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INNOVATION AND INTERNATIONALIZATION BY INDIAN FIRMS: EVOLUTIONARY PATHS SINCE 1990S

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INTRODUCTION

In 2010, there were 56 Indian firms in the Fortune Global 1000. These included firms like Sun Pharmaceutical with revenues of slightly less than US$ 1 billion, to Infosys and TCS with market values of roughly US$ 30 billion, and Indian Oil with revenues of about US$ 50 billion,.[1] Most of these firms now have operations overseas. Some, such as the Tata Group, have more than 57% of their revenues coming from abroad. In this chapter, we examine the links between Indian firms' internationalization and their innovation capabilities over the last two decades. We also discuss the implications of these recent trends for developments in Indian firms' innovation and internationalization in the future.

The innovation and internationalization process of Indian firms has been dynamic, with both elements changing qualitatively and quantitatively over the last two decades. We identify three broad phases in this process: an initial phase (which roughly covers the 1990s) and two subsequent phases (which together roughly cover the 2000s). These phases correspond to the changing institutional landscape in India (and overseas). For instance, in India, the 1990s were a period of opening up of the economy following several decades of import substitution and tight internal controls. Thus, Indian firms in the 1990s were still constrained in what they could do internally but were even more constrained in terms of what they could outside the country.

We structure our discussion of these three phases around the following questions:

1. What were the innovation capabilities of Indian MNEs in each of these phases?
2. How did Indian firms use these innovation capabilities to internationalize, both to other emerging markets as well as to developed markets?

We then answer the following questions:

3. What is the applicability of the model that comes out of the analysis of the two questions above, both with respect to firms going from Emerging Markets (EMs) to Emerging Markets as well as firms going from Emerging Markets to Developed Markets (DMs)?
4. What conclusions can be drawn about the competitive advantage of Indian MNEs arising from innovation?
5. What will the still-evolving third phase of innovation and internationalization look like for Indian MNEs in the years to come?

[1]Source : http://en.wikipedia.org/wiki/List_of_companies_of_India

INNOVATION AND INTERNATIONALIZATION BY INDIAN FIRMS: THE EVOLUTIONARY PATH SINCE 1990.

Innovation by Indian firms has been driven and determined by a mix of institutional, industry and firm-level factors. As the economic and institutional environment has evolved, the competitive dynamics across a range of industries have changed. Specifically, the emphasis that firms have placed on innovation versus internationalization, and the nature of the relationship between the two, has changed over time. While there have been distinct cases of companies using India-specific factors to compete in international markets, such as the well-known and widely recognized success of Indian IT and BPO firms, there have been an equal number of cases driven by other types of relationships between innovation and internationalization which we outline below.

To structure our analysis, we look at three distinct though overlapping phases of innovation and internationalization of Indian firms.

Phase One (1990-2000): Arbitrage-based Internationalization

The first phase of Indian internationalization, roughly corresponding to the 1990s, marks a starting point in terms of the development of the innovation capabilities of Indian MNEs. The overall thrust of such innovation involved the arbitrage of a low-cost base in India. The penetration of international markets was based on trading of entrepreneurial skills. Such internationalization was largely focused on markets that at the time were categorized as transitional or developing – such as the ex-Soviet bloc, Africa and South East Asia. To gain a better understanding of why this was the preferred method of internationalization, we examine the context, both in India and overseas, and the type of firm-level innovation that leveraged this context.

The Indian context, in the 1990s, consisted of groups of largely oligopolistic firms, particularly family-owned business groups, across a range of industries. Such an outcome was due to a specific approach to a managed market economy that the Indian government had pursued for the preceding decades. Specifically: the government allocated licenses to firms to undertake a specific industrial activity, and the focus of government policy was a) import substitution across a range of products, such as consumer goods and medicines and b) to manage 'destructive' competitive forces (Luce, 2008).

At the same time, a large number of industry sectors had also been 'reserved' for small and medium sized enterprises – this was termed as the 'license raj', wherein the state was involved in micro-managing the management decisions of private firms (Das, 2002; Luce, 2008). The 1990s marked a period when new institutional arrangements were being devised and slowly implemented.

Regulatory barriers were removed across a range of industries, so that new, and sometimes foreign, competition could enter. For example, beverage giants Pepsi and Coke entered the Indian market in this period, after a gap of nearly two decades, while some automakers such as Ford also made limited entry with a few models. At the same time nevertheless, old institutional practices, built over decades of the license raj, were still intact in many aspects, such as foreign exchange and foreign ownership restrictions. The transition provided particular challenges for many firms, as they needed to make sense of and respond to changing institutional and industry conditions in terms of the direction and magnitude of such changes.

As the economy liberalized in the 1990s, and as new institutional conditions evolved, some firms, particularly the more entrepreneurial ones, tended to aggressively initiate international expansion. Many of these were from emerging industries such as information technology. Such an approach used a combination of factor-based arbitrage and entrepreneurship that matched supply in India with demand in overseas markets.

The demand from overseas markets came from changes that had occurred there in the 1990s. New markets emerged following the end of the Cold War and the collapse of the Soviet Bloc, as well as from growth in Africa. Institutional infrastructure in many of these countries was just beginning to be established, and industry conditions were also being opened up to new competition. In other words, there were similarities between conditions in the Indian context and some of these overseas markets, in terms of the direction of change in institutional and industry conditions.

The theoretical explanation for this pattern of innovation and internationalization lies in institutional theory which suggests that the firm's ability to exploit or improve its capabilities abroad may vary, depending upon the institutional contexts in which it invests. Kostova (1996) was one of the early researchers to recognise these challenges and termed the construct 'institutional distance' to tap into the extent of similarity or dissimilarity between the regulatory, cognitive, and normative institutions of countries. The institutional environment, in particular, affects various aspects of firms' operations and thus its competitive advantage in the host country. Regulatory, normative and cognitive factors can affect various aspects of firms' activities and ways of competing in the host country (Xu and Shenkar, 2003).

Emerging countries are characterized by a lack of the soft infrastructure that makes markets work efficiently (Khanna and Palepu, 2006: 62). This infrastructure includes intermediaries such as market researchers, supply chain partners, rating agencies and media, regulatory systems and contract enforcing mechanisms. Thus emerging countries are characterized by 'institutional voids' that make it difficult for companies to access capital or talent, to invest in R&D or build global brands. Emerging country firms or local firms can exploit these voids to compete with MNEs from developed countries that lack experience of operating in these institutional settings (Khanna and Palepu, 2006).

Thus emerging market firms that have learned to compete in institutional environments characterized by weak institutions and institutional voids may be better positioned to compete in other emerging markets with similar environments. This logic underlies the concept of institutional arbitrage. Hall and Soskice (2001) define institutional arbitrage as follows: 'multinational enterprises may shift particular activities to other nations in order to secure the advantages that the institutional frameworks of their political economies offer for pursuing those activities' (2001:57). Thus gaps in the host institutional environment or an unfavourable institutional environment may be offset by taking advantage of institutional arbitrage. In summary, institutional theory concepts suggest that emerging market firms may benefit from engaging in institutional arbitrage in other emerging markets (Figure 1).

In addition, industry conditions in many of the still 'emerging' and mostly 'transitional' markets were also evolving in the 1990s. In many emerging markets, industry structures were less well developed and less competitive than in developed markets. For instance, supplier networks and related industry infrastructure were less well-developed. Product innovation was less aggressively practiced, and incumbents tended to coexist in terms of sharing the overall market. At the extreme, entire industries or important segments of industries were undeveloped. In other cases, industries had homogenous product offerings, with little segmentation or differentiation to address the unique demands of customer sub-segments.

In such a context, firms from other emerging markets that have relatively advanced domestic markets in terms of product innovation and competitive intensity were likely to find such underdeveloped markets and industries attractive for entry. These firms could bring assets that they have developed in their domestic markets, and that had value, i.e. fit, in specific emerging or developing economies. These assets and capabilities could be unique, in the sense that Western competitors may not have the same accumulated set of relevant capabilities. Thus, penetration of particular segments was potentially easier. Figure 1 reflects this idea that emerging market firms may find attractive opportunities under specific institutional and industry conditions.

For Indian firms, relative success in addressing such new demands in the 1990s was to a large extent based on their use and leveraging of various kinds of innovation. Some of these were product-based, mostly in low-end consumer goods, garments, and medicines, namely the four T's: tea, toothpaste, t-shirts, and tablets. A major rationale for such innovations were those based on exploiting factor differentials, in terms of both cost and quality, between India and the host markets. Other types of product based innovations were also seen on a limited scale. For instance, automobiles and trucks were exported to other developing markets, particularly those in Africa that had similar infrastructure conditions as in India. They also had similar institutional conditions, particularly in the rigour of product certification and quality expectations, as well as price points that the local host market could afford. In these conditions, while there was some latent demand, the Indian firms had the appropriate product portfolio at the price points that would open up the market for them. Similarly, Indian firms, specifically trading houses, were major providers of certain basic consumer goods to the Russian market, in the post-communist 1990s. Institutional conditions for many of these consumer goods were still being formed, in terms of product certification, while industry conditions meant that many such products were suddenly unavailable as supply chains collapsed together with purchasing power. Indian firms then moved to provide such basic consumer goods at prices that were attractive to a population that suffered a rapid loss of purchasing power, following the collapse of the Soviet system.

A second type of innovation, once again based on factor differentials, also emerged in this period of the 1990s. These were essentially processes that were done at a lower cost and sometimes higher productivity than in overseas markets. Such process innovations primarily enabled the Information Technology sector to develop and thrive, and also involved the trend of 'body-shopping' that arbitraged low-cost based skills between home and host markets. The market focus of such innovating firms, however, was different from the product-based types – the primary focus here was the developed markets rather than other 'developing' or 'emerging' or 'transitional' markets.

A final type of innovation that emerged in this period was innovation in business models. Firms were able to develop unique value propositions based on distinctive value chains, both inside and outside the firm. An interesting case is that of the diamond industry globally. Typically centred in the Belgian port city of Antwerp, the industry became increasingly dominated by the Indian diaspora from the 1990s. These Indian firms, typically family owned and managed, provided a unique business model of intermediary services between diamond supply and demand. Sourcing rough diamonds from Botswana, and from Southern Africa, they moved these diamonds to the Western Indian city of Surat, and then used highly skilled and low cost artisans to polish and sell the finished product to global buyers. In other words, the business model was based on providing a unique link between different value chain players in Africa, India, and Belgium.

This initial first phase of internationalization and innovation was thus characterized by some common elements: innovation based on labour or factor arbitrage, entrepreneurial skills that drove the ambition to enter and succeed in international markets, a focus on developing or emerging or transition economies (with the exception of IT firms that primarily focused on developed market clients), and also arbitraging to a limited extent on institutional and industry conditions. However, there were still a range of restrictions imposed by regulation and the firm-level capabilities. For example, restrictions on foreign exchange and hence overseas investments were still prevalent, along with redundant inefficiencies built up during the decades of the license raj. These barriers made market-seeking innovations relatively few, and with even more limited cases of success in international markets. In the second phase, however, innovation picked up, and the further opening up and liberalization of the Indian economy meant that internationalization had a different character. We elaborate on this below.

Phase Two (2000 to 2005): Innovation for the Indian Market

The second phase of our analysis broadly corresponds to the years 2000 to 2005. In the first phase, Indian firms were still emerging out of a protected environment and the sense of entitlement that entry barriers created by regulation confers. However, through the 1990s, as the Indian economy liberalized and a different set of institutional conditions set in, Indian firms developed towards operating in more competitive conditions. In 2000-2005 then, innovation trajectories and firms' focus shifted from the transient advantages afforded by labour and cost arbitrage as both the environments and firms' strategies changed.

While there were some uncertainties in Phase One on whether the opening up of the Indian economy was going to be transient, during Phase Two it became increasingly clear that the liberalization process was largely irreversible. The philosophy of the Indian state in managing the Indian economy had clearly changed from active participation to providing the context within which private firms could grow and prosper. Further, many restrictions, such as those on capital and foreign exchange transactions, were relaxed, as the Indian economy gradually became more integrated with the global economy. Hence, M&A emerged as a viable strategy for Indian firms looking to gain globally competitive innovative capabilities.

Competitive conditions too became more intense across a range of industries, as more were opened up to both domestic and foreign competition. Many Indian firms radically restructured in the late 1990s and early 2000s, as they shed peripheral businesses and increased focus (Luce, 2008). While in the past, the philosophy of many Indian firms, and business groups in particular, was that 'we can do anything and everything', the philosophy in the 2000s became more focussed within sometimes related fields (for instance, oil, gas & refining for the Reliance group, or the industry sector approach of the Birla group).

As Indian companies became more efficient and as new firms entered, the Indian economy as a whole started to pick up speed. Economic growth in the 2000s put India on the world map, and made it one of the more attractive emerging markets, along with the other BRICs. This offered opportunities not only for foreign firms, but also for local firms to enter new segments of the Indian market, and develop new ways of competing. That is, the domestic market became a primary target, but competition from local and overseas firms meant that Indian firms had to learn new ways of competing.

A combination of competitive pressure and market opportunity motivated some Indian firms to move up the innovation value chain and gain more access to resources and markets. This in turn pushed many firms to seek new ways of competing from those that were solely based on labour or cost arbitrage (as in Phase One). Indian firms now had more confidence in their ability to compete not only with domestic competitors, but also increasingly with multinational firms. All this in turn had implications for how they chose to do innovation whether with products, processes or business models.

In terms of product innovation, firms in the pharmaceutical industry began to go beyond generic drugs based on a low-cost advantage, towards developing new molecular entities in biotech including biosimilars. Such moves involved more research intensive activities, instead of primarily manufacturing activities. For instance, market leader Biocon increasingly invested in R&D to move to a more innovation based model, and also extended into partnerships with Western players such as Pfizer for insulin biosimilars (Enright & Subramanian, 2008). This was a process that was begun in the early 2000s, following India's signing up to the TRIPS (Trade-Related Aspects of Intellectual Property Rights) regime on intellectual property rights,[2] when many pharmaceutical firms in India initiated forays into innovation as a way to reduce dependence on an imitation based model practiced for the previous two decades. In general, while in the 1990s, a majority of the Indian pharmaceutical industry was focused on bulk drugs, the early 2000s saw an increased focus on prescription drugs for the domestic market. Prescription drugs commanded higher margins, but required increased investment in R&D, as well as marketing and distribution. Overall, while the R&D investments in the pharmaceutical industry in the1980s and 1990s were done with public funds, the 2000s increasingly saw investments by private firms (Saranga and Banker, 2009).

In terms of process innovation, it is instructive to see how the information technology firms evolved in Phase Two. Indian IT firms tried to integrate vertically by seeking industry-specific knowledge, such as banking or insurance, and developing some consulting expertise to go along with their back-end IT services. The IT firms' major customers were in the developed markets of North America, Europe and Japan. However, these firms were not always successful as they ended up competing with IT majors such as Accenture or IBM, amongst others. The foreign MNEs had

[2] The Indian Patent Act, 1999, was an effort to make the previous legislation, the Indian Patent Act, 1970, TRIPS complaint. TRIPS was established in 1994, and later became part of the WTO accession agreement.

developed client relationships, a key entry barrier, and were also increasingly moving their back-office services to India. While competition was one factor, many firms in the IT industry, used to rapid growth in their traditional service offerings, had little motivation, and hence had some inertia in shifting their focus from one based on labour-cost arbitrage to one based on knowledge.

The more interesting evolution was the increasing focus on business model innovation, particularly in services. Consider the case of Bharti – a leading telecom player in India. It had developed a specific model for providing mobile phone services in India. It had focussed its activities on marketing, brand building, pricing and billing instead of the actual provision of the technology. By outsourcing many of the technology related activities such as developing and managing network equipment as well as some of the back-office IT activities such as customer data, it was able to reduce capital expenditures. This enabled the firm to focus on the customer side, and offer some of the lowest prices globally to customers, thus driving rapid market growth. In fact, together with other leading players such as Reliance Telecom, Bharti was able to bring mobile phone access to the vast interiors of India, where having a telephone had been a luxury in the past. To a large extent, this was made possible by value propositions that were oriented towards price points that combined low call rates with low-cost phones that made mobile telephony affordable to a large number of rural customers.

As the Indian economy gathered pace, many Western multinationals that were still holding back in the 1990s entered the Indian market with significant commitments. To be able to compete in this qualitatively different environment (compared to Phase One), some Indian firms felt the need to focus their resources on succeeding in the domestic market. The emphasis was now increasingly on innovation, but many firms lacked capabilities, particularly in technology. Selective acquisitions by companies primarily in engineering, such as by the wind-power company Suzlon and moulding company Bharat Forge, often played the role of enhancing the capability profile of the Indian firms in their ability to compete in the domestic market. Indian firms' horizons also started expanding beyond their domestic markets, and domestic strategies became increasingly integrated with these firms' global strategies.

There were some limited efforts to internationalize home-grown innovations in Phase Two. Some firms tried out international entry on a relatively small scale. For example, Mahindra & Mahindra's launched their off-road vehicles in some African countries, while Tata Motors' began to sell their trucks in some African and South American countries. However, these efforts were limited, and were largely driven by the forces of competition in domestic markets. Internationalization and innovation in Phase Two had a qualitatively different character to Phase One; these became more asset- and capability-seeking rather than market seeking in Phase Two. This was because the focus was increasingly on the rapidly growing domestic market, and assets were being built up to drive innovation to compete in the domestic market primarily.

Overall, from a focus on cost based arbitrage advantages in the Phase One, the focus in Phase Two shifted increasingly towards competing on innovation capabilities. Such a shift involved different skills sets and knowledge bases than those involved in Phase One.

Phase Three (2005 to 2010): Leveraging Innovation into International Markets

While Phase Two saw an emphasis on innovation as a way of gaining competitive advantage, particularly in the domestic market, Phase Three saw a greater focus on internationalization as well – particularly the search for new markets. During much of the first decade of the 2000s, institutionally, many of the developing or transitional economies such as China, Russia, Brazil, and Africa made moves towards improving investment conditions, and establishing new legal and institutional conditions. While their application and rigour were not always uniform, the opening of these markets, particularly large markets like China and Russia, offered great opportunities for multinationals, both from developed and emerging markets. While large and medium sized developing and emerging countries moved to a new market philosophy and industrial structure, many industries were still opening up or emerging, especially in services and healthcare. At the same time, institutional environments too were still evolving, and were similar to conditions in India. For instance, anti-trust and foreign exchange regulations were still being put in place in countries such as Russia and China, as these countries addressed issues of macroeconomic policy along with currency regimes and privatization policies (Goldman, 2003).

In terms of product innovation, in industries such as automobiles, local players like Tata Motors and Mahindra & Mahindra, after launching successful products in the Indian market, moved more aggressively into markets in Africa, South America, China and even the US. Their products included trucks from Tata to off-road vehicles and farm vehicles from Mahindra & Mahindra. These were based on their established success in the domestic market being exported to overseas markets where industry and institutional conditions allowed for market penetration.

In terms of process innovations, pharmaceutical firms increasingly targeted their biosimilars to overseas markets. In addition many IT firms morphed into business process outsourcing firms, as they took on ever more types of processes for their overseas clients.

But the more interesting and probably profound development in innovation for international markets came in the form of applying unique business models that were first developed for the Indian market, and then subsequently adapted for the overseas market. Many of these were interestingly in services rather than products, the latter being typically considered to be the strength of firms from emerging markets such as China and based on low cost arbitrage. In contrast, service based internationalization was based on innovation, and particularly innovation in business models.

Take again the case of Bharti Airtel. In the second half of the 2000s, the company started internationalizing into neighbouring markets like Bangladesh where it invested US$ 500 million. Bharti later bought the African assets of Zain Communications, a Kuwait based telecom firm in 2010. In effect, what Bharti was trying to do was to apply its business model (i.e., its price focused, outsourcing of capital-intensive parts of the activity chain and system) to markets that it believed it could compete in – where there were some industry and institutional conditions that were still evolving. Similarly, after having gained a reputation for quality at low cost in medical services, Indian healthcare providers started expanding their scale-driven business model into some South-East Asian countries, such as Thailand, Vietnam and even Singapore. For example, Fortis Healthcare, a major Indian healthcare provider, expanded its footprint by buying into the assets of a cancer hospital in Singapore, with the objective of implementing the scale-sensitive business model that it had developed in Indian conditions, as well as gaining new capabilities from the advanced medical infrastructure in Singapore.[3]

In other industries, such as diamonds, the Indian entrepreneurs who had increasingly dominated cutting and trading, moved up the value chain and started offering a wider range of services such as financing and end-to-end logistics, thus adopting a one-stop business model for their buyers. In the highly visible IT industry, the model moved towards what was called a 'global delivery model' where clients' needs were served with a combination of assets on site at the client's location, in addition to the Indian company's assets and capabilities in India, and sometimes in other parts of the world (such as China). In other words, in a number of industries, what was increasingly becoming innovative was not the product or the process, but the business model itself that was often rolled out in India, scaled, and then applied to particular overseas markets that had the right industry and institutional conditions needed.

BOUNDARY CONDITIONS, LIMITS AND CHALLENGES

We see that Indian firms' use of innovation capabilities to successfully internationalize rested on two main choices. First, the choice of location (Emerging Market or Developed Market, and then which country in particular) and second the adaptation or adoption of existing or new business models. Successful Indian MNEs were able to find a fit between the home country (India) and host country institutional and industry conditions. They were able to leverage their internally

[3] See http://www.business-standard.com/india/news/qa-malvinder-mohan-singh-fortis-healthcare/426504/

developed innovative capabilities to fit these markets. (e.g., Indian pharmaceutical firms in Russia in the 1990s; IT firms into developed markets).

The institution-based view argues that firms develop resources to respond and compete in their home environments, including their institutional conditions (Peng et al., 2009). Emerging market firms faced with institutional voids end up developing 'specific' resources and capabilities to compete in such environments. These institutionally adapted resources and developed capabilities including innovation capabilities then drive the firm's strategies at home and abroad (Cuervo-Cazurra, Meyer and Ramamurti, 2011). Similarly, industry conditions too drive firms to develop resources and create strategies that help them serve customer needs and interact with competitors and counter the strategies of competitors within the norms and regulations of the institutional environment.

Thus Indian MNEs who first entered other emerging markets and less developed markets benefitted from the resources, capabilities and strategies developed in India. They were at a competitive advantage over firms from developed markets that did not have the experience of developing complementary or primary resources in their home countries to counter institutional and industry voids. Further, Indian MNEs were at a slightly advanced stage of development compared with firms from some emerging markets like Russia and others in specific industries. Emerging market MNEs can save on the learning cost of developing resources because they already have such experience at home, and may even be able to transfer some of the resources already developed to the new host country. Creative application of prior strategies that worked in their home markets may also allow these emerging market firms to identify unique segments of demand within an already functioning industry or an entirely new industry category altogether.

The second and particularly the third phase of internationalization coincided with developments in both the institutional and industry environment in India. Pro-market reforms reduced institutional voids with the liberalization of markets and improvements in governance (Cuervo-Cazurra and Dau, 2009).The opening up of the Indian economy both forced and enabled Indian firms to become more competitive by being able to access more capital, invest in new resources and upgrade existing resources through greater investments in research and development, training and assets. Thus, Indian MNEs developed greater capabilities leading to higher levels of innovation. Further, Indian firms were also forced to go overseas in search of technology and learning to compete both with Indian firms at home and MNEs in their home markets. This springboard (Luo and Tung, 2007) action further developed their innovation capabilities. As they moved up the value chain, Indian firms were better positioned to compete not only in emerging markets that had developed further, but also in key industries in developed markets.

Despite these successes, Indian MNEs still had some limitations however. In some developed markets, Indian firms lacked competitiveness or faced tougher institutional environments than at home and were thus unable to compete (for example, the pharmaceutical industry's expansion in the US has not been as successful as those into emerging markets, where Indian firms have often run into trouble with regulatory bodies such as the US Food and Drug Administration). There were also challenges in specific industries in specific emerging markets. For example, Indian pharmaceutical firms faced tough competition from Western firms and regulations favouring local Chinese companies in China. Several Indian firms that had entered China in the early 2000s were forced to scale back efforts in 2009-2011.

CONCLUSION: LESSONS LEARNED AND THE WAY AHEAD

Innovation and internationalization by Indian firms has changed significantly over the last two decades. In this time, continued development in India has removed some institutional voids, though not all. Further, Indian MNEs have evolved and are no longer solely reliant on their domestic markets. Some, such as the Tata group, now generate more revenue from overseas markets than from their home market. This also applies to several pharmaceutical firms. Such firms increasingly resemble international players, competing in India and abroad. As the competitive and institutional context, both in India and outside, has changed, firms have adjusted their strategies to compete in newer ways.

Indian firms' strategies on innovation and internationalization have become increasingly complex and increasingly involve a mix of asset-seeking and market-seeking rationales. Several leading Indian firms are now listed overseas and are able to access international capital. They have established research and development centres of excellence in developed markets. Learning from these experiences (both successful and unsuccessful), Indian firms are now engaging in higher technology innovation both in India and overseas with a view to targeting the high end of developed markets. For example, Suzlon, the Indian alternative energy firm, started off in 1995 with basic technology to counter soaring power costs and the infrequent availability of power in the Indian state of Gujarat. It is now the world's third largest wind power equipment manufacturer. It has R&D centres in Belgium, Denmark, Germany, India and the Netherlands, and manufacturing facilities on three continents. India is now also a hub for small cars, and Chennai is referred to as the Detroit of

South Asia[4]. Pharmaceutical firms such as Dr. Reddy's and Ranbaxy have led the way in drug discovery and acquiring patents in the US. India is also increasingly a global hub for drug research and development and for clinical trials[5]. Further, Indian firms are using innovation capabilities to invest in other emerging markets to both develop these markets as well as to expand the scale and scope of their operations. For example, Infosys and Wipro have established software development centres in Shanghai and Chengdu, China, while Aurobindo Pharmaceutical has set up production and manufacturing facilities in Datun, China.

The typical process followed by these firms, particularly those that focus on business model innovation, was to first develop and fine-tune the innovation in India and then adapt it to specific industry and institutional conditions overseas. While still in the early stages, such approaches have made it possible for domestic and international strategies to become more integrated. As the Indian economy continues to integrate with the global economy, not only in terms of products and markets, but also institutionally, this trend is likely to increase. Given India's recent emergence as a global player, Indian firms may begin to focus on identified areas of excellence and continue to build capabilities here instead of spreading into other sectors. Indian firms may also begin to add manufacturing innovation instead of services innovation to complete the value chain of activities in these key industries.

However, global expansion also comes with pitfalls – accessing international capital may reduce the cost of capital but exposes firms to international regulatory pressures and more rigorous standards of corporate governance. Indian firms' ability to manage across borders is still nascent when compared with that of Western multinationals – specifically, in attracting and motivating foreign talent, understanding overseas cultures, customers and competitive conditions, and adjusting levels of integration and responsiveness dynamically across time, geographies, products and activities. It is also unclear how some of the recent large scale acquisitions will perform: how will Bharti fare in Africa, and how successful will the Jaguar and Land Rover acquisitions prove to be for Tata over time? Either way, the next few years promise to be significant ones in the development of Indian firms' internationalization and innovation efforts.

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[4] Wall Street Journal, July 8, 2010.
http://online.wsj.com/article/SB10001424052748704111704575354853980451636.html.

[5] july 6, 2011, http://clinuity.com/blog/2011/07/india-emerging-as-hub-for-clinical-trials-says-assocham/

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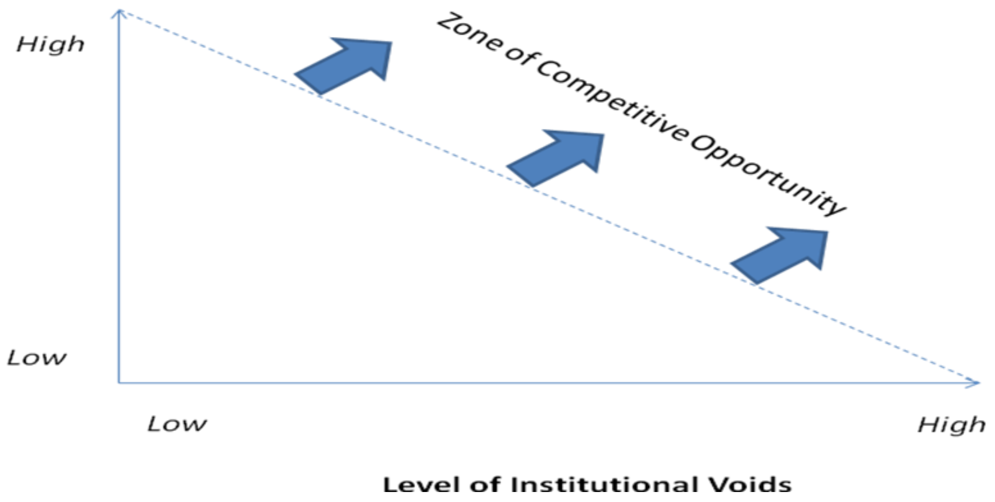
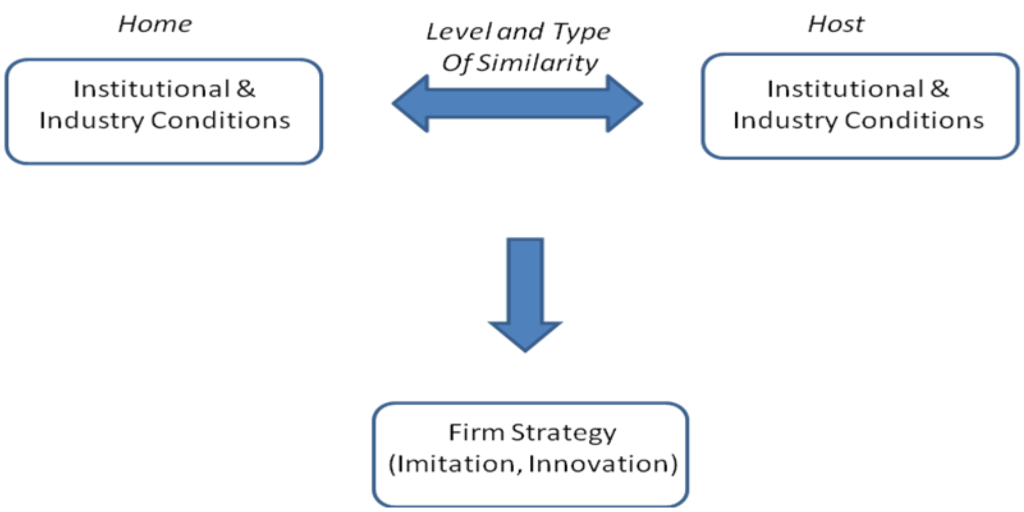
FIGURE 1

Models for the Innovation-Internationalization process of Indian firms





APPENDIX

Key points for three phases of Innovation in Indian firms.

	First Phase: *1990s*	Second Phase: *First half of first decade of 2000s*	Third Phase: *Second half of first decade of 2000s*
Overall	Low cost, trade entrepreneurial skill as innovation, to other EMs (e.g., Soviet bloc, Africa, SE e.g., Birla to Thailand and Malaysia; Mittal to Kazakhstan and Indonesia)	Moving up the innovation value chain, primarily focusing on the Indian market, selective internationalization – both market seeking and asset seeking to be better able to compete domestically	Leveraging business model innovation from India to other EMs (china, Africa, Eastern Europe, Latin America) but also to some DMs both to leverage existing innovation capabilities but also to acquire these capabilities Suzlon in Europe; Dr Reddy's; Tata's in UK
Indian Context	Expertise from 5 decades of import substitution in low cost high volume (e.g., generics and auto but also consumer goods); Low cost, mostly using labour or some other kind of arbitrage; entrepreneurial skill: lots of small and medium size firms, but mostly trade; innovation was mostly about matching supply and demand	Institutional development; Acceleration of opening of the Indian economy; macroeconomic growth; new firms entering old and new industries; increased and substantial foreign competition; relaxation on JV investments; relaxation of capital and foreign exchange controls	Increasing local and foreign competition; experience in competing with innovation; more institutional evolution, more access to capital; accelerating macroeconomic growth; relative improvements in infrastructure
External Context	Institutional conditions and cultural issues, how governments operated; Industry immaturity: some market opportunities (e.g., Soviet bloc countries, Africa) ; similarity in markets (low incomes) and supply and related infrastructure	Opening up of new markets; institutional development; access to domestic markets and assets by foreign firms	Liberalization in many markets; Economic crisis; Protectionism in some markets; Institutional evolution, Industry immaturity and evolution

Product Innovation	Generics; Low-end consumer goods: 4Ts namely tea, toothpaste, T-shirts and tablets, Autos etc.	From generics to biomsimilars; autos/vehicles for Indian market; services (healthcare, banking, etc) for Indian market Mahindra & Mahindra tractors in Africa; Tata trucks in Africa/South America	*F*rom generic drugs to new molecular entities to biotech including biosimilars(e.g., Biocon has a licensing deal with Pfizer to do insulin biosimilars; statins) Mahindra and Mahindra tractors in China, Africa, US; Tata trucks into more Ems
Process Innovation	Business process outsourcing, bodyshopping, IT	IT firms taking more activities; Innovating in biotechnology (drug discovery – biosimilars)	IT firms going into verticals, consulting, global delivery models, cross-country product development processes (Dr.Reddys; Suzlon)
Business model Innovation	Diamond industry: getting rough diamonds from Botswana, SA and Australia to Surat and then using highly skilled and low cost artisans to polish and then sell to global buyers: Africa, India, Belgium	Telecoms (BhartiAirtel); Healthcare, Autos, banking – reconfiguring the activity chain and system; cost innovation and market generating prices, primarily focused on domestic markets	For services not just products - e.g., mobile telephony Bharti going to Africa; healthcare going to Thailand/SE Asia; diamond industry moving to high value added e.g., to higher value diamonds, bigger diamond pieces plus services such as financing with one stop shop etc.