons why innovation in IT systems is both possible and rewarding in India. The first is that, because they are relatively new to using IT, most swis buying firms in India are not constrained by the problem of how to accommodate or replace existing out-of-date hardware and software. This means that incompatibility between older and newer versions of the technology does not occur and the best performing IT solutions can be implemented without messy links between old and new systems, and without the need to retrain workers, or redesign business processes (Nilekani 2009: 348).

The second, which was also often mentioned in the interviews, is the close proximity of domestic projects to IT companies' headquarters, and thus their senior and most experienced staff. According to IT consultants working in the domestic market, this access makes it much easier to monitor and talk about experiments and to see what is working and what is not. It also means that senior staff can be on hand to reassure clients so that, as a manager at a large IT firm put it, "tolerance of failure and ability to get a second chance is higher in India because you are nearby" (interview, 22 January 2009, Delhi).

2.5 Benefits from SWIS

What all of this means is that firms in India that purchase out-sourced swis from the sector get two clear benefits over those that purchase IT without the sector's involvement: They learn complicated industry-specific applications of the technology from their competitors in the West and they are able to use the newest technologies and innovations.

When asked what this combination contributes to the outcomes of projects, three of the interviewees proudly pointed to examples where they had surpassed the technical capabilities of their clients' competitors in developed countries. In all three of these cases, their clients gained competitive advantage as a result of systems with a significantly lower cost per use than their equivalents in the West. Sometimes this cost saving occurred because using newer technology meant less IT infrastructure. For example, "the Bombay stock market does a higher throughput of transactions with one-third of the infrastructure of the New York Stock Exchange" (interview, Senior Manager in large IT firm, 17 February 2009, Mumbai).

In other cases, there were dramatic cost savings, which could be passed on to customers. For example, in India, mobile phones have some of the lowest call costs in the world, but the telecom companies are still able to make a good profit. An

expert with many years experience working in Indian IT firms explained that this is because the IT cost of calls to telecoms firms is very small. Even with low prices they can still make a small margin on each call, and thus make large profits “because they have scale, and they count on volumes” (interview, 13 February 2009, Mumbai). Perhaps the most dramatic example though, comes from Indian banking. An interviewee working for a multinational bank in India used the Indian bank ICICI as an example:

The biggest mistake that multinational banks will make is that they are underestimating how far some of the scale Indian and Chinese banks have gone. The cost of servicing in an ICICI bank—if they take that cost of service into the UK... I do know, for example, that they give you the highest rates in London on deposits. There’s a reason for that. It’s because the cost of service is so low, they are at a different price point with a more advanced technology [interview, 4 February 2009, Mumbai].

Of course, these three cases are the best examples of outcomes from swis projects that the interviewees could point to. When asked about the usual, or average, situation of Indian swis buying firms, most admitted that so far they have not yet achieved parity with western competitors’ capabilities. Indian swis-buying companies are, in general, new to IT use and they have only automated some of their processes. Where systems have been installed, they are at parity, or better, than those in developed countries, but there is more work to be done. For example, as of now, manufacturers have “core” systems for managing their materials and workflow, but they have not yet automated their customer records and marketing, or supply chain (interview, sales manager at large IT firm, 20 February 2009, Pune).

In retail, a similar situation prevails. Indian retailers at the moment have systems to manage stock and ordering, but have stopped short of buying the “business intelligence” systems that are routinely used in the West to optimise which products to stock at different times of the year (interview, CEO of small IT firm, 13 February 2009, Mumbai). The head of India market practice at an international IT consulting firm gave an example of Axis Bank to illustrate the situation in finance. He said that the bank’s “data centres are absolutely top of the range” and that “in the background everything is all functioning really well”, but that with “mobile banking they have nothing, their customers can send a message to check their balance, and that’s it”. He summarised that “the bits that they’ve done, they’ve done well, but the bits that they need to do to become world class, there’s still a lot of stuff to be done out there” (interview, 27 February 2009, Bangalore).

His opinion was that these additional systems will be put in place in India, and that they will improve Indian firms’ processes, prospects for expansion, and ability to compete with developed country firms. This optimism is justified if his and the other interviewees’ experiences of swis projects are representative and likely to be replicated.

This possibility finds some support in other research. Kite (2012) investigated the impact of swis purchasing using an econometric analysis of a very large sample of large- and

medium-sized firms. She found that the swis investments in her sample made a contribution to firms’ revenues far in excess of both the amount spent on swis and the effect of spending the same money on more general IT. Importantly, her analysis also confirmed the sector’s role in bringing catching up with advanced firms by statistically demonstrating that swis purchasing moves Indian firms significantly closer to the technical frontier.

Overall, then, there is clear evidence of the swis sector being involved in a positive process that benefits Indian firms. This section has shown that in India firms that purchase swis from the sector can catch up with, and sometimes overtake, their western competitors’ IT capabilities. These findings are very encouraging. However, when taken together with the literature discussed in Section 1, they raise an important question: What is it about the swis sector that makes catching up in India possible, when previous research has found that in many other places it has been thwarted? This question is now taken up in Section 3.

3 SWIS Firms as Multinational, Learning Organisations

Perhaps the most important feature of the swis sector in this regard is that it works with both developed country firms and Indian firms. Without this scope of operation there would be no opportunity for the sector to act as an indirect conduit of knowledge between those who have it and those in India that want to learn it. But, having a multinational presence is not enough. The process of bringing learning to India also depends heavily on three other conditions.

First, swis firms’ developed country clients must be willing to share knowledge with their swis suppliers. Second, swis firms must be willing to work on Indian projects so that they can reuse knowledge for the benefit of domestic firms. Finally, it must be possible to successfully apply western knowledge about IT in India. In other words, methods of using IT from developed countries must be reworked and made not only technically, but culturally acceptable for Indian clients. The remainder of this section provides a discussion of these three conditions based on the interviewees’ suggestions about how and why they have been met.

3.1 Sharing Knowledge

On the first point, several of the interviewees were clear that swis export contracts can involve a deep trust between swis suppliers and buyers, and, as a result, a willingness to share knowledge. The former chief of European operations in a very large Indian swis company gave the example of a large British supermarket chain. The relationship began when he made an unsolicited “cold call”. Eleven years later, it had grown into “a \$40 million business, with a good amount of sharing”. He was very clear that this sharing came about both because of the trust between “the people there that are interacting” and “the relationships that are there” (interview, 8 January 2009, London).

Lema and Hesbjerg (2003: 120-24) carried out two in-depth case studies on Indian IT firms’ activities in export markets,

and found something very similar. In both cases, export contracts were accompanied by “long-term”, “cooperative”, and “strategic” partnerships in which free sharing of knowledge and intellectual property took place on a regular basis. In the context of the literature, these findings are surprising. Knowledge on how to use IT is essential to many export clients’ competitive advantage, and the literature suggests they ought to be wary of sharing it (Abramovitz 1986; Kaplinsky 2000).

When this point was put to interviewees, they identified two clear reasons why export clients might overlook this consideration. The first, which was the case in the British supermarket example above, is that IT firms are not, for example, retailers themselves, and so are not seen as potential future competitors (interview, 8 January 2009, London). The second is simply that IT systems are complicated. Several interviewees testified that it is not possible to install them without a deep sharing of information. If export clients want the benefits of low-cost swis from India, they must share knowledge with their Indian swis provider.

3.2 Reusing Knowledge

Perhaps another reason why export clients have been willing to share knowledge with swis firms is the mistaken idea that their partners will not reuse it in developing countries. In the 1990s, when many western firms had their first interactions with India-based IT firms, it was well-documented that they preferred to work in export markets. Heeks’ (1996) survey found that profitability and ability to learn were the key reasons behind this preference. The cost of labour in India was significantly lower than the prevailing wage for IT workers in the west, so that Indian IT firms working abroad could charge a significant mark-up above their wage bill. Additionally, Indian IT workers and firms relished the opportunity to work in the west because the learning opportunities offered were beneficial for their careers and brands, respectively.

More recently, these incentives to work only on developed country projects have begun to be matched in the Indian domestic market. Indian projects have become more profitable, and India offers IT firms and workers a rewarding learning experience. But, there is also another reason why the domestic market has recently become more of a focus for IT firms: it is the fast economic growth that India has been experiencing, and its potential for more growth in the future. With the exception of 2008-09, when global recession affected the Indian economy, the years between 2003-04 and 2010-11 saw real GDP growth of around 8% or higher (Ministry of Statistics and Programme Implementation 2011).

With this strong growth trajectory, the interviewees from IT firms were sure that their firms’ future growth depended on the domestic market. For India, a typical prediction was “definitely the growth will be there” (interview with sales manager at large IT firm, 20 February 2009, Pune) or “the domestic market will definitely keep on going, I am confident about that” (interview with marketing consultant to IT firms, 4 March 2009, Bangalore).

3.3 Applying Knowledge

The final of the three conditions necessary for catching up to take place is that IT firms’ attempts to apply what they have learned from export markets into India must be successful. It has been argued above that this involves significant technical innovation for the Indian context. It turns out that in many cases it also involves a serious understanding and accommodation of the culture of Indian businesses (Nicholson and Sahay 2004).

According to the interviewees, this is true from start to finish in domestic projects. During the sales process, personal networks are incredibly important, because “it’s very hard to sell to someone that doesn’t know you”. Without pre-existing personal contacts, IT consultants need to spend many months building personal trust with potential clients (interview, sales manager at large IT firm, 20 February 2009, Pune).

There are also social differences to navigate once the project is up and running. In developed country markets, it is usual to create and agree upon clear-cut written documents describing the parameters of the project and the responsibilities of each party. In India, on the other hand, “people use their personal relationships. The client will call and ask you, ‘Please can you accommodate this? Please, can you just do this?’” (interview, IT consultant working in the domestic market, 4 March 2009, Bangalore). IT firms mostly staffed by Indian people are, by virtue of their own backgrounds, able to understand and accommodate the cultural needs of their Indian clients. This, alongside efforts on innovation for the Indian context, has been essential to their success in the domestic market.

In summary, this section has found that what is important about the swis sector is that it is active in both developed countries and the Indian domestic market, and that its firms are actively interested in, and successful at, learning. The sector has seized the opportunity arising from the technical complexity of its product to build long-term, trusting relationships in export markets. As a result, it has absorbed knowledge which otherwise would rarely leave developed country firms. IT firms have also been successful in both technical innovation and accommodating cultural behaviour to successfully bring this knowledge to India.

4 Implications

The most important implication of the research presented here is that much of the sector’s activity in the domestic market is beneficial to India’s economy, and so it should receive policy support. This paper has argued that domestic projects raise the output and productivity of Indian firms, and move them towards stronger competitive positions in world markets.

When this finding is placed alongside the other arguments against export orientation in the swis sector, covered in Section 1, the implications are clear. swis sector policy support should be maintained, but redesigned to incentivise domestic market deals rather than exports. This move would remove government support for export projects in which India’s most educated and highly skilled workers are engaged in work

that benefits western firms. More importantly, it would also encourage the swis sector and other Indian sectors to together capitalise on the opportunity that now exists to bring knowledge from developed country firms to India. If policy can be designed to incentivise swis projects in parts of the economy, such as small-scale firms, which have not yet seen them, so much the better.

This paper also has implications for the literature on catching up. Perhaps the main one is that outsourcing industries that work across borders have the potential to bring new catching up possibilities. They clearly have an opportunity to spread tacit learning, and where, as with the IT sector, features of the industry allow it, the results can be impressive.

Another implication is that capabilities in production of technologies, like IT, that are complex, path dependent and constantly improving, can be valuable to developing countries. Complexity leads to the need for long-term trusting relationships and the tacit learning that comes with them, whilst path dependence and technical progress bring the potential for catching up and overtaking with western capabilities.

If, as seems likely, IT has these same features in other developing countries, an IT sector may be able to play a similar role to that which this paper has documented in India. Alternatively, there may well be similar opportunities for India and other developing countries in establishing capabilities in the production of newer technologies.

NOTES

- The Software and IT Services sector is defined as the industry that produces IT and software-related business-to-business services. These services include custom application development, network consulting and integration, software testing, application management, IT outsourcing, software deployment and support, hardware deployment and support, IT training, IT consulting and systems integration, managed services, hosting services and support/maintenance, as well as sale and installation of packaged software in client businesses. IT-enabled services and business process outsourcing are excluded, as is the production of hardware.
- 2005-06 denotes the year between 1 April 2005 and 31 March 2006. This convention is adopted throughout this paper.
- The literature often groups SWIS with IT-enabled services, business process outsourcing and hardware production. These three industries together are referred to as the "IT sector".
- Notable exceptions where demand in these categories is already substantial are educational institutions and packages that allow interaction with e-governance initiatives. See, "Personal Computers (per capita) by Country", *World Development Indicators database*, viewed on 10 December 2012, http://www.NationMaster.com/graph/med_per_com_percap-media-personal-computers-per-capita
- With the exception of 2008-09, the year of global recession (NASSCOM 2009b: 6).
- This paper is in part based on a series of 42 in-depth interviews carried out between 8 January 2009 and 4 March 2009. The interviewees selected covered a range of people holding different types of jobs within eighth of the top 10 IT firms by SWIS revenues from India in 2008. Interviewees from several small and mid-sized IT firms were also included along with experts on the SWIS sector. Together, the surveyed IT firms earned over 35% of total SWIS revenues from India in 2008, and a much larger proportion of the formal SWIS industry as included in Figures 1 and 2.
- Kumar's comments are important because Reliance Industries is one of India's largest conglomerates with activities in many diverse sectors of the Indian economy (<http://www.ril.com/>).

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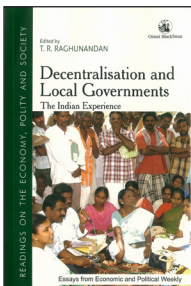
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Decentralisation and Local Governments

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T R RAGHUNANDAN



The idea of devolving power to local governments was part of the larger political debate during the Indian national movement. With strong advocates for it, like Gandhi, it resulted in constitutional changes and policy decisions in the decades following Independence, to make governance more accountable to and accessible for the common man.

The introduction discusses the milestones in the evolution of local governments post-Independence, while providing an overview of the panchayat system, its evolution and its powers under the British, and the stand of various leaders of the Indian national movement on decentralisation.

This volume discusses the constitutional amendments that gave autonomy to institutions of local governance, both rural and urban, along with the various facets of establishing and strengthening these local self-governments.

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