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## Reverse innovation: A new paradigm of innovation Evidence from Chinese markets

Juan Shan\*, Miqdad Ali Khan

School of Management, Shanghai University, (CHINA)

E-mail : shanjuan@shu.edu.cn; miqdadalikhan@gmail.com

### ABSTRACT

This study discussed various stages of multinational corporations (MNCs) development process before arriving to reverse innovation. Based on the analysis of most recent development in the literature and then using three case studies, the study shows how by virtue of reverse innovation MNCs can be more successful in emerging markets. Our study found that MNCs must understand that they need to identify local constraints and opportunities in the local markets and innovate according to the needs of the customers in those markets. MNCs can develop and use local capabilities by developing partnerships or acquiring local companies. There is also a need of an ongoing R&D effort to continuously improve present innovation and guard against competition at the same time. Based on the previous research about reverse innovation, disruptive innovation, frugal innovation, inclusive innovation and BOP innovation, this paper compares various concepts and provides a comprehensive elaboration of change in paradigm of innovation using cases from Chinese market in an original way.

### KEYWORDS

Reverse innovation; Disruptive innovation; MNCs; Emerging markets; China.



## INTRODUCTION

The pattern of innovation was long thought to be driven by west, where new ideas about products were cooked in the laboratories and exported to the developing countries. As developing countries in their bid to catch up with the developed countries, they just buy the products from developed countries rather than inventing new products. However, many developing countries are no longer buying only but in fact, their firms have surpassed the primary objective of producing must have goods and they have started to provide global solutions. As mentioned in Economist's special report (2010), developing countries are becoming the source of new innovations as did the Japanese automotive firms in 1960s, when they destroyed American automotive industry by introducing new models of cars with low costs and high reliability. They were able to do it by introducing a new innovative concept in production "lean manufacturing". Today firms operating in developing countries are using innovations to provide better solution than conventional firms to serve emerging-market customers and some of these innovations have gone global<sup>[13]</sup>.

This new paradigm of innovation can be referred to as 'reverse innovation' which can be defined as a case in which a certain innovation is first adopted in a developing country before it travels uphill to developed countries<sup>[16]</sup>. Some of the famous examples found in the recent literature are Tata Nano<sup>[2]</sup>, GE's super cheap ultrasound<sup>[16]</sup>, Grameen bank's microfinance loan products<sup>[9]</sup>, Brazilin Embraer's jets and Nokia's low cost mobile phones<sup>[10]</sup>. These innovations don't necessarily involve technological breakthroughs as in developed countries but in fact they involve new ways of using existing knowledge and technologies to serve local needs. The firms leading this process of reverse innovation involve both local firms and MNC having operations in developing countries, for example GE's super cheap ultrasound and handheld ECG machines produced for developing countries by teams of Indian and Chinese experts<sup>[9]</sup>.

This study explores the importance of MNCs adopting to reverse innovation, which is a new paradigm shift for MNCs to operate in the global environment. It is also important to mention that the phenomena of reverse innovation is still in its early days and limited research has been done in this field as the possibility of important innovations taking place in developing countries and making their way uphill to developed countries is only being recognized recently for example studies by Immelt *et al.*<sup>[16]</sup> and Ramamurti<sup>[25,26]</sup>.

## LITERATURE REVIEW

Innovation can be defined as the effective application of processes and products which is new to the organization and designed to benefit the organization itself and its stakeholders<sup>[35]</sup>. Innovation has always been recognized as one of the pillars of MNCs<sup>[1]</sup>. From conventional perspective, innovation is generally assumed to originate in developed markets where the world's leading MNCs are located. However, reverse innovation refers to the innovations occurring in developing countries and then trickling up to developed countries (see Figure 1). Instead of developing high-end products at home, the MNCs can produce the products in developing countries with the local constraints in the mind. After capturing local markets, the products can be used for disrupting developed markets<sup>[5,10]</sup>. This phenomenon is also referred to as inverse innovation in some literature<sup>[19]</sup>.

According to Govindarajan<sup>[10]</sup>, this new paradigm of innovation has posed some interesting puzzles for mainstream theories of innovation management. These theoretical challenges can be related in three dimensions. Firstly, we need to understand that the fundamental driver of reverse innovation is the income gap between emerging and developed markets. The developing countries have huge markets with micro consumers, which require products with improved price-performance features, portability and usability, suggesting MNCs to rethink their business models for emerging markets<sup>[25,26]</sup>.

The second dimension is why there is a growing demand for local innovation and technological advancement in developing countries. In fact, the recent accelerated growth experienced by countries like China, India and Brazil has brought dramatic change in technological paradigm<sup>[40]</sup>. In the coming decades, two-third of economic growth is expected to come from these emerging economies. The emergence of a huge middle class which has been pulled out of poverty in the last few decades is a major driver of this huge demand for local innovation. Moreover, firms in developing countries are under pressure to improve performance and competitiveness as new low cost producers are entering the market which makes it difficult to hold any competitive advantage even for the major players<sup>[15]</sup>. So far the MNCs have largely failed to realize the needs of customers in emerging markets, they are compelled innovating locally mainly due to fear of losing market share to these small but highly competitive emerging market firms.

The third dimension can be the reason, why this local innovation may travel uphill to the developed world. Usually this happens in three steps: first the innovation is adopted in one of three emerging markets (e.g. china, India and Brazil), it is then adapted in other emerging markets and finally it is used for low end disruption in the developed markets<sup>[9]</sup>. There can be a number of reasons for the spillover of innovation from underdeveloped countries to the developed countries. The poor living in those rich countries might like to buy good enough products at a cheap price. Another reason can be explained by the phenomena of disruptive innovation, which states that a product can be offered at a low price with a quality, which attracts low end segment of the market but over time it can attract the mainstream customers due to incremental changes done over time<sup>[6]</sup>. Optimizing products for emerging markets which requires addition of new functionalities, can also found new applications in developed markets, for example GE ultrasounds designed for developing countries, with ease of use and portability, found new use in American emergency rooms<sup>[16]</sup>. Also redesigning products for emerging markets can also increase overall product demand in developed countries. Finally, these developing countries enjoy the advantage that they

can use the latest technology to research and innovate without bearing the burden of sunk investments, for example adoption of non-conventional sources of energy by Suzlon and Goldwind<sup>[25,26]</sup>.

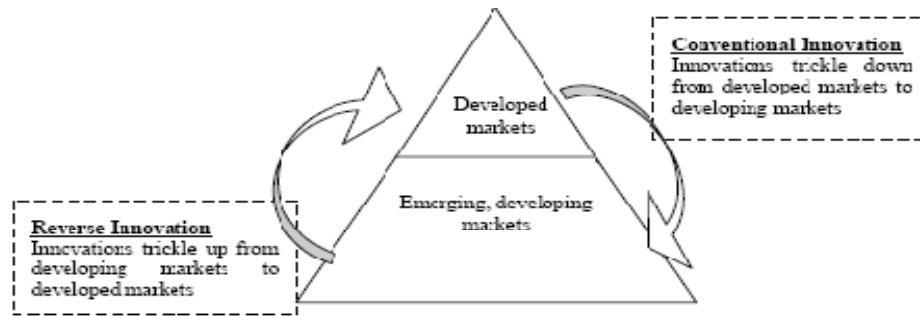


Figure 1 : Reverse innovation

Source : govindarajan and ramamurti (2011)

**MNC’s development process**

The globalization journey of MNCs has evolved in four distinct phases - globalization, glocalization, local Innovation, ultimately leading to a ‘reverse innovation’ phase<sup>[11,29]</sup>. The initial phase was Globalization, where advances in transportation, communication, and the opening of numerous global markets allowed MNCs to sell products and services globally. This allows MNCs to gain economies of scale resulting in a cost advantage due to the sheer size and scale of their operations. In this phase, innovation happened at home, and then the products were distributed worldwide. The problems emerged in this phase were that products were not customized to meet the needs and preferences of the customers of the local markets.

Although, MNC’s recognized that though they were earning good enough profits, their market share was not as big as it could have been by winning the markets outright. Then arrived the second phase of the MNCs development process, glocalization, where they focused on winning the markets by providing global products according to local needs. Although the innovation was destined for the needs of the home country, the products and services were modified at a later stage to meet the needs of Emerging Markets (EM). This included altering products and also on numerous occasions defeating existing products to suit the purchasing power of emerging market buyers.

The next phase is largely considered to be the beginning of the ‘reverse innovation’ and is called local innovation. In this phase, MNCs began to develop products to suit the needs of the local consumers. They use a different approach and developed products from scratch in emerging markets, rather than altering the existing products. As local R&D teams develop products for local markets, the firm enables them to remain connected to, and benefit from the global resource base.

If the local innovation is “in country, for country”, the final stage ‘reverse innovation’ will be “in country, for the world”. The MNCs finish the reverse innovation process by taking the innovations originally chartered for EM, and adapting them, and scaling them up for global use (see Figure 2).

According to Govindarajan and Trimble<sup>[10]</sup>, there are dramatic differences in strategic thinking between globalization and reverse innovation strategies. Globalization strives to tailor product with respect to the customer whereas reverse innovation means redesigning the entire business model. Further comparison of the dominant logic between these two approaches, can be seen in TABLE 1.

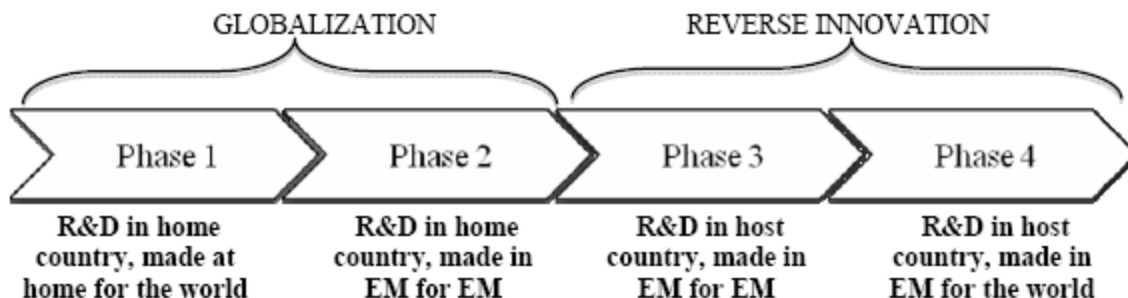


Figure 2 : The MNCs development process

**TABLE 1 : Dominant logic of globalization vs. reverse innovation strategies**

<b>Globalization</b>	<b>Reverse Innovation</b>
Optimize products for the developed-world customer	Best solution for the emerging-market customer
Cutting-edge, technologically sophisticated, performance-rich products with many features, new and fancy applications	Frugal, functional, good-enough quality product
Take the simplest possible approach to designing offerings for emerging markets: remove features to reduce cost	Reinvest the product from the ground up; clean-slate innovation
Premium-price, high-margin orientation	Low-price, high-volume orientation
Technology push; product-out approach	Customer-centric; market-back approach
Look for customers to sell products to	Identify customer pain points, and develop products to solve customer problems
Sell products to current consumers of the product	Create new consumption among noncustomers
Gain market share	Create the market
Leverage current core competencies	Build new core competencies
Exploitation mind-set for emerging economies	Exploration mind-set for emerging economies
Use developed-world products to transform emerging markets	Build new global growth platforms based in emerging markets

**Source: Govindarajan, V. and Trimble, C. (2012), p.36**

### **Reverse innovation and disruptive innovation**

It is essential to compare reverse innovation with other related concepts, which have been frequently mentioned in the contemporary literature such as disruptive innovation, frugal innovation and Bottom of Pyramid innovation (BOP). According to Markides<sup>[20]</sup>, disruptive innovation is a phenomenon, where an MNC introduces a product whose features at first doesn't attract main stream customers but instead try to satisfy some of the fringe segments of the target market, who are otherwise ignored. This allows MNCs to capture low-end segments of the market and then as they improve their performance, they move uphill to satisfy the needs of main stream customers. This concept of disruptive innovation was first introduced by Christensen<sup>[5]</sup>. His work got great appreciation as many companies have been using disruptive innovation to successfully find new opportunities in emerging markets and operate without serious competition from global players. We can see the example of the extraordinary economic development of Japan in the post World War II era, where companies like Toyota, Sony and Canon did exactly what disruptive innovation implies. For a company to be a disruptive force in a market, it must have two important ingredients. Firstly, it should provide an inferior disruptive technology with a lowered initial cost and secondly, fill the performance gap once it captures a low-end segment of the customers.

Many studies have tried to explain the connection between disruptive innovation and reverse innovation. However, it is difficult to explain as reverse innovation has a lot of parallel features with the concept of disruptive innovation<sup>[13,14]</sup>. Govindarajan and Trimble<sup>[11]</sup> explained the overlap between reverse innovation and disruptive innovation arguing that reverse innovation emerges as a result of three main gaps between developed and underdeveloped countries i.e. income gap, infrastructure gap and sustainability gap, of which only income gap can provide stimulus for disruptive innovation. Reverse innovation is alternative approach from glocalization strategy, where goods are still manufactured in rich countries and then modified to meet the needs of poor countries<sup>[16]</sup>. Studies by Hang<sup>[13]</sup>, Corsi and Di Minin (2011), Ritu (2013), argue that reverse innovations are also potentially disruptive, unlike Christensen's theory, which discusses disruptive innovation either as a new market disruptive for emerging markets or a low-end disruptive to developed countries. However, reverse innovation can be explained as a third category of both a new market disruption for emerging markets and a low-end disruption for developed countries at the same time. As Romero (2012) says, the gap between emerging markets and developed markets is closing fast and innovation no longer travels in one direction. For instance, GE started offering innovative products in emerging markets and once they successfully disrupting these markets, they offered the same product in developed countries, as low-end disruption, so we can call it 'reverse innovation'.

### **Reverse innovation, frugal innovation and BOP innovation**

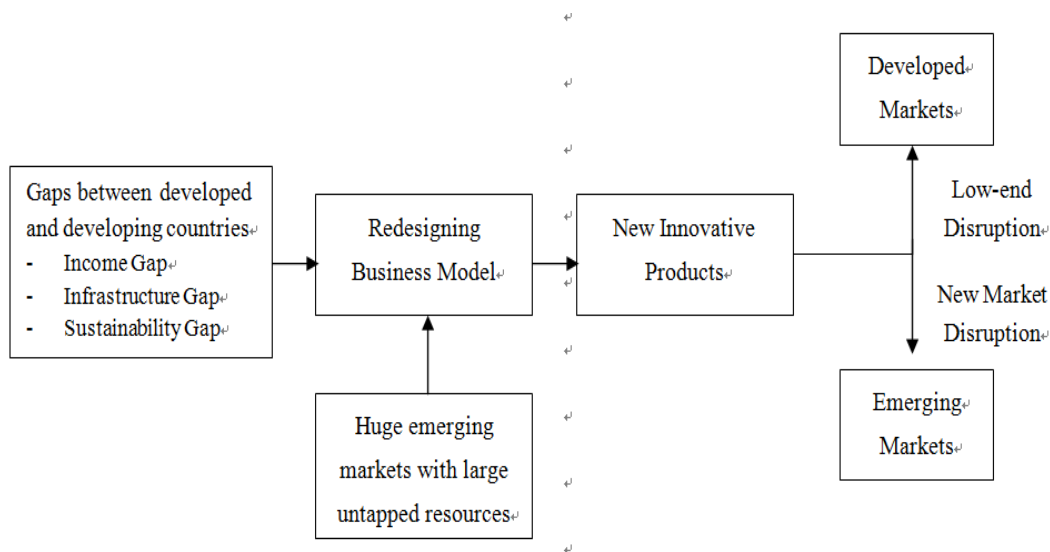
Frugal innovation or constraint based innovation means to redesign the products and processes, in order to cut out unnecessary cost and hence make the product cheaper than what it would cost in developed countries<sup>[36]</sup>. Frugal innovation is more than just cutting the cost, but in fact, these products also need to have a great price to value ratio. For example, Nokia's cheap phones come with flash lights, multiple phone books, and several languages and rubber pads. Therefore, frugal innovation is not only about redesigning the product but in fact, rethinking the entire process and business plan<sup>[30,31]</sup>. According to Bhatti and Ventresca<sup>[2,31]</sup>, there is considerable evidence that

potentially a certain type of innovation is operating in emerging markets called frugal innovation, whose impact can rapidly diffuse into developed markets.

The point of difference between frugal innovation and reverse innovation is that in case of reverse innovation the focus on the flow of innovations from poor and underdeveloped countries to rich countries as compared to the conventional flow of innovation from rich towards poor countries<sup>[9]</sup>. Whereas, frugal innovation responds to global call for sustainability and equality for all by making things cheap by concentrating resources on the essentials of a product<sup>[39]</sup>. There can be many examples to signify the importance of frugal innovation, such as \$100 one laptop per child, \$2000 Tata Nano car, \$5000 Awami villas and Telenor easy paisa<sup>[2,3]</sup>. Jugaad innovation, a term coined by Radjou *et al.*<sup>[24]</sup> argues that the West needs to look towards places like India and China for frugal and flexible innovations.

BOP innovation was first introduced in the work of Hart & Christensen<sup>[14]</sup> and Prahalad<sup>[23]</sup>, suggesting MNCs to work closely with local Governments and civil society to create products for the 4 billion poor population of the world. George *et al.*<sup>[7]</sup> defined inclusive innovation as an innovation which serves the “disenfranchised” and it is not only a process but a performance outcome. In addition, the focus of research in corporate social responsibility (CSR) has shifted from emphasis on having corporate social responsibility to helping these MNCs implement CSR by developing effective business tools and methods<sup>[21]</sup>. These scholars are of the view that such efforts will create millions of new entrepreneurs at the grass root level. Since Bottom of pyramid customers will demand more innovations in technology, products and services, this will create hundreds of thousands of small micro enterprises generating economic activity in the most remote parts of the world. These micro enterprises are an integral part of any economy in terms of their contribution not only to output levels but also in terms of creating jobs. According to Williamson<sup>[34]</sup>, some of the most efficient business models are being challenged by emerging market players, who are not only offering price cut but also delivering high quality products. Therefore, the very large size emerging economies such as India and China, coupled with growing technological capabilities and rapid growth in incomes, will be the new source of innovation for the poor of the world<sup>[17]</sup>.

Although, all these concepts are very similar to each other, we focus on ‘reverse innovation’ in this study, as the ultimate objective of all these innovations, is to create low cost solutions in order to satisfy customers in emerging markets. For this purpose, firms are required to redesign their business model, keeping market potential and cost constraint. These products can then be used for both new market disruption in emerging markets and low end disruption in developed markets as suggested in Figure 3.



**Figure 3 : Reverse innovation phenomena**

There are various innovative projects that can be referred as examples of frugal, disruptive and reverse innovation. TABLE 2 gives a brief overview of some of these examples found in contemporary literature and have been very successful in not only innovating but earning considerable amount of profits.

### Cases of reverse innovation

In order to further clarify this new paradigm of innovation, our study takes a look at the three prominent cases of reverse innovation from the Chinese emerging market. The first case is regarding GE, where an MNC (General Electronics) formed a zero based effort to offer a new product for emerging markets, in order to increase their market share and also preempt local giants. Furthermore, GE used the same product to disrupt the market at

home by offering the new product for low-end disruption. The Second case is related to the Chinese Internet giant Tencent's most successful brand WeChat, which, after its phenomenal success in China, has been launched globally. The third case shows how Logitech learn the secret to win over Chinese consumers from a local competitor and then sell their products worldwide.

**TABLE 2 : Examples of frugal, disruptive and reverse innovation in emerging markets**

Year	Product/Service	Description
1975	Microfinance	Microloans Grameen
1992	Galanz	Affordable microwaves in China
1995	Suzlon energy	India's major Suzlon wind power provider
1996	Haier	Mini magical child (Washing machine)
2004	One Laptop Per Child	\$100 Laptop for Children worldwide
2004	Yadea	Green E-bikes in China
2008	Tata Nano	\$2000 car from India
2009	GE Healthcare projects	Handheld ECG and portable low cost ultrasound device
2010	Godrej Fridge	\$60 portable refrigerator from India
2011	Mobile messaging app	WeChat from China

### Reverse innovation at GE

Much has already been written about what is perhaps the most successful example of reverse innovation; where GE implemented this phenomenon known as reverse innovation. GE achieved this phenomenon by creating portable low priced ultrasounds for emerging markets. GE is a global leader in the healthcare industry with a history of successfully exploiting business opportunities. In 1979, GE effectively launched high quality Ultrasounds in US. With time, GE looked to grow outside the US and today more than half of GE's profit comes from business outside the US. It has a workforce of 300,000 employees working in 160 countries. When GE looked to outside markets, China appeared to have huge potential. However GE's revenue didn't grow fast enough in China even after being there for a decade. Until 1995, its total revenue was only \$5 Million. The problem was the business model, which GE and other global partner's generally use for emerging markets; it includes developing good quality expensive products at home and then manipulating them or even disfeatures them to be suitable for emerging markets. So once GE realized that their business model was not suitable, they changed it and by 2009 they had a 30 percent market share in China. GE learned that in order to tap into the opportunities of emerging markets, they must develop products in the developing countries. After winning the markets there, they can disrupt markets back in US by offering these low cost solutions. In short, GE learned how to do reverse innovation. Another important issue is the amount of competition GE has to face in emerging markets. Philips, Toshiba and Siemens are the traditional competitors of GE but the real threat comes from the emerging market giants, who are here to stay and can destroy GE's market share. In the words of GE's CEO Jeffrey Immelt *"If we don't come up with innovations in poor countries and take them global, new competitors from the developing world like Mindray, Suzlon, and Goldwind will. That's a bracing prospect. GE has long had tremendous respect for its traditional rivals like Siemens, Philips and Rolls-Royce. But we know how to compete with them. They will never destroy GE. The emerging giants, on the other hand, very well could"*.

In 1996, GE pursued its goal of winning Chinese emerging market by starting a joint venture with a local company, Haiying. This Chinese firm was then acquired by GE and hence evolved the unit called Local Growth Team (LGT). This LGT quickly learned that there is a fundamental difference in customer choice between customers in developed countries and China. In America, performance is the single most important aspect but in China price matters the most, followed by portability of the machine. As to this day, most of Chinese population still lives in villages, where their healthcare needs are met by low tech and poorly funded small hospitals and clinics. Also due to the weak infrastructure, patients have difficulty reaching hospitals, so portability is necessary, as sometimes the equipment had to travel to the patient. So LGT designed a low cost and portable ultrasound for the first time in history and circulated it in Chinese rural areas. But then GE faced another problem, which was that the doctors and other medical staff were not proficient in using ultrasounds, so GE offered on the job training, online health guides, and simple keyboards with built-in solutions for certain tasks. However, soon it was revealed that these small compact ultrasounds also had another market in the making for them. The market was America, where they were being used in unexpected ways, such as in emergency rooms and during operations (when anesthesiologists require placing needles and catheters). A few years after its launch, compact ultrasounds are \$278 million of the global product line for GE and growing at a rate of 50 to 60 percent per year<sup>[9]</sup>.

### Wechat goes global

Although, most of the literature focuses on dominant models for innovation emerging from developed countries, little attention has been awarded to learn the alternative sources of innovation, provided by the local players in emerging markets<sup>[10]</sup>. Therefore, using WeChat's example, we will look at the way Tencent, a Chinese Internet giant, introduced a new innovative mobile messaging app which is now the hottest mobile phone app across the world. WeChat (which is called Weixin in Chinese language) is a mobile text and voice messaging communication service launched in January 21, 2011. Currently, it has 279 million active users with 78 million

outside China, as estimated by Global Web Index. This app is available for download on the Apple app store, Google play, BlackBerry app world and marketplace for Windows phones. With regards to the services for mobile phones, the app provides text messaging, hold-to-talk voice messaging, video calling, broadcast messaging, location sharing and video/photo sharing features. The service is provided in more than 15 languages. All these features have made WeChat the fifth most downloaded app after Google maps, facebook messenger, YouTube and Google plus. WeChat is currently dominating the Chinese market as it has revolutionized the way Smartphone users interact with their family, friends and even strangers<sup>[28]</sup>.

After establishing its dominance in the world's largest smartphone market, WeChat has since gone global. Tencent has opened its representative offices in the USA in 2014, for its social networking program and has announced that it has entered into an agreement with the Tech giant Google for its promotion in the USA. Tencent released the news on January 25, 2014, that those users, who would connect their WeChat accounts with their Google accounts and invite 5 new users, will receive \$25 Restaurant.com gift card from Tencent. Many industry insiders think that linking WeChat with Google is a step in the right direction for the development of WeChat in USA, as Google accounts are responsible for 25 percent of the total cyber traffic in North American ISPs. This means a huge number of mobile phone devices are connected to Google accounts daily, making Google bigger than facebook, Netflix and instagram together. It's not just the discounts and advertisements that will make US users attracted towards WeChat, there are other features that must be tailored to suit the needs of US users such as Global censorship<sup>[34]</sup>.

Currently, most of the users in US are Chinese living in the US or people who have somebody to contact inside China, such as family or friends. According to App Annie, what is encouraging for WeChat is that Google apps shows that facebook messenger ranks first in downloads in USA whereas whatsapp is 6th and WeChat is 21st already. Also, the Apple platform shows WeChat is the most downloaded app in 45 different countries ranging from Mexico to Madagascar<sup>[2]</sup>. Therefore, WeChat, whose rivals include WhatsApp from America and Line from Japan, was able to charge into new countries due to its successful advertising campaign involving Argentinean soccer player Lionel Messi as a global spokesman. The question is whether WeChat with nearly half a billion users will overtake Facebook; it largely depends on the fact whether WeChat is able to provide features which people don't receive from facebook, and also whether WeChat can maintain the online privacy of its users<sup>[38]</sup>.

For this study, the growth of WeChat into a global competitor and its Chinese origin is an important development, as WeChat is an example of reverse innovation, where an innovation was first introduced in China by the name of Weixin and after dominating the home market, it was rebranded in 2012 as WeChat for global use.

### **Logitech**

Another clear example of reverse innovation is the MNC Logitech and its mouse destined for the Chinese market. Logitech is one of the global leaders in computer peripherals, with a global competitive advantage in keyboards and mice, but yet until 2009 they were failing to win over Chinese consumers. Logitech deployed a special team to examine and explain the reasons why Logitech mice were failing to conquer the Chinese market, as they had done in most places in the world; the results were surprising. The reason behind the lack of success was not other multinationals, global competitors like Microsoft, but in fact it was a local Chinese company called Rapoo, which held the vast majority of the market share. Rapoo had an advantage in the local market because it understood the needs of Chinese consumers, which were different to consumers in the rest of the world. Logitech realized that the options they were providing for Chinese consumers, 27MHz, 2.4 GHz, and Bluetooth mice, did not meet the consumer needs or were out of their price range. The Chinese consumer had two particularities that needed to be addressed. Firstly the Chinese connected the computer to the television to serve as video entertainment due to the high price of satellite television and due to the density of the population, interferences between two separate mice is very possible. Thus, requiring a minimum of 2.4 GHz and shielding for the Chinese consumer. Rapoo was able to defeat the product, providing only the 2.4 GHz without the other features, and in that way keeping the price affordable for the Chinese market. Logitech realized that although most consumers in the developing world weren't connecting their computers to the television to watch entertainment, it would probably change due to development of the computer as a multi-purpose entertainment device. Logitech created a mouse with the features necessary for Chinese consumers at only \$19.99. The new mouse was very successful in China and it was the first product to break 10 million in sales in the first year. Logitech had then shipped 4.5 million units of this mouse worldwide<sup>[32]</sup>.

Logitech's experience with a humble product like mice, gives us a profound story to explain that customers in emerging markets have unique needs, which requires redesigning the business models according to the emerging market.

### **Discussions and implications**

These three cases offer important lessons, not only for traditional multinationals, but for local emerging firms seeking to succeed in these emerging markets by adopting reverse innovation strategy. Apart from demonstrating the feasibility of this new innovation strategy, the cases provide some important implications for successful implementation of reverse innovation in emerging markets.



The first lesson that can be learned is that MNCs operating in emerging markets will have to see things from customer's prospective, which includes successfully identifying the needs of customers in emerging markets and also the opportunities available to exploit those needs. As we have seen in the case of General Electronics and Logitech, both were unsuccessful companies in China until they learned to see things from the customer's prospective. It is also important to note that the customers for both firms had almost similar general preferences, e.g., the product needed to be much cheaper than it was in the developed world and the features demanded were different, compared to customers in developed countries. Therefore, these foreign multinational companies realized that they should be open to the assessment of such differences in needs and should better respond to those opportunities<sup>[13]</sup>. This also signifies that merely customizing foreign products to local requirements is not likely to meet the needs of the customers in emerging markets but rather emerging markets (e.g. China) reveals the importance of market pull innovation; which means that it's the market potential and demand drive that shapes the original innovation<sup>[33]</sup>.

Another aspect of doing reverse innovation successfully for the MNCs is to develop local capabilities. These local capabilities were essential for the success of these companies in delivering new products required by local consumers. As we can see from the case of GE, the critical turning point of the company was in 1996 when GE started a joint venture with a Chinese company, Haiying. These local firms are building innovative capabilities through creating original products for the unserved lower end of the market, where advanced countries firms have limited experience<sup>[18]</sup>. Foreign MNCs aspiring to develop disruptive product in emerging country can access the local capability by developing partnerships with local firms<sup>[4]</sup> or develop its own local R&D team. At the same time, these local R&D units require more autonomy than a tradition unit. As we saw in GE's case, where the new local unit was called Local growth team (LGT), which had more autonomy and a flexible structure.

In order to maintain the disruptive advantage and make the products trickle up to global markets, the MNCs should be prepared for a sustained, long-term R&D effort when they adopt the reverse innovation strategy. As the entry barriers are pretty low, the initial success of new technology may attract many imitators. As we can see from Logitech case, the initial success of Logitech's innovative computer peripheral products was imitated by a Chinese company, who became more successful than Logitech, as they had the better understanding of local needs, in terms of product features and price ranges. Thus, there is a need of an ongoing R&D effort for sustaining the competitive advantage for the firms doing reverse innovation<sup>[13]</sup>.

## CONCLUSION

Emerging countries, with their vast, untapped markets, present new opportunities for the MNCs. Our study discussed various stages of MNC's development process before arriving to reverse innovation. Based on the analysis of most recent development in the literature and then using three case studies, the study shows how by virtue of reverse innovation MNCs can be more successful in emerging markets.

Until now, the traditional MNCs have viewed China and India solely from the lens of out sourcing and cost reduction, whereas, they have focused their marketing strategies on only 10-15% upper class citizens of these countries, missing out on larger chunk of the market<sup>[12]</sup>. However, sustainable innovation in emerging markets requires MNCs to attract the vast number of potential consumers at the bottom of the pyramid. To do so, they need to identify local constraints and opportunities in the local markets and innovate according to the needs of the customers in those markets. As these emerging markets are huge markets with micro customers, the society has various demographic and class differences and each of these segments has its own needs. The idea is to learn those needs and offer the right product at a reduced cost. Moreover, our study shows that the products developed for resource-constrained consumers in emerging markets can travel uphill to niche market in developed countries.

Reverse innovation, which is considered as new commercial approach can help MNCs to gain new customer segments, to develop new markets and to achieve the goal of multinational business successfully. With the increasingly fierce competition around the globe, there are more and more MNCs choosing reverse innovation as their enterprise's expansion strategy. Also since financial crisis in 2008, emerging markets have emerged as an important segment of the global economy, mainly due to uncertainty created by huge debt problems in Europe and slow growth in America. These emerging markets traditionally enjoy gifts of cheap labor and untapped resources.

Use of innovation will multiply their potential to surprise the developed world with new products and services. Therefore, reverse innovation shouldn't be considered optional but it should be considered a necessity, as this approach will help MNCs to win new markets and also guard against competition, in these markets.

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