Application of Reverse Innovation in SMEs

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Abstract Reverse innovations are typically originated in the developing countries and later adopted in rich countries. This strategy is increasingly practiced by multinational enterprises (MNEs) that can access the market structure of the developing countries and can deploy all the company force to come up with innovations. Small and medium-sized enterprises (SMEs) increasingly face competition from products by new entrants located in the developing world, often applying frugal innovation, as well as from products developed by MNEs through reverse innovation. It is therefore critical that they defend their position by developing products using the techniques of reverse innovation; however, in doing so they face specific challenges. In this article we discuss these challenges, and how the application of reverse innovation in SMEs differs from that in MNEs.

Keywords: Reverse Innovation, Strategy, SMEs, Frugal Engineering.

1 Introduction

The phenomenon of Reverse Innovation was first described by Immelt et al. in October 2009 in the article “How GE is disrupting itself”. Innovations are typically originated in rich countries and later downhill to the developing world. A reverse innovation is any innovation that is adopted first in the developing world.

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and after uphill to the rich countries. They are also known as Gandhian or Frugal innovations (Sehgal et al. 2010, Prahalad et al. 2010).

Jeffrey Immelt, chairman and CEO of General Electric, stated: "If we don’t come up with innovations in poor countries and take them global, new competitors from the developing world will". Affordability and sustainability replace abundance and premium pricing as driver for innovation (Prahalad et al., 2010). Instead of simply cutting costs and offering lower-end models with fewer features, true innovations in terms of technology and process are necessary in order to satisfy the demands of developing markets. Successful companies from these environments often excel in this process, known as frugal innovation. Many multinationals establish R&D facilities in emerging countries. By 2007 nearly 70% of research intensive Fortune 500 companies conducted at least part of their R&D in India, a trend that is still increasing (Herstatt et al., 2008).

2 Background

The issues, problems and solutions described by Govindarajan (Govindarajan et al., 2012) are going to permeate our home market. The so-called emerging giants (companies based in the developing world) want to expand their products and services in the well-established home markets, either with products with equivalent features offered at lower prices or with a new price-performance proposition.

In this environment, it seems to be of high interest to study the processes and strategies driving the success of reverse innovations and their transference to developed countries in order to extract the best practices followed by multinationals and apply them in the SMEs.

Many companies are setting a glocalization strategy implying a compromise between global scale and local responsiveness in order to achieve new markets in the emerging countries. Corporations optimize their products for the developed-world customer without sustainable competitive advantage. The reverse innovation strategy, however, has another logic, which is trying to obtain the best solution for the emerging-market customer. Reverse innovation begins not with inventing but with unlearning. Such a strategy requires internal resources and capabilities in the organization; however, SMEs often lack these requirements.

"SME" stands for small and medium-sized enterprises – as defined in EU law: EU recommendation 2003/361.

The main factors determining whether a company is an SME are number of employees and either turnover or total assets in balance sheet.

According to the annual report on small and medium-sized enterprises in the EU 2011/12, Small and Medium-sized Enterprises (SMEs) form the backbone of the EU economy – accounting for 99.8 per cent of non-financial enterprises in
2012, which equates to 20.7 million businesses. The overwhelming majority (92.2 per cent) are micro-enterprises, defined as those with fewer than ten employees.

In employment terms, SMEs provided an estimated 67.4 per cent of jobs in the non-financial business economy in 2012, almost identical to 2011 (67.4 per cent) but up from 66.9 per cent in 2010, although SMEs provided a slightly smaller share of GVA in the EU in 2011 and 2012 (58.1 per cent).

Both multinationals and SMEs are responding to current globalization with massive restructuring. Reverse innovation can be adopted by MNEs with international presence in emerging markets, but SMEs usually lack that structure abroad. The definition of SME inherently implies that SMEs have lesser human and financial resources at their disposal than MNEs. Developing new products and services using reverse innovation best practices, adapted to SME’s specific characteristics, could be considered as an effective line of defence. European SMEs usually operate under high overhead costs, such as labour costs, and find themselves faced with strong price-oriented competition from low-cost producers from emerging countries. Providing innovative products may help SMEs strengthen their competitive position in home as well as in international markets.

3 Application of Reverse Innovation & Implications

3.1 Reverse Innovation in MNEs

To create a reverse innovation mind-set, MNEs must take three steps (Govindaran- jan et al. 2012):

1. They must shift the center of gravity of their organization to emerging markets.
2. They must bulk up on emerging market knowledge and expertise.
3. They must change tone by taking highly visible and personal actions.

All these actions imply an emerging country organizational structure, capital and an experienced management team. Some of these pieces may not be available in SMEs, who must therefore adapt the process as discussed below.

MNEs try to shift the center of gravity shifting people, power, money and attention to where the growth is, rolling critical decision makers to emerging markets and increasing R&D spending in emerging markets focusing it on local needs. Other measures to manage emerging market knowledge and expertise will include changing the composition of the board of directors and the top management team to include leaders with deep experience in emerging markets or assign individuals to multiyear expatriate assignments in the developing world. In addition, MNEs has to set the tone about criticality of winning in emerging markets.
Reverse innovation is not only a product innovation but also a business-model innovation. Reverse innovation strategy requires new processes, new partnerships and even a reinvented value chain. MNEs have considerable advantages: technology, a global brand, supply networks, and manufacturing capacity.

### 3.2 Barriers to Innovation in SMEs

Barriers to innovation in SMEs have been studied in numerous national and international research projects, e.g., Rodenes et al. 2002 in a province of Spain, Ylinenpää (1998) in Sweden, Rammer et al. (2006) and Tiwari et al. (2007a) in Germany. Comparing the findings of the above-mentioned references highlights that SMEs often face similar barriers to innovation. The most prevalent ones are listed in Table 2.

<table>
<thead>
<tr>
<th>Barrier category</th>
<th>Barrier</th>
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<tbody>
<tr>
<td>External barriers</td>
<td>Financial constraints</td>
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<tr>
<td></td>
<td>Availability of Skilled Labor</td>
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<td></td>
<td>Bureaucratic Hurdles</td>
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<td>Difficulties in cooperations/partnerships</td>
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<td>Internal barriers</td>
<td>Intellectual Property Management</td>
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<td></td>
<td>Project Management</td>
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<td>Internationalization</td>
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<td></td>
<td>Conceptualization of innovative products</td>
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<td></td>
<td>Marketing</td>
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Many SMEs have limited resources and lack know-how on international markets, which imply a significant barrier to innovation affecting international potential capacity. In this study we are focused on SMEs and their local markets, understanding that some of the SMEs have international outlook but not all of them. Understanding and overcoming these barriers is critically important to accomplish the reverse innovation strategy in SMEs.

### 3.3 Understanding Emerging Markets

In countries like China and India a new consumer middle class of hundreds of millions of people is emerging. When we analyse these markets, we appreciate a
structure which is very different from that found in Europe. If we consider the market pyramid (Pralahad et al. 2003), at the top of the pyramid are a relatively small number of consumers who are responsive to international brands and have the income to afford them. Next, a much larger group of people who are less attracted to international brands. Finally, at the bottom of the pyramid of consumers is a massive group that is loyal to local preferences, habits and often to local brands. Below that is another huge group who are unlikely to become active consumers anytime soon. The extensive pattern of economic growth in these economies force MNEs to focus on satisfying new emerging middle class demands, competing with the booming local giants either entrepreneurs or companies who create more products with fewer resources. All these new entrants might spread their products to our home market, particularly aiming stagnant middle class consumer segments, which might be attracted by a new price-performance proposition.

Govindarajan (Govindarajan et al. 2012) stated that there are five enormous gaps that separate emerging markets from rich countries: the performance gap, the infrastructure gap, the sustainability gap, the regulatory gap and the preferences gap.

Consumers in big emerging markets are getting bombarded with global standards, but they are often unwilling to pay global prices. Consumers in the big emerging markets are far more focused on the price-performance proposition. Even when consumers in emerging markets want to buy the same products sold elsewhere, some adaptation is often necessary to reflect differences in use, distribution, or selling. Customization is the first response of the MNEs to its expansion to emerging countries strategy.

The rich world has extensive infrastructure deployed but emerging countries do not. These infrastructure constraints can help developing creative products and services. Most of these new products and services are based in green solutions because they can adopt the green solution as the new one without incurring in change costs. In addition, innovation in the emerging countries enjoys the advantages of lower friction due to a regulatory gap with the rich countries.

These different gaps become the path of the dynamics of reverse innovation so understanding them is crucial to SMEs to face the entrance of new competitors and develop products and services for dodging the competence at home markets. Eventually, outstanding SMEs with a brilliant price-performance proposition can afford to capture market share in developing countries by venturing overseas.

### 3.4 Reverse Innovation in SMEs

For many managers of SMEs in rich countries, the answer to the entrance of new products from competitors located in the developing world is calling on the gov-
government to instate trade barriers, providing some other form of grant, becoming a subordinate partner to a multinational or selling out and leaving the industry. We believe there are other options for SMEs, however these require them to innovate.

Not so many managers have posed several key questions to evaluate the risks: How strong are the pressures to globalize in your industry? How internationally transferable are your company’s competitive advantage? By understanding these answers, managers can better appreciate the actual risks.

There are SMEs in which success turns on meeting the particular demands of local consumers with a well-established relationship with them. In some sectors, high transportation costs needed may discourage a global presence. Also, SMEs may have a local distribution network that would take years for a new competitor to replicate. Or they may have long-standing relationships with government officials. In all of these cases, SMEs may continue by selling only in their local markets. Any such asset could form a barrier to entry to the home market but that will only retard the demise of these SMEs, especially those oriented to middle-class markets. MNEs can have the same barriers and even others because of their resources availability. Their structure deployment in home markets let them introduce without friction costs the new reverse innovative products.

Creating a reverse innovation mind-set in SMEs has to start by quelling fears about losing the positioning of the brands or cannibalization of the current products. Developing new products and services based on reverse innovation could partially cannibalize yourself, however if someone else comes with a new performance-price proposition they anyhow do it.

The innovation process can be simplified in 3 phases (Tiwari et al. 2007b): conception, implementation and marketing. Conception includes requirement analysis and idea generation. Implementation embraces development (prototype, construction) and testing. The last phase includes production and market launch and penetration. In this document we will focus in the first and second phases, specifying reverse innovation characteristics.

After beating cannibalization fears and overcoming innovation barriers, SMEs should create a clean-slate innovation unlearning price-performance curve and trying to determine a new proposition as MNEs achieve reverse innovation products. SMEs have to estimate customer needs as if they were emerging markets customer needs, similarly to the market research conducted by MNEs with overseas structure. Some marketing studies can be conducted within home markets but analyzing real needs and not local preferences. Usually SMEs are guided by actual customers requests about its actual products, which influence new developing process by technology push. Not forgetting the actual customers, SMEs should innovate for new consumption among noncustomers or the ones who would first change their mind to new competitor’s products or services. Regarding the idea generation, SMEs can achieve the twin objectives of offering a new price-performance proposition and a new idea conception by using open innovation networks (Tiwari et al. 2012). Open innovation is a paradigm that assumes that firms can and should
use external ideas as well as internal ideas, and internal and external paths to market, as firms look to advance their technology (Chesbrough et al. 2008). The cooperation may take place at any stage of the innovation process as a replacement for R&D resources shortage in comparison with MNEs.

By the second phase (implementation), SMEs should develop a new price-performance proposition by starting from zero, questioning all the elements used taking into account the infrastructure constraint experimented in emerging countries. In addition, they should explore the possibility of developing a new component with a new cost model and using a green solution. SMEs can increase the probability of offering an attractive price-performance proposition if they are able to connect their product development process with global innovation networks. MNEs will shift their resources on emerging markets, but SMEs have to manage to establish collaborative forms of product development and testing in the global network. This collaborative form can be taken place in the same country or beyond the national boundaries. This cooperation will also help to reduce the aforementioned barriers to innovation in SMEs.

Most of the studies developed until now show MNEs examples of reverse innovation (Govindarajan et al. 2012) such as GE, P&G or PepsiCo, which prove that reverse innovation is a recent and successful strategy, however the approaches followed by these MNEs can not be directly applied by SMEs. SMEs can get more directly applicable hints by analyzing start-ups and entrepreneurs who are reinventing the idea of radical price-performance equation and in social innovators. One such example is Diagnostics for All (http://www.dfa.org), DFA is a non-profit enterprise fusing biotechnology and development, dedicated to creating low-cost, easy-to-use, point-of-care diagnostics designed specifically for developing countries and hoping also to commercialize its idea in the rich countries. DFA has relied on strategic partnerships to reach its success using paper technology to create diagnostic devices. Another example (The Economist, 2012), Igloo Vision is a small British company and has managed to disrupt the events installations and projection solutions market. They have employed computer-games technology and cheap projectors for playing 360º videos and simulation software. They are still keen to develop formal partnerships with companies for new application deployment.

4 Conclusions

In this paper we have analyzed the possibility and challenges involved in the application of a reverse innovation process in SMEs. The result of this analysis is summarized in Table 3.
### Table 3 Application of reverse innovation in MNEs and SMEs

<table>
<thead>
<tr>
<th>Challenge</th>
<th>MNEs</th>
<th>SMEs</th>
</tr>
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<tbody>
<tr>
<td>Strategy</td>
<td>Center of gravity to emerging markets.</td>
<td>Center of gravity to competition with products from emerging markets.</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Emerging market knowledge and expertise.</td>
<td>Basic needs of consumers and new price-performance proposition.</td>
</tr>
<tr>
<td>Communication</td>
<td>Criticality of winning in emerging markets.</td>
<td>Criticality of competing with new “far from home” competitors and MNEs applying reverse innovation.</td>
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</table>

SMEs should outline the criticality of the entrance of new competitors coming from emerging markets and of products developed by MNEs through reverse innovation. In order to face this new scenario we propose tailoring MNEs reverse innovation strategy and tools to SME’s specifics.

Regarding the process of innovation and applying reverse-innovation best practices we propose that SMEs adapt their first two stages as shown in Table 4.

### Table 4 Application of reverse innovation in innovation process phases

<table>
<thead>
<tr>
<th>Phase</th>
<th>MNEs</th>
<th>SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conception</td>
<td>Using emerging market knowledge and expertise. Generating ideas in R&amp;D centers of emerging countries.</td>
<td>Extracting ideas based at home market eliminating all the unnecessary features. Questioning every step and simulating emerging countries gaps.</td>
</tr>
<tr>
<td>Implementation</td>
<td>Development and testing in emerging markets.</td>
<td>Testing non-costumers for feedback. Using global innovation networks for developing and testing.</td>
</tr>
</tbody>
</table>

## 5 References


Tiwari R., Buse S. (2007a) Barriers to Innovation in SMEs: Can the Internationalization of R&D Mitigate Their Effects? Proceedings of the First European Conference on Knowledge for Growth: Role and Dynamics of Corporate R&D (CONCORD 2007) – Seville Spain


