7

IT Enabled Development, Innovation and Business Transformation

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Introduction

This chapter touches on four broad areas. First, it looks at what information technology and communications might mean for development, the options it opens to developing countries, and the extent to which employers understand the importance of IT enabled services as a strategic competency to participate in this new economy. It then touches on some of the opportunities and challenges that IT services can offer to users, especially small and medium enterprises (SMEs), as an enabler of enterprise transformation and transformation of the business environment. Third, it addresses the ecosystem for IT services, and what these services, as a sector, mean for developing countries. It concludes with some of the guiding principles, or lessons, about programmes both to promote IT as a sector and IT services as a core competency or enabler of business transformation and grassroots innovation.

Context

We are living in a technological revolution that has not yet stabilised or come to an end. It continues to evolve very fast, some of the latest examples being the emergence of broadband and high-speed networks, mobile and wireless networks, and cloud computing. All of these suggest that this revolution has not run out of steam – if anything, it seems to gather speed every day – and has major implications for productivity, both in the public and private sector.

In the early stages (late 1980s into early 1990s) there were all kinds of debates about the impact of information technology on productivity, in business enterprises as well as in government. Today that debate has more or less subsided. There is a growing consensus, certainly in the US and to some extent in Europe as well as in certain developing countries or OECD countries such as Korea, that information technology has already had a major impact on productivity. Indeed, it has become an essential competitive tool for advanced economies. Less is known about its impact on developing countries and this is still evolving, but we know that, as in all technological

revolutions, it takes time for productivity to reveal itself at the macro level. In a sense, we are living in a techno-economic paradigm that is very similar to the major impact that electricity, railways and steam engines had in the industrial revolution, and it took much longer in these earlier revolutions for technology to be broadly diffused. In some areas of information technology, such as wireless networks and telecommunications, and particularly mobiles, diffusion is happening much faster. Information technology has become the global general-purpose technology of our time, and that means a lot of adjustments have to be made to policies, institutions and skills to take advantage of this new techno-economic paradigm. These adjustments are not always easy to make.

Possibilities

We need to appreciate these broader forces around IT services and ITES and the transformation that is going on so that we can take advantage of it more broadly for development, not only for the export of ITES, but also to transform the economies of developing countries. In a sense, what IT offers is the ability to access knowledge from across the world and to work with talented people and different skills across continents and countries. With globalisation, information technology provides an option to change the development process so that people can access and share knowledge much more quickly; they are able to access global talent and expertise and are able to exploit global demands in new areas such as ITES. It also allows people in general to collaborate globally for new niches and new opportunities for exports, and to promote grassroots participation in development by empowering communities, SMEs and non-governmental organisations (NGOs) with knowledge and information. They can then make their voices heard to ensure social accountability and transparency, and participate more broadly in various development activities. In a sense, the IT revolution provides us with a new paradigm for development that is based to a greater extent on networks, innovation, and access to knowledge and learning. That is good news.

What are some implications for business?

Most organisations have been built on hierarchical models, based on fairly high-cost transactions and interactions, both within and across organisations. IT offers a dramatic cut in these costs so that new forms of organisations that are much more networked and decentralised can begin to emerge. They can be based to a greater extent on shared knowledge and shared information, which also allows businesses to outsource a large number of these activities across the globe. This is more significant for the large multinationals that have hundreds of thousands of suppliers and contractors, but it also has major implications for SMEs that are able to internationalise quickly, connect and offer niche services and knowledge to large players and global supply chains.

This will have major implications for how organisations do business, how they relate to each other and how they are able to access competencies as well as develop their own core competency to orchestrate networks and share information. As a result, we also have new types of business strategies that are highly focused, allowing networks of providers to differentiate services across clients, which some people call 'extreme personalisation' of services. Providers are able to co-create services with users or clients, and to shape content and co-innovate in collaboration with these customers. These strategies also tend to depend extensively on partnerships and outsourcing and on the ability to adapt rapidly to changing technologies and changing markets. The new organisations of the twenty-first century that are enabled by IT are able to mobilise talent, mobilise the intangible assets they have, to sense information about clients and markets, and have situational awareness and what is called business intelligence. These are intelligent enterprises that are very different to the enterprises of the nineteenth and twentieth centuries. It is important for the IT industry and IT services to understand this macro picture and to understand what kind of clients they are going to be serving.

The implications for a variety of services can be seen in the financial sector with the financial services revolution, with all of its advantages as well as its risks. Another area where IT has led to a major revolution is the media industry, where the internet in particular has had a major impact on the mass media and publishing, and on the increasing ability of users to participate in knowledge- and information-sharing through social networks, blogs and so on.

IT has also enabled global supply chains in many ways. Perhaps the most important change is that many of these supply chains have become agile and temporary and more demand-driven – more driven by the user industries or shifting demand in the market – and are able to swiftly adjust based on demand from the markets. In China, for example, many of the large companies being formed in the garment industry become major multi-billion dollar enterprises without producing anything themselves but by orchestrating the demand for garments; they are able to sense what is required and respond very quickly by importing from thousands and thousands of suppliers. The core competency in this case is the ability to orchestrate networks and mobilise response from a large number of suppliers and expertise from across a global supply chain that is in many ways dynamic and temporary.

These changes have many implications, not all of which are positive: there are also a lot of risks, including the growing divides between those who are able to master the technologies and be part of these global networks and those who are not. Unfortunately for many countries it may also mean that the promises will not be realised, in the sense that investing in the technology per se does not guarantee results. This cautionary note suggests that we should avoid technological determinism; productivity, growth and the ability to participate in this revolution depend very much on public policy choices, and it is not inevitable that IT will always be a win-win for all the participants.

Options for developing countries

The IT revolution offers three broad strategic options for developing countries. One is to see IT primarily as an industry or service sector that generates new sources of growth and high value-added services and will provide attractive employment for those employed in that industry; it is a fast-growing industry, and both the magnitude of that, and the opportunity of participation by developing countries is well known. This is the option that most countries emphasise. Another is the opportunity to deploy IT as a general-purpose technology or an enabler for many services and sectors, to help promote new business models, to innovate and to transform sectors and industries. In this, IT services, and particularly software services, can be seen as a core competency because it is often now integral to competing and exporting not just in finance but also in tourism, in manufacturing, in almost all sectors of any economy for that matter. The other option is to leverage IT more as a tool for empowerment – for engaging citizens, who can feed back to government about their public services, to organising NGOs or communities to participate in development processes and make their voices heard on any or all of the issues of the day. IT is increasingly proving to be a powerful tool for organising grassroots participation and innovation.

These are three broad options. The first, which looks at IT as a sector of industry, has been the one most emphasised in many countries. However, we are increasingly recognising that IT is also a key enabler for other sectors and for the possibility of transforming many services and improving productivity. More recently it is being seen as a tool for empowerment.

How IT is transforming enterprises

New tools

At this stage the IT transformation of enterprises is happening more in developed countries. However, IT is also increasingly having an impact in emerging markets and middle-income countries, and would hopefully happen in SMEs in developing countries, provided they are enabled through e-business solutions and well-designed diffusion programmes. E-business, or IT in business, is offering us an expanding set of tools for redesigning how business is done and for forming new business models. That goes for all kinds of applications in business, whether it is for financial management, customer relations management or supply chain management, or for simpler applications that enable managers and employees to conduct their business. It is also giving opportunities to enterprises to practice new forms of innovation. Innovation and research and development in particular are primarily done within the enterprise. Increasingly, business innovation is being extended to depend on what is called ‘open innovation’, which invites participants, customers and other partners to work with the enterprise in developing new services and new products. Some of the

large enterprises that used to be 100 per cent dependent on internal research and development and the elaboration of new products within their enterprises, such as Procter and Gamble, now have 50 per cent of their products and services innovated externally, through collaboration and a variety of means to engage customers and partners. Hence, many enterprises are involved in developing innovation networks or marketplaces – for example, competitions among researchers to solve specific problems, and often individuals or small enterprises in developing countries are participants in this innovation marketplace, or through outsourcing or offshoring of innovation to many countries. Currently, a lot of that offshoring goes to China, India and countries in East Asia, but increasingly it is happening in other parts of the world.

SMEs

E-business can become an important tool for helping to develop or deliver business development services to SMEs, for example helping them access micro-finance, providing them with knowledge about markets and information, and enabling them to internationalise and add value to their services. This transformation of enterprises does not happen overnight, as there is a learning process that enterprises go through to be able to use IT, all the way from encouraging access to information and automating business processes, to gradually integrating applications across the whole enterprise, and then linking this enterprise to many other partners and customers. This leads to deeper transformation or perhaps even new business models.

To enable enterprises to go through this learning process and to be able to deepen the impact of IT on the way they do business, many countries have developed diffusion programmes to help SMEs overcome some of the common constraints. These range from building awareness of and familiarity with IT tools, to exploring ways of re-engineering their business processes, to managing the risks of investing in the technology. This kind of support allows SMEs to get the most out of their investment. These diffusion programmes have been in operation in a number of countries and some are even second and third generation. Many of these programmes started in OECD countries and are now increasingly being adapted and transferred to developing countries. There are many lessons to be learned from them,

Broader impacts

The impact of IT is not only felt within or between enterprises, but also in relation to their whole environment. IT can help transform the business environment or the relationship between business, government and civil society. For example, municipal portals, offering simplified access to public services, have made it much easier for businesses to access information about the regulatory environment – the procedures for establishing a business, registering, licensing, reporting to government and clients and so on. It is well known that SMEs suffer from the regulatory burden and from

a lack of access to information about how to start a business, register or licence. In many countries these costs can be quite high, which has led to high barriers to entry, a very large informal sector, and severe constraints on SME growth.

Procurement

IT can improve the business environment through a variety of other applications, for example through e-government procurement. Using e-procurement for the public sector helps make the bidding process more transparent and competitive, and reaches out to a larger number of enterprises. In general, through access to information and analysis of these procurement transactions, government procurement can be made much smarter and more analytic. This applies just as much to IT services and IT investment in government in general, and can make government a more effective user of IT services. Another application that can help transform the business environment is to facilitate trade, as in the success of the Singapore TradeNet in speeding up trade transactions and connecting members of the trading community in one data network. The model has been replicated by others including in Tunisia, or one in Ghana that was done primarily by private sector investment. These are just examples of what IT can do for the business environment.

The IT sector

Growth

IT, as a sector in itself, is a dynamic service that is growing quickly. It is estimated to be worth about US$3.4 trillion globally, including investment in both products and services. Of this, about US$1 trillion comes from developing countries. This is a growth sector that can become a core competency and enabler for enterprises within developing countries, aside from being a source for export itself. The good news is that the entry points into this global market for ITES are diverse. There is no one-size-fits-all and many countries have adopted very different tactics. For example, India used low-cost export of IT services as a driver for growth towards becoming a major player in the IT market globally. However, there are other countries that have taken very different directions. Some of them are very much dependent on a high level of research and development and innovation, such as Israel, or adaptation to certain markets, such as Ireland or more recently some of the new economies that are increasingly looking at this as a source for export and high-growth value, like Mexico and Brazil.

IT services should be included in the thinking and planning of IT-enabled digital content, or 'digitalisation', and the availability of IT digital media, because these can be a very important source of both cultural and educational development in the country, and for the export of products like film and music. The fact that many forms

of cultural content can be digitised and exported and shared very easily should be a good opportunity for many developing countries to capitalise on their local culture and creativity.

The challenge is to get the IT services to grow in a dynamic way and to be able to connect and compete globally. In most developing countries, the IT services sector is composed of fairly small enterprises and like other SMEs they face many constraints, for example in accessing skills and markets, appropriate infrastructure and finance. In the case of the IT sector, however, these constraints are magnified by the fact that it is such a dynamic sector, which depends more on innovation of its services, highly-specialised skills, specialised infrastructure (particularly technical communications) and research and development or adaptation. Often, the legal and regulatory constraints can be significant because the government and public sector have not caught up with the nature and requirements of the sector, from intellectual property rights (IPRs) to venture capital and so on. Sometimes, public procurement in government in developing countries can discourage the development of IT services, either because of poor procurement procedures or the not giving adequate incentives to IT services as distinct from hardware, or other uncompetitive practices. Governments in developed countries have often been lead users of IT, but it is important for them to learn how to become an effective user of IT services; how to outsource, how to promote competition among local providers, as well as how to partner with international providers.

The IT industry as an ecosystem

These constraints are shared among all SMEs, but they need to be addressed in a specialised way for IT SMEs. This means that we have to begin to think of the IT industry as an ecosystem; to see how all the key players, from the private sector, civil society, academia and multinationals, can work together to create clusters to facilitate the development of parks and incubators, and to help this IT ecosystem to develop. There are many innovative practices to help develop specialised human resources to match the needs for quality and up-to-date training and for certified training in particular, some of which can be provided by leading multinationals. There are also many ways of encouraging research and development or innovation for SMEs in this sector, to provide access to finance and venture capital, and also to link these SMEs to universities and IT user industries. Most important is to draw on lessons learned from successful clusters. For example, we know that it is preferable for IT parks and incubators to be managed by private enterprises and that such parks should emphasise marketing of their services. We also know that IT parks need to create linkages to universities and knowledge centres; should have fairly advanced IT infrastructure to enable interaction and the building up of a cluster, making it easier to export and so on; that they should have some specialised finance facilities for the incubators or for the small enterprises located in them; and that they should provide effective shared

facilities or 'business development services' to support these enterprises in activities that are uneconomical to do on their own.

Grassroots

IT services can be enriched and made more relevant to developing countries when viewed not only as a source for export or outsourcing in general, but also as a service for communities and grassroots organisations to mobilise local knowledge and creativity. Many innovations, for example mobile banking, came from the user side, from communities and from developing countries. Many of the innovations in lowering the cost of mobile services and in the provision of prepaid services and so on also came from developing countries. The user innovation element, the participation of users in adapting these tools to their needs, is extremely important in the case of information technology. Ideas and pilots are helping to create innovation networks at the grassroots level, to share innovations that are relevant to poor communities and low-income users, and also to create knowledge and content at the local level that is relevant to development. We see examples of that in micro-finance and in the development of tele-centres as the community centres for innovation, knowledge sharing and experimentation. There are also funds being created for grassroots innovation using competitive grants and cost sharing. In many countries, such as Sri Lanka and India, many of these competitive grants and innovation funds are able to empower and help communities and relatively poor users to develop relevant local content and to adapt these tools to their needs. It is important to emphasise this point, because IT is very much context-dependent, and appropriating the technology for the needs of poor communities and low-income users is critical to the development process, particularly in reducing a growing inequality gap.

Conclusions

What are some of the guiding principles or lessons in developing programmes either to promote IT as a sector or to promote the use of IT by SMEs and by communities at large?

One is that IT should be used systematically as a key to private sector development strategies. Often IT strategies in developing countries tend to be developed by IT ministries or telecom ministries, separate from private sector development strategies, entrepreneurship strategies and SME strategies. This gap needs to be bridged.

Second, this is not about a single input such as investing in IT or providing finance for IT SMEs; rather, it requires a much more holistic approach that looks at human resources and infrastructure, and enabling policies, with partnerships across institutions in the public and private sectors and civil society. In particular, the emphasis should be on the soft aspects, to create an ecosystem for IT. This includes

appropriate policies and institutions; developing and nurturing leadership in the business sector; collaboration among associations, academia and government; the development of links between IT enterprises, multinationals and academia, so that we can develop the appropriate skills in a dynamic way, tailored to the needs of these enterprises, developing the necessary consensus for reforms, and developing change management and entrepreneurial skills which are critical to SMEs in general and IT enterprises in particular.

These programmes need to be developed in a way that balances strategic direction or growth policies at the national level with experimentation at grassroots level among associations, particularly SMEs. This is because a lot of this will require innovation from the bottom up, and can vary within a country, across regions and so on. We should therefore not expect that these problems could only be dealt with centrally or from the top.

Because IT is context specific and requires a lot of learning and adaptation, and a process of discovery, we need to focus heavily on local capability for learning. In other words we need to design these programmes for diffusion or for promotion of IT in ways that can help the country or the sector to evolve and learn quickly, rather than expect that a ready-made solution can be imported from somewhere else.

Finally, we need to co-manage different spheres of public policy-making – IT policies, the innovation policies, entrepreneurship development policies, SME development policies and so on. These spheres of policies sometimes belong to the national innovation system, industrial and trade policies or education and training, or to the user industries such as various user sectors in agriculture or manufacturing. They all need to be orchestrated in a way that helps develop these ecosystems or the dynamism of IT services. It depends on a local market that is increasingly able to use IT effectively, as well as on the exporting of IT services in niche areas globally – two areas that seem to be complementary rather than either/or.