IIMB Management Review (2013) **25**, 249–256

available at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/locate/iimb

IIMB Management Review

ROUND TABLE

Local innovation: The key to globalisation

Srivardhini K. Jha, Rishikesha T. Krishnan*

Corporate Strategy & Policy, Indian Institute of Management Bangalore, Bannerghatta Road, Bangalore, India

KEYWORDS
Innovation;
Emerging markets;
Frugal innovation;
Multinational enterprises

Abstract The round table discussion draws the panellists to weigh in on how multinational enterprises from developed countries are innovating in and for emerging markets, the challenges faced, and lessons learnt. The key takeaways are that MNEs are increasingly innovating for the Indian market, alongside their contribution to global products. They are doing so by developing close relationships with field facing organisations, co-creating with customers, empowering engineers, and taking a clean slate approach to product development. This approach has given them dividends not only in the local market but also in the global market.

Academic perspective

Progression of MNE R&D centres in India

Over the past two decades, India has become a much sought after destination for innovation activity among multinational enterprises (MNEs). According to a report by Zinnov (2012), between 2000 and 2010, the number of MNE R&D centres in India went up from 162 to over 700. Further, the R&D investment has come from all over the globe — North America, Europe, and Asia Pacific (APAC) — and spans multiple sectors such as automotive, information and communication technology, and pharmaceutical (Basant & Mani, 2012). As a result, India has rapidly emerged as a hub of MNE innovation activity.

Over the years, the R&D work undertaken by these companies in India has undergone a qualitative change. Most of the MNE R&D centres began as resource augmentation centres or extension units (Jha, 2013), driven by the availability of low-cost skilled personnel in large numbers (Mrinalini & Wakdikar, 2008). During this initial phase, the centres worked in a "project mode", executing to the specifications provided by the corporate headquarters (HQ) and making a marginal contribution to the company's global products. Over time, the centres have matured and developed advanced capabilities in one or more technical areas. Consequently, they are more intimately engaged in the product development process and have taken on the technical ownership for certain products within the MNE, making a substantial contribution to MNE R&D (Jha, 2013; Kumar & Puranam, 2012). Through this evolution, the focus of the India centres has largely remained on serving the traditional markets of the MNE i.e., the developed markets of North America, Europe, and Japan and the innovations originating in these centres have been packaged into global products and remained mostly invisible (Kumar & Puranam, 2012).

* Corresponding author. Tel.: +91 80 26993160.
E-mail addresses: vardhini@gmail.com, srivardhini.keshavamur09@iimb.ernet.in (S.K. Jha), rishi@iimb.ernet.in (R.T. Krishnan).
Peer-review under responsibility of Indian Institute of Management Bangalore

Production and hosting by Elsevier

0970-3896
http://dx.doi.org/10.1016/j.iimb.2013.07.002

However, more recently, MNE R&D centres are turning their attention to the local market (Jha, 2013). In other words, having developed technical capabilities over the years, these centres are exploring how they can innovate to address the needs of India and India-like markets, which have grown rapidly in the past few years.

These developments pose two challenges. First, R&D centres have to move beyond pure technical capability and develop an intimate understanding of the business environment. This can be challenging for centres that have been primarily inward facing and have few connections with the local business context, and more so when few individuals in the local innovation ecosystem have experience of managing innovation across the value chain (Krishnan, 2010). Second, MNE R&D centres that have thus far played a contributory role in global product development efforts with clear roadmaps now have to lead the product development effort for a new, unexplored market. This requires a substantial shift in mindset and capability (Govindarajan & Trimble, 2012). To gain further insight into this phenomenon, we explore

- What challenges do MNE R&D centres in India face as they try to innovate for India-like markets? How do they plan to overcome these challenges?
- What specific steps are the R&D centres taking to understand the local business environment?
- What is the nature of engagement of R&D centres with the customer facing functions of the company? What are the challenges in engaging with these functions that are driven by quarterly quota and less inclined to focus on long-term initiatives such as R&D projects?
- How can MNE R&D centres compensate for institutional voids in the emerging market environment?

Frugal, jugaad, and reverse innovation

In addition to understanding the business context, innovating for emerging markets such as India challenges deeply entrenched R&D principles within the MNE. Countries like India have a large number of people with an annual purchasing power parity of less than $1500 (Prahalad & Hart, 2002). Govindarajan and Trimble (2012) describe these countries as "mega markets with micro customers". In order to tap into this customer base, MNEs need to develop low-priced, value products that can drive profits through volumes. These are also referred to as "frugal innovations" i.e., affordable, value products that meet the needs of resource-constrained customers (Bound & Thornton, 2012; Sehgal, Dehoff, & Panneer, 2010; Zeschky, Widenmayer, & Gassmann, 2011).

The guiding principle of frugal innovation is to start from a clean slate and bring cost discipline in every step of the innovation process as opposed to stripping down costs from existing products (Sehgal et al., 2010). In other words, value and affordability are the key drivers of innovation, in place of affluence and abundance (Prahalad & Mashelkar, 2010), which have traditionally guided the innovation process in MNEs. Some observers have recommended developing a more flexible approach to innovation — Jugaad — which refers to the ability to innovate in unconventional ways, in the face of adversity (Radjou, Prabhu, & Ahuja, 2012) to take on this challenge, while others (Krishnan, 2010) have questioned the appropriateness and scalability of such alternate approaches.

Given that innovating for emerging markets would require a fundamental change in how MNEs approach innovation, the question arises if it is worth the effort. Would the volume in these markets compensate for low margins and recoup the R&D costs? Would the value products not erode the company's profits from premium offerings? Scholars have persuasively argued in favour of innovating for emerging markets, saying that innovations originating in these markets often find applications in developed countries and go on to become successful products for the MNE (Govindarajan & Trimble, 2012; Immelt, Govindarajan, & Trimble, 2009). Such innovations that flow from less developed countries to the developed countries are called "reverse innovations". Govindarajan and Trimble (2012) further argue that if MNEs do not reverse innovate, firms from emerging markets will.

In the light of increasing importance of innovating for emerging markets and the challenges associated with it, we explore the following questions

- Is frugal innovation the new innovation paradigm? If so, how do you bring about a frugal mindset in a company, especially in companies that have traditionally believed in trying to make more sophisticated products and technologies based on big ticket R&D investments?
- Can reverse innovation be a deliberate strategy? Or is reverse innovation just a desirable "side-effect"?
- Will Jugaad play an important role in a large MNE? How would it relate to the existing approaches to innovation in the company?

Local Innovation: The Key to Globalisation: Discussion*

Anchor
Rishikesha T Krishnan
Panellists
Vijay Anand: Vice President, Intuit India
E-mail: vijay_anand@intuit.com
Gopichand Katragadda: Managing Director, GE India Technology Centre
E-mail: gopichand.katragadda@ge.com
Ranjan Malik: Director, Erehwon Innovation Consulting
E-mail: ranjan@erehwonconsulting.com
Wido Menhardt: Chief Executive Officer, Philips Innovation Centre
E-mail: wido.menhardt@philips.com

Rishikesha T Krishnan: Good evening and welcome to this panel discussion. We have an eminent set of speakers to focus on the links between local innovation, global

* This panel discussion was organised by the Karnataka chapter of the Indo-American Chamber of Commerce.

innovation, and global competitiveness. We will understand from these experts how the dynamics of innovation are changing.

My first question is to Vijay Anand from Intuit. Intuit is a financial products company which makes software products that help you manage your finances better. Their market is primarily in the US but increasingly they are doing work in India. They have a development centre here in Bangalore. Vijay, how does doing more work for the Indian market tie in with the global innovation work that you are doing? I know that your R&D centre here has been traditionally doing a lot of work for Intuit's global products. But in the last few years, for particular products like Fasal and txtWeb, you have been trying to innovate more for the local market. How do you see the connection between these two, and how are they evolving over time?

Vijay Anand: Thank you Rishi. To add to what you said about Intuit, we are a 30-year-old company in the US and we have been in India for about seven years. Like many MNC R&D centres we began with developing expertise and products for our core markets, which are in the US. But over the last four years, our mission is about growing outside the US, particularly in an exciting market such as India. MNCs have realised that to sell their products in fast growing emerging markets, they need to localise their product. Four years ago, as a company we said we could localise our product but the question was, how do we know that that is going to work? The approach we took was to start on a clean slate. We decided to look at the market, at the target segment. In our case, our mission was, how do we delight the financial life of millions of small businesses so profoundly that they do not go back to the old way of doing things? We studied small businesses in India, the pain points that they faced and started thinking about innovating for those pain points. If there happened to be solutions for them, it was great, but we did not make that big assumption. That is the mindset that is critical to triggering local innovation.

I will talk about two examples. The first one, Fasal, tackles a big unsolved problem that affects our farmers in rural markets. It looks at how efficiently our farmers are able to get the information that they need, at the right time, through the technology that they already have. So what we did here was to solve the pain point of how do farmers in rural India get price information that is just in time for the commodities. We started with perishable goods in a mandi in Chikkaballapur, right outside Bangalore. The assumption here was if we deliver the information to their mobile phone, and most farmers already have one, in the form of messages that are very simple and easy to read, just at the time of harvest when they have to decide which mandi to go to, they would get the best possible price. We knew that our path could be filled with pitfalls as this was not our core business. We were not in the business of serving rural India. But we knew it was a big unsolved problem and we had to have the mindset to go down this path experimenting rapidly. To adopt frugal innovation, we applied rapid experimentation, testing hypotheses along the way, validating them. As we went along we realised that we were indeed solving a big unsolved problem. Three years later we have over a million farmers across four states in India using this every day. About 90% of the farmers say they actually see the benefit. They get about 15% more money in their pockets every time they go to the mandi because of Fasal. We are now trying to see how we can scale this and grow it into a new big business for Intuit, not just in India but in other markets as well.

A similar example is txtWeb which is solving an urban India problem. How can we get the 900 million people in India, who have a mobile phone, access to information? We cannot assume that all of them have access to the Internet. So it was a similar pain point, but we were addressing a different market. Today, it has become a platform where developers in India are building applications to solve specific problems, delivering information in byte sized chunks using sms, for five million users everyday with over 3000 applications, all developed by college students and young developers that we host.

While we hope that these will be big businesses for Intuit someday, more importantly, our experience has taught the company several things. The first thing it has taught us is the power of many. We do not have to create everything for our consumers. There is participative or collaborative innovation that we can do with the market. You can call it network effects, or user contribution, where we can provide a platform that allows other people to participate. It helped us understand that emerging markets can teach us big lessons back in the US.

Our core product is an accounting product called QuickBooks. We sell a cloud-based version of it across many countries today. But just a year ago, it was only being sold in the US, where we were making our entire $5 billion. The initial question that was asked inside the company was, how will we go to those 100 plus countries? Our product, whose core element was tax, was so customised to the US, that we wondered how we would customise it for all those other countries. The lessons we learnt from txtWeb and Fasal taught us to open our product for the first time in 30 years to allow users to define tax rules in our product. We created a global tax engine in the product (done by the engineers in Bangalore), which allowed say, a user in the Philippines to put a tax code for his province. And all we had to do was share these tax codes with other users in the same province. So today as a result of innovations in our tax model, in our business flow, and in our languages and so on, this product is being used by small businesses across 140 countries, including thousands in India and the product is customised for them. We achieved this in a year's time. So the power of many, the power of customisation, and bringing user contribution which txtWeb and Fasal taught us, is now being applied to our core product. The product now has more users across the world than in the US. It has completely turned our model upside down. It is still an evolving story but one that we are really proud of.

Rishikesha T Krishnan: Thanks a lot Vijay. Gopi, let me turn to you now. Whenever we think of your GE India Technology Centre here in Bangalore, we see it as one of the largest hubs of high-end technical talent in India. Can you give us some insights into how GE manages to attract top talent and do high-end work in a challenging environment? Is there something that other companies can learn from your experience?

Gopichand Katragadda: Today, we are in a great place. The teams produced 1850 of the patents filed in the past 12

years and more critically, 850 of those were filed in just the last two years. So it was an exponential growth. We also track these patents going into products and we find we are making significant revenue difference for GE globally. Ten percent of GE's revenue in India is produced because of the work the team did here just in the last two years. So how did we get here is a good question to ask even for myself.

If I look back, there were a few elements which made the difference. When we started, we did not start small. We did not say let us try something and if it works we will invest some more. We started with confidence saying we will invest 80 million dollars straightaway, and this was in 1999 when we were formed. That gave us a good footprint where we could build our infrastructure and that is one of the elements which attracts talent. However, infrastructure is not just about the buildings. We have significant investment in very advanced labs. We can test almost any metallic alloy that is used in the most advanced gas turbine or aircraft engine. We can also test components, subsystems, and gear boxes for wind turbines. This is extremely important because talent needs to be hands on. If you get engineering talent and you expect them to do only simulation, that is not going to last for a long time.

What also helped is that when we went about building teams, we considered the pillars or the persons around whom we could build if we needed to grow in a particular area. I think that was critical. We looked for good leaders, who built great teams. Eventually we got to a point where we were reaching the best we could be without having manufacturing and without having customer connect. In the last three years that too has changed. We have a good number of Indian customers in the energy sector and in the healthcare sector. We have the ability to stand in front of a customer and face the wrath of the customer when the customer is not happy. Thus, we are able to think quickly and make sure we are using all our knowledge to come up with a solution going forward. Manufacturing is extremely important as well. We are in the process of setting up a plant in Pune, but we have already started in leased facilities. This facility is going to have an investment of $200 million and will employ 3000 people. But more importantly our engineers can go on location and work on the wind turbine that they have designed, and analyse, and test it. And I am very happy to be part of the team producing the technology.

Rishikesha T Krishnan: Thank you, Gopi. Now, one end of the innovation spectrum is the very advanced R&D that Gopi was talking about. In recent years there has been a lot of interest in what is known as frugal innovation. This is about finding ways of overcoming constraints in creative ways, coming up with completely different solutions to problems. Ranjan, I want to get a perspective from you on whether there is something special about the way we do things in India that allows us to solve these problems in a different way. And if that is the case, how can we develop that capability further? Can you, based on your consulting and extensive work on innovation in India, share with us how we can convert our innate skills into a capability that works in the market?

Ranjan Malik: I am basing my presentation on my experience with large companies. Before I answer your question, let us begin by looking at the question, does innovation happen all by itself or can we make innovation happen? By nature human beings are innovative, as are systems. In most conferences on innovation around the world, these days, there is a cynicism that is emerging. This cynicism comes from the fact that most great examples of innovation that are shared at conferences seem more like happy accidents rather than an outcome of an orchestrated, premeditated process that leads to some huge innovation that changes the world and causes an inflection point. The people who attend the conferences come there to understand how they can make a game changing innovation happen. They go back feeling very inspired but what they do is go back and flog their old, usual incremental innovation processes in the hope of producing radical innovation. And that is where the scepticism and cynicism is coming from. How do you produce game changing innovation that surprises the world? That is where I will bring in the Indianness of it. You get answers to questions you ask; what about answers to questions you do not ask? Innovation is not just about getting answers to your current questions. Innovation is more about discovering new questions, it is a journey of discovering questions that you have not asked yet; of discovering opportunity areas that are breathtakingly obvious only in hindsight.

Now the world is looking for a fundamentally different approach to innovation, possibly a new philosophy of innovation, and I think Asia, specifically India, is uniquely placed to offer to the world a new way of approaching innovation. And why do I believe India is ready to offer that?

Unique Challenges: The first reason is our unique challenges. Traditionally we have had a knack of getting much much more out of much much less, of extracting as much as we can out of very little. We have a huge Indian middleclass now but we all remember the time, to give an example, when Indian households did not buy dusters; old bed sheets and pillow covers would find their way down to become dusters.

What we do is to alter the leverage ratio or input—output ratio of our technology or our innovation, getting more than usual output using less than usual inputs. We take on challenges that are almost impractical, which call for a leap of faith. Mahatma Gandhi's call to the country and more recently, the Anna Hazare movement, are examples of this. As also our attempt to produce low-priced products such as €1500 car or a $20 water purifier from the Tatas, or the inexpensive mobile ECG machine, from GE. All these have come about because we have worked with reference points which are not just radical but, by Western standards, almost ridiculous. This is great because we choose to work within those constraints by design! We say, we have to make a car that costs under 100,000 rupees (around $1800). In India we work with those kinds of constraints so our challenges are very unique. So it is not surprising that a number of multinational companies (MNCs) are now opening value innovation centres and frugal innovation centres in India. I know of at least two MNCs that have set up value innovation centres here and these centres are now coming up with elegantly simple innovations that would work not just in the developing world but would work amazingly in the developed world too.

Unique Context: Second, we are a very unique context. At the core of any innovation — a game changing one

specifically, lies a process of evolving the concept through multiple experiments and playing with the concepts in live conditions. India offers very fertile ground for quick evolution of innovation. India is a land of contrasts — we are third world and first world at the same time; we are modern and traditional at the same time; we are rational and emotional at the same time. So if you have a solution that you want to evolve through experimentation, the country offers size, diversity, and multiple contexts as nowhere else. We can work with live labs, live markets where we can evolve not just new market strategies but also the context, formulating or co-creating products together with people. Very few countries can offer this. India can provide on-demand ecosystems or self-organised systems where innovation is an emergent phenomenon. When innovation happens as emergence you end up with surprises because the system produces it. For example, if you throw a mobile phone into different kinds of contexts in India, it would evolve into different kinds of applications.

Unique Culture: My third point is our unique culture. I think Eastern philosophy (here I include China as well) has traditionally had a deep and nuanced understanding of some concepts that enable innovation. Systems thinking is something that the world is discovering now but I think Indians and Chinese and other Asian cultures have understood it and have been using it for centuries. For example, the concept of balance, while defined very interestingly in modern science, is defined by the Chinese as balance between Yin and Yang — as between hot and cold, between inner ecology and outer ecology of the system, and between sufficiency and deficiency. Eastern philosophies, rooted in holism, have long understood that the sum is greater than the parts. I think we can give to the world a very elegant and balanced form of innovation that is not just centred around the economic parameters, the pursuit of profits. The world is just discovering corporate social responsibility (CSR) as a mandatory extracurricular activity. But I think doing good is central to doing well; where your purpose is to do good and as a consequence you also do well; where the collective comes first and the individual comes next. I think Asians can give that, so long as we are not trying to "copy paste" Western methodologies. We could provide to the world a guiding philosophy or frameworks that could become the innovation compass for individuals and collectives; A compass that will ensure that we are not mindlessly growing for the sake of growth.

Rishikesha T Krishnan: Wido, Philips has been in India since 1930 or so, but the Philips Innovation Centre is more recent. How do you use your heritage in India to focus on innovation for emerging markets? Please share with us your experiences in developing products in your innovation centre here that are especially suited to meeting the needs of India and other emerging markets? What are the challenges you have faced and how have you addressed those challenges?

Wido Menhardt: I have been in India for three years now and with Philips for five years. Philips is a Dutch company and has been associated with electronics for a long time in India. Incidentally, when I talk to people in India, sometimes they think that Philips is an Indian company and are surprised to hear that it is a Dutch company. It is so much part of the fabric. But our larger sector is healthcare and healthcare is headquartered in Boston.

I cannot profess to explain how innovation or innovation for the local ecosystem happens. But we have been very successful in the last three years in creating innovations for the local market, particularly in the healthcare sector. I would qualify them as happy accidents, as Gopi called them. I think the inflection point for us has been our centre, the Philips Innovation Centre, which has been here since 1996. Earlier, the engineering centre tried to find ways to innovate for the local market, used innovation drives, innovation ideation sessions, and refocused on innovation itself in order to find ways to innovate for the local market. The breakthrough we provided was to start with the customer. Once we tried to understand what the local customers want, and put the constraints in place, not only in terms of usage, but also in terms of cost, needs, and accessibility, we started to have some remarkable success. We used value engineering to the extreme and novel platforms such as open source technology, which in a company like Philips was unconventional and brought in its wake concerns about legal implications. We have also been very prudent in using very high technology in order to make very low-cost products — possible through innovation. We focussed on recreating products which have very low-cost points for the local market.

We innovated in the area of business models. In healthcare, typically, we take our "big iron" and sell it to the hospital. But we have changed that to per click, per procedure pricing. For example, take a telemedicine product which a hospital uses internally, for experts within the hospital to provide services to some of their satellite hospitals. We have sold a solution like that to one of the leading chains of big hospitals here, call it X. We sell that per click. Further, if Philips brings another hospital which is not part of the X hospital chain, and X provides that service to the new hospital, not only do we get a revenue stream out of that, but we also get a finder's fee from the first hospital we sold it to. So novel business models are part of the idea.

Finally, we have brought in new operational mechanisms. We have started to co-create with customers. We build something and get an agreement with the customer that this is what they want. But they also need an additional input "a". Then we go on site with our engineers and develop "a" on site. In American startups that would not be surprising, but in Philips people ask me, how is that scalable? How are we protecting our employees? and so on. But we have done that with great success. We have innovated on how we work within the company. Normally, the chain of communication is as follows: the engineers speak to marketing and marketing speaks to sales. Here in India, in Bangalore, the engineers had to talk directly to the sales people. That can often go wrong. But it has really worked well. So now our engineering managers are on the management teams of our sales organisation. That's a first at Philips. With those things, we have also been able to drive time to market to unheard of levels. We have developed products within 3—4 months by being extremely entrepreneurial, extremely pragmatic, getting pieces from wherever we can, putting them together, and getting them to the customer. Entrepreneurism is the key characteristic

that the Bangalore centre is perceived as having within the global Philips context. Our CEO from Amsterdam visits once a year — my MNC colleagues will know how important it is to get engagement at a high level — and what he takes away is that Indians are entrepreneurial.

As for our challenges, the first challenge is that of infrastructure — power, water, traffic on roads, and so on. This is a standing concern and we have heard a lot about it in this ecosystem, but these are real challenges we have to contend with. Second is people, and culture; culture is key. There are two elements in terms of culture. This ecosystem has grown up as a service industry — IT services and R&D services. But if you want to innovate with products, you cannot have a service mindset anymore. You cannot go to the customer and say, please tell us what to do; instead you have to go to the customer and challenge him. You have to know what they are doing, know their business, and challenge them on how they run their business and tell them how they can run their business better with your products. And that kind of mindset change is hard. I am working on it every single day. The second is engineering competence, engineering depth. The classical model is that we hire a bunch of freshers and we hire one person who speaks English and fronts with the global organisation. In the new model, where we develop products, the individual contributor here will also have to talk to the individual contributor who is his counterpart, and the old model will not work. So one of the things that we drive is more technical depth and more experience on the technical track. We have metrics to get the average experience of our people. We have two career paths which we promote. We actively promote and communicate, even to the families, that it is a good thing to be an engineer even after you have been in the workforce for 7 years.

The final challenge is to raise the bar continuously. In case of our value products, we have the products of our local competitors in sight. Of late, we have started rethinking another concept. The value based engineering approach for emerging markets has always been to take global products, either real or in concept-in-use case and to re-engineer them. Traditionally we always came from the top. For markets such as India, Africa, and the Philippines or Indonesia, we would have to approach the situation from the bottom. Often these are situations where a doctor may not have much to work with. So we have to think along the lines of, what is the product that you can create that is better than nothing? Rather than taking the value engineering down approach we have to take a completely different approach. We have been very successful in Philips in getting a continuous stream of innovative products to the local market that have been developed at the Centre.

Rishikesha T Krishnan: Gopi, I would like to get your insights on the same issues because GE has also been very active in innovating for the local market. What are the critical things that GE is doing to innovate more effectively for the local market?

Gopichand Katragadda: Before looking at innovation for India, and talking about getting to the next level, we need to answer questions at the fundamental level. Do we have enough energy to create an ecosystem which can produce the next big thing? We cannot think only about one product, we need to think about a portfolio of products. And we cannot stop there. We need to think of an area. If you look at how innovation happened and how the wealth of nations was created, the industrial revolution created wealth for Europe, the digital revolution created wealth for both the US and Japan. The electrical revolution in between created wealth for the US. So your thinking has to be grand. For example, if we consider the opportunity in genome decoding, we would have to consider the ability of our technologists to do well in IT systems, we would have to pull in cloud, and pull in the right demographics. We would need to go all out and say that if this is a new area, let us as a nation invest and create the next generation of innovation in this ecosystem.

Having said that, what we do at GE would be very small in comparison. I will give you two examples of what we have done in GE. One, we have looked at what is unique about product requirements in India. If you consider the wind turbine area, we are a low wind regime country at 7 m per second wind speed. Our turbines were made for 8—12 m per second. We in India developed a turbine for low wind regimes and we have now sold many more outside of India, even in better wind regimes. The other aspect of it is value and I think value should be looked at a little more than cost. We must ask what the need of the Indian market is. Vijay Anand talked about reverse innovation, and at GE, the portable ECG machine is a poster child for reverse innovation. We took a product, the non-portable version of which costs $10,000, and we made a portable one in China for $2,500, and one for the Indian market for $500. You may look at it as an example of disruptive cost, but it is really about value. It is a one button press for getting your ECG, suited for Indian conditions, where the machine has to work in rural areas. Considering the number of people that we have to train in India to operate these ECG machines in rural areas, it doesn't make sense to create a matrix of buttons where you can set up different options. It must be very simple to operate. We got round the cost aspect by putting a bus printer into our ECG machine. At GE, we are very proud of our high-resolution printers. So for us to use an Indian bus printer to put in our ECG machine was a big step. But we did that because it was the right thing for the market. What you need is an ECG printout which gives you sufficient information. You can later transmit it to a higher end computer or take a memory stick and print out an image with a higher definition. So these are the things you look at when you consider the local market. You should innovate locally, and if you do it right, you will find markets globally.

Rishikesha T Krishnan: Vijay, one of the things that your Intuit centre has done well is take our local talent, from our education system (that is often criticised for a number of reasons), and get them to do very interesting work such as the projects you described. How do you create the right environment within Intuit so that you can get the best out of these engineers, so that they can contribute to innovation both in the Indian market as well as the overseas?

Vijay Anand: You cannot talk about innovation without talking about talent. Typically within multinationals, mindset is key. One of the panellists talked about reverse engineering. I talked about the mindset of starting with a clean slate. These are all critical for you to succeed in

innovation. We had a very basic rule when we started our centre, that it would be about talent, not cost. Talent before cost seems very basic but it is difficult for a multinational to make that leap. But we found that if you put that upfront, there is an immense talent pool that is out there that can innovate, not just for India but across the world. The examples of products that I gave you earlier were developed by brand new college recruits from an engineering college, right here in Bangalore. A lot of us had this mindset that when we hired college students, we would have to mentor them, we would have to have enough senior people to coach them. Otherwise the situation would become unmanageable. But we did not have that luxury. Four years ago, when we started, we had a very small pool of senior engineers but we hired more than 50 people from this one college. People said you are not going to succeed. Well, those 50 people that we hired 5 years ago are our best talent today! What made that happen? There is something different that is going on in the education campuses today compared to when I graduated. There is certain boldness in thinking. The new recruits said, we do not want to work on the projects that you are giving us. How about we actually think about what we need to do? So that was a mindset change. Do not tell people what to do. Challenge them to come up with a problem. Ask them, what are you going to solve?

The second mindset trap that we often fall into is what we call the hippo mindset — the highest paid person in the office making all the decisions. For example, the head of R&D expects that people would come up with ideas and come to him/her and he/she would tell them which one is the right idea and which is not. I had to bust that myth. I had to tell them I do not know. How do you then make a decision? How do you decide which idea is good and which idea is not? How do you know which one to fund and which one not to? We had to make a leap of faith assumption that this decision had to be taken by the recruits themselves. It shocked them. They had graduated just three months earlier. Our approach should be — teach them the methodology, do not tell them what is a good idea. Do not give them the answer, challenge them with questions that will help them answer the questions by themselves.

I talked about rapid experimentation earlier. There was a recent book, a bestseller, "The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Business" by Eric Ries, an entrepreneur. We realised that we had been practising it all along. It speaks of a methodology about telling people how to define hypothesis. The only education, we said, was that you have to test your hypothesis. You need to have a hypothesis and be able to define what success looks like. You then need to go out in the market, and put engineers right in front of customers. We had no marketing people, no product managers, and no sales people. We called it "follow me homes". It involved an exercise such as going to a small business or kirana shop, sitting there all day, understanding the processes and pain points, and coming back with a hypothesis of a big pain point that we can solve well. They come back to me and say, I think I can do this that will improve your business by X percent; but I do not know if it is a good idea or not. So we encourage them to go test it. We give them only two weeks — that is the constraint — it is very important to work with constraints. Once they come back and tell us what happened, we ask them, what do you think? It is a question. It is always about questions to arrive at problems. What we found was that the young talent caught on to it in a much bigger manner than our senior engineers who were reluctant to get out into the field. The young men and women just went out there and came back with a flood of ideas and were testing them so fast that the founder of our company said, India is the beacon for innovation. He found that the young recruits were actually living the truths that he taught. So to me, it all begins with talent, but the key is to pick early, work on the mindsets, and work within constraints. They have also learnt to deal with failure far better than senior people. Our senior people talk about risk, while these people say, we are just going to give it a try. And we manage risk because we are fast. We can fail fast and we'll go on to the next idea. As a result we have a centre that is entirely driven by this model, even in our traditional products.

To give you an idea, we have a two billion dollar business for a desktop product which runs on Windows called QuickBooks in the US. It has four million users. It ships once a year and people come back with ideas. In effect, we realise after a year whether the customers are going to buy it or not. We turned the model on its head with the young engineers communicating with customers in the US on video, every two weeks, showing them hypotheses and concepts that the customers used, with the customers coming back with their inputs. To a point where the product that was completely waterfallish once a year, is now being iterated every two weeks. A million users in the US are getting subscriptions where they get features every few weeks to test and they vote up or down. Not by saying, but by using. So this has changed the entire company, thanks to the 50 people we hired from a Bangalore engineering college four years ago.

Rishikesha T Krishnan: Thank you, Vijay. On that note, let us close the discussion. I would like to thank all the panellists for their time and their enlightening contributions. I would also like to thank our hosts, the Indo-American Chamber of Commerce, for enabling this discussion.

References

Basant, R., & Mani, S. (2012). *Foreign R&D centres in India: An analysis of their size, structure and implications*. IIMA. working paper number 2012-01-06.

Bound, K., & Thornton, I. (2012). *Our frugal future: Lessons from India's innovation system*.

Govindarajan, V., & Trimble, C. (2012). *Reverse innovation: Create far from home, win everywhere*. Harvard Business Press.

Immelt, J., Govindarajan, V., & Trimble, C. (2009). *How GE is disrupting itself*. Harvard Business Review. October, 1—12.

Jha, S. K. (2013). *Evolution and organization of global innovation network in multinational enterprises (MNEs)*. Unpublished doctoral dissertation, Bangalore: Indian Institute of Management.

Krishnan, R. T. (2010). *From jugaad to systematic innovation: The challenge for India*. The Utpreraka Foundation.

Kumar, N., & Puranam, P. (2012). *India inside: The emerging innovation challenge to the West*. Harvard Business Press.

Mrinalini, N., & Wakdikar, S. (2008). Foreign R&D centres in India: Is there any impact? *Current Science, 94*(4), 452—458.

Prahalad, C. K., & Hart, S. (2002). The fortune at the bottom of the pyramid. *Strategy and Business, 26*, 54—67.

Prahalad, C. K., & Mashelkar, R. A. (2010). Innovation's holy grail. *Harvard Business Review, 88*(7—8), 132—141.

Radjou, N., Prabhu, J., & Ahuja, S. (2012). *Jugaad innovation: Think frugal, be flexible, generate breakthrough growth*. Jossey-Bass.

Sehgal, V., Dehoff, K., & Panneer, G. (2010). The importance of frugal engineering. *Strategy + Business, 59*, 1—5.

Zeschky, M., Widenmayer, B., & Gassmann, O. (2011). Frugal innovation in emerging markets. *Research-Technology Management, 54*(4), 38—45.

Zinnov report, brief overview of MNC R&D landscape — India and China(2012). date of access: 15 May 2012 http://zinnov.com/article.php?art_id=181.