Innovation and product innovation in marketing strategy

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ABSTRACT

Innovation leads to a process of change in organizations and its market offerings, and is a key weapon that marketing strategists use to win customers and markets, through the development of sustainable competitive advantage. Innovations use assets and competencies of the organization along with innovation processes to bring about new or different market offerings, which when successful in the market bring in immense value to the firm. However for an innovation to succeed as a competitive advantage there should be a fructification of the innovation advantage through appropriate competitive marketing strategies. Innovations are often motivated by 'innovation events'. Processes that foster transformation of 'innovation events' to 'innovations' is the new product process or the innovation process system. Innovations also lead to the creation of assets called intellectual property. Innovation creates and generates value and could reflect in both co-created value and shared value. Ultimately the purpose of innovation is for improving and increasing the delivery of superior meaning and superior value to the customer while making it relevant, different or new and valuable from the customer's stand point. The study addresses the nature of innovation, the elements of the innovation process system, types of product innovation and assessment of innovations. An empirical desk research on innovation aspects of Philips Corporation has been conducted, followed by a primary interview with Philips Innovation Campus, Bangalore, India. The paper concludes by laying out the implications for marketing strategists.

Keywords: innovation events, fructification of innovation advantage, problem resolution, product innovation, marketing strategy

INTRODUCTION

Innovation leads to a process of change in organizations and its market offerings, and is a key weapon that marketing strategists use to win customers and markets, through the development of sustainable competitive advantage. In the words of Peter F Drucker (1954) 'there is only one valid definition of business purpose: to create a customer' and 'the business enterprise has two and only two basic functions: marketing and innovation'. Innovations use assets and competencies (skill and knowledge in both technical systems and management systems) of the organization along with innovation processes to bring about new or different market offerings, which when successful in the market bring in immense value to the firm. Innovations also lead to the creation of assets called intellectual property; intellectual property rights called IPRs include copyrights, patents, trademarks, trade secrets and industrial designs. An ongoing innovation advantage is possible if the organization focus is to build organizational capabilities along with the co-creation of value with the customer, with adequate adaptations to mindsets, skills, behaviors and decision structures in an environment of global resources, flexible, efficient, resilient business processes and focused analytics (Prahalad and Krishnan, 2009). As of the time of study, a leading automobile firm of India has designed and developed an indigenous low cost car through frugal engineering techniques that is now poised to be sold in developed markets such as Europe - the Tata Nano to be sold in global markets as Nano Europa. At the same time, the world renowned Gillette razor blade firm has studied the Indian consumer for his shaving habits and procedures and innovated the Gillette Guard which directly competes to substitute the traditional knife or double edged razor blade. Around the same time, PepsiCo in India has innovated to make Aliva – a lentil based snack that has global potential. All the preceding three products are product innovations and all the three are capable of reverse innovation; Tata Nano and Gillette Guard are both frugal innovations. All the three innovations have the potential to redefine markets.

Innovation is driven by customer and market requirements as well as competition among suppliers to a need requirement and shaped by the evolution of technology (Adner and Levinthal, 2001); an illustration of innovation of this type is the Tata Ace of Tata Motors, India (Business Today, 2014). Customer and market requirements as of the beginning of the twenty first century indicated the requirement of a sub-four ton four wheel light commercial vehicle to compete with the three wheelers of Bajaj Auto, Mahindra & Mahindra and Piaggio in terms of space and price (less than Indian Rs. 500,000). The market feedback indicated the requirement of a small truck. The road transportation system in India was emerging as a hub and spoke system that shifted the requirement of trucks into heavy and small commercial vehicles. A small truck needed a suitable engine, bigger than a single cylinder but smaller than a four cylinder which was in use in the market at the conceptualization stage. The firm decided to come out with an innovation of a new two cylinder engine which cost a third of its competitors, offered optimal performance including the fuel efficiency of a three wheeler simultaneously meeting the emission norms of Indian BS II and BS III. The engine became the USP of Ace and the vehicle was a resounding success with a 78% market share within seven years of its launch in 2005.

Innovation can also be driven as a part of a planned agenda to innovate by the firm that is defined by the core purpose and / or the envisioned future of the business. The capabilities of the organization and its ability to freewheel (or develop competencies in areas where none existed earlier) define the boundaries of what the firm can innovate and what is best for firms to accomplish. Innovations diffuse through markets till they are adopted by the individual

customers in the market. The process of demand realization till the adoption is complete can be termed market potential realization and the consumer adoption process at the aggregate or market level (within a social system) can be termed diffusion of innovations. Theories of innovation were initially propounded by the economist Joseph A Schumpeter, anthropologist H G Barnett and sociologist Everett M Rogers. Joseph A Schumpeter envisioned innovation to include construction of new plant and equipment, introduction of new firms and rise to leadership of new men. Innovation is defined as 'any thought, behavior or thing that is new because it is qualitatively different from existing forms and is the basis of cultural change' (Barnett, 1953). The Rogers curve on the time of adoption of innovations is given as Figure 1 (Appendix) outlining the different categories of customers on the adoption time line as innovators, early adopters, early majority and late majority comprising the mainstream market and lastly laggards. It has been discussed in literature that there is a chasm between the realization of the innovator / early adopter market and the subsequent mainstream market characterized by the majority (Moore, 1991). It is also discussed that in markets for product innovations, sales are initially low and as new firms enter (firm takeoff occurs) and quality improves with prices dropping, there is a takeoff in sales. The demand shifts during the early evolution of a new market (product innovation) due to non-price factors (such as new firm entry) is the key driver of a sales takeoff (Agarwal and Bayus, 2002). A growth model (Bass, 1969) for the timing of initial purchase of new products based on innovative and imitative behavior was developed and empirically tested against data for consumer durables; the model yielded predictions of peak of sales and the timing of the peak of sales based on which long range forecasting could be developed. The generalization of the Bass model to include decision variables such as price and advertising was also developed (Bass, Krishnan and Jain, 1994). Later studies have shown that marketing mix in general and pricing and promotion specifically impact both the market size of a product and the shape of the diffusion curve (Boehner and Gold, 2012).

At the individual level (Kotler et.al, 2013) the consumer adoption process is usually postulated to pass through five different stages of awareness, interest, evaluation, trial and adoption. Factors influencing rate of adoption would be (i) relative advantage that the innovation enjoys to existing comparable products or substitutes, (ii) compatibility which is the match with the values and experiences of individuals posited to buy the innovative product, (iii) complexity or the degree with which the innovation is relatively difficult or easy to use, (iv) divisibility or the ease of trial of the innovation, (v) communicability or the ease with which the innovation is understandable and describable to others (vi) cost (vii) the business risk the innovation poses on the outcome of its use (viii) scientific credibility (ix) social approval.

Innovation requires both technical and market capabilities (Abernathy-Clark model); requires knowledge of the components that go into making products as well as knowledge of the linkages between them also called architectural knowledge (Henderson-Clark model); requires hold over the complementary assets if necessary as well as the ability to protect its innovation through patents, copyrights, trademarks, trade secrets, tacit knowledge, causal ambiguity (Teece model). Innovations also follow the evolution of technology as a life cycle as well as the evolution of technology in the market (Afuah, 2003).

RESEARCH QUESTIONS

The study aims to outline the nature of innovation; layout the elements of innovation process system; examine the types of product innovation; layout aspects of assessment of innovation; conduct an empirical study of product innovation; and draw implications for marketing strategists

NATURE OF INNOVATION

Innovations are the creation and exploitation of value providing or value built in 'newness' or 'differences' in products, processes, technologies, methods and business models (from elements of other products, processes, technologies, methods and business models or from elements of the same products, processes, technologies, methods and business models earlier made) that are often built by the occurrence of one or more events with 'small / low success probabilities' that may require 'high problem resolution' and show 'possibility effect of a particular solution or deliverable in the native state of occurrence of the events in the product, process, technology, method or business model' and hence can be called as 'innovation events'. The intent being that the initial small / low success probability events required for innovation be systematically raised to high success probability events that are significant with effective and appropriate problem resolutions and show 'certainty effect of the particular solution or deliverable in the design state of occurrence of the events in the product, process, technology, method or business model' through the skill and knowledge systems of organizations with the aid of the information systems and intelligences of the innovation process system so that innovations could actually occur in products, processes, technologies, methods or business models. The skill and knowledge systems could be either in technical systems or management systems or both and would deploy innovation supportive assets. The net effect is that 'innovation events' are transformed to 'innovations'.

Occurrences of events that have zero probability in the native state of occurrence are the random process innovations or the innovations in the econometric sense, though the occurrence of such events separately by themselves for the purpose of 'newness' or 'difference' producing innovation as studied in this paper is hypothetical. In a marketing sense, innovations manifest as differentiation, though 'all differentiation' may not be innovations.

'Innovation events' are thus embedded in the ideation, conceptualization, technology, technology design, engineering design, solution provision, problem solving that consequently manifest in the design and development of products and processes. These 'innovation events' could be motivated by systematic processes that include elements of 'creativity' and / or 'intuition' and / or 'ingenuity' and / or 'experimentation' and/or 'execution'. 'Creativity' would include building 'newness' and / or 'differences' by extending the known to the unknown and connecting things from among the known. 'Innovation events' could also be an outcome of innovation art commonly referred to as 'genius'. 'Innovation events' are sometimes called 'happy accidents' by practitioners (Jha and Krishnan, 2013).

Traditionally systematic processes of innovation have been in the realm of the research and development department more popularly called R&D. This is termed as 'closed innovation'. With the advent of the internet, the power of 'open innovation' was brought forth smoothly, where seekers and external solvers come together; consumers also could participate and become prosumers. Motivations for innovations apart from systematic research and consequent technological break-through could include identification of pain areas of customers. 'Innovation events' embedded in technology can be termed 'breakthroughs' that could lead to

'advancements' in the design and development of products. Innovation events have also to be supported by successful hypotheses generation (Jha and Krishnan, 2013).

As of the time of study, there is considerable attention being given to Jugaad. Jugaad innovation – is a new way of doing things – 'yukthi' as it is called in the Indian languages; in which case it is some kind of a process and method innovation that uses the principle of flexibility and leads to practical and / or effective solutions that are affordable duly recognizing the importance and / or the scarcity of resources. Jugaad is motivated by problems of resources and constraints. New products may or may not flow out of the jugaad innovation. Jugaad innovation practices could lead to reverse innovation products. Jugaad could be improvisation, though jugaad could be more than improvisation; jugaad could be even adaptation. Improvisation leads to improvement of products or procedures by making small changes in design. Large changes in design would lead to 'adaptation'. Both improvisation and adaptation could emerge as innovation but not necessarily so.

As such, innovation means 'something new' or 'something different' that is not seen or experienced or understood earlier by the customer / consumer; this could possibly need new knowledge or discovery and possibly need an invention which is the technological and engineering aspect of innovations. In addition innovations could sometimes need imagination (or abstract innovation) and engineering skills to be combined; this is often called as inclusion of 'Imagineering'. To create 'something new' or 'something different' is by itself is not sufficient and it is necessary that the innovation solve a customer problem or fulfill an unmet need of the market or provide a new benefit (innovation has to work for the customer or has to be exploited); this needs marketing skills. Innovation could thus be the creation of a new market or an addition or an extension / modification to the product / process / technology in the existing market or with the creation of new competitive space. An illustration of this is the twin spark technology (two spark plugs instead of one) for more power and better fuel economy used in motor cycles by Bajaj Auto, India, that created the performance segment in the Indian two wheeler market. The innovation has been adopted by other manufacturers in India and abroad. The concept of the twin spark technology per se was not unique; it was already existent in the Alfa Romeo 2000 cc engine; what was something new was the usage of the twin spark technology in a two wheeler, where optimization work was needed to get it work in a small engine successfully, the balance of the two sparks was achieved through a new algorithm that Bajaj Auto developed.

For existing markets, if the addition or extension / modification is a 'just noticeable difference' to the consumer / customer or as claimed by the marketer and existing technologies is used, then it is called 'incremental innovation' or 'continuous innovation'. All incremental or continuous innovations would be 'kaizen', though all 'kaizen' would not be continuous innovation. Technology improvisations and adaptations also fall into this category of continuous innovation. If the addition or extension / modification is a 'significant difference' to the consumer / customer or as claimed by the marketer and builds on existing technologies, then it is called 'evolutionary innovation'. If the innovation demonstrates radically new technologies and the differences are 'just noticeable' then it is called 'discontinuous innovation'; if the radically new technologies bring in differences that are 'significant' then it is called substitutes. The point to note is that the 'just noticeable difference' or 'significant difference' should be 'clear differences' and accepted as 'common knowledge' by the customer/ consumer, the set of competitive firms in the market, the market place (including channels) and the society and market environment at large.

If the innovations creates markets and simultaneously disrupts the existing market or value network and the technology is radically new, then it is called disruptive innovation. If the innovations creates markets and simultaneously disrupts the existing market or value network and the technologies are similar or same, it is called successive generations of technology. Jugaad and frugal engineering also disrupt existing markets and create new markets without having to radically change technologies. Both disruptive innovation and successive generations of technology would lead to obsolescence of the earlier products / processes / technologies. Creation of new markets with existing technologies without disruption would be an evolutionary application (as seen with a scalloped product life cycle); creation of new markets with radically new technology that does not disrupt existing markets, is called a revolutionary innovation, with new to the world products. If new competitive space is created or breakaway positioning strategies is enabled- whether the technologies are existing or are radically new- then it is called value innovation or blue ocean strategy. For example (i) in the watch market, watches broke away from jewelry to alloy based to functional quartz to fashion watches to low price watches to super fiber watches; (ii) jewels market moved from jewelry 22 carat to costume and imitation jewelry to fashion 18 carat jewelry.

Innovations that are built with radically new technologies are normally called 'out of world' innovations. Table 1 (Appendix) illustrates the distinctive types of innovation and Table 2 (Appendix) follows with their respective examples.

ELEMENTS OF THE INNOVATION PROCESS SYSTEM

Innovations are often motivated by 'innovation events'. Processes that foster transformation of 'innovation events' to 'innovations' is the new product process or the innovation process system. Innovation process systems are cross-functional in nature and involve new product development groups and should be supported by an effective technology strategy. Sources of innovation could be the firm's value chain, society and market environment comprising of competitors, suppliers, customers, complementary innovators, related industries, universities and research laboratories (Affuah, 2003). Drivers of innovation include size of the organization, open innovation practices, country of origin, investment in R&D, organizational culture (Tellis, 2013). It has been inferred (Damanpour, 1992) that organizational size is more strongly related to the implementation aspects of innovations rather than to the initiations of innovations in organizations. The ideal culture of innovation would include the willingness to cannibalize existing products, balanced marketing and technology ideation, specific time spent on creative activity, embrace risk and focus on the future; leaders of innovating organizations have to ensure that these cultural characteristics emerge through appropriate incentives, empowerment of innovators and encouragement of internal markets (Tellis, 2013). A mindset shift towards innovation is also needed in the innovation process system for successful innovation (Govindarajan and Trimble, 2012). Organizations have to evolve mindsets that have a definite orientation of focusing either on markets (need based R&D, need-gap analysis, market forces driven products), organizational dynamics (operations, culture, corporate identity) or market environment and society (clearances of technology or markets, public or society driven motives). As such different mental models for innovation and marketing include those based on R&D, market focus, customer and branding, operations, culture, corporate identity, society and market, society and technology (Tollin, 2008). An illustration of society motives playing a role in innovations is the water purifier market; Hindustan Unilever (subsidiary of Unilever Inc.) with

its innovation of the water purifier 'Pureit' addressed the challenge of making safe, accessible and affordable drinking water to India that also demonstrated the firm's commitment to innovations (Business Today, 2014) with society motives, as well as breeding trust with the Indian consumer.

Broad parameters or the dashboard of an innovation process system (Dabholkar and Krishnan, 2013) are (i) the number of ideas or challenges in consideration for the firm or the 'idea pipeline' (ii) the rate at which the ideas flow through the innovation process system or the 'idea velocity' (iii) the conversions rate from ideas to successful innovations or the 'batting average' (iv) the number of innovators that participate in such systems.

One method of building the 'idea pipeline' is by job mapping (Bettencourt and Ulwick, 2008), wherein the idea generators break down or dissect the job to be done by the customer into a series of job process steps and examine at each job step 'what must be done to carry out the job' in addition to 'how must the job be carried out', in order to come out with innovation ideas. MP3 concentrated on customers listening to music whereas Apple reconsidered the entire job of music management enabling customers with procurement, organization, sharing and listening to music. Building the 'idea pipeline' could also stem from discovering new questions of problems, products and processes (Jha and Krishnan, 2013). A strong market orientation of the firm is one of the most fertile sources of ideas for innovation (Mohr and Sarin, 2009). Suitable idea generation could also be effected through brainstorming, synectics, and morphological analysis. A capture of unmet needs is also required for strong idea generation. Techniques for capturing unmet needs include focus groups, perceptual mapping, benefit structure analysis, mystery shopper surveys, problem research, customer satisfaction surveys, customer complaint analysis, environment scanning, analysis of trends in the market environment.

To get optimal 'idea velocity' an innovation process should enable 'innovations to happen' once the ideation is through. This can also be called as the execution of innovation using a system that is normally manned by a dedicated team that involves selection of the innovative leaders or champions; selection of the best people for the job at hand; organizing the people into a functioning whole (that includes conflict resolution and support); planning and achieving results through appropriate incentives, metrics and cultural values and norms. Innovation planning includes hard facts, knowledge and assumptions and involves rigorous learning mechanisms that focus on hypotheses generation and discovery. The culture created should enable an organization to coexist with routine and predictable tasks and successes with non-routine and unpredictable experiments (Govindrajan and Trimble, 2010); it should also engender adequate motivation levels. Support from top management, support and involvement (or healthy partnering) from operations managers across functional areas is needed to fructify the innovation initiative. The involvement from the operations (also called the performance engine; Govindarajan and Trimble, 2010) includes task breakup and management of conflict between the innovation team and operations; conflicts include issues of resources, task allocation and emotions of key people. The start-up should deliver innovation and the established organization should deliver efficiency, effectiveness and innovation. An illustration of the success of the 'performance engine' is that of Narayana Health, Bangalore, India, whose innovation is of providing quality care at affordable prices; founded by Dr. Devi Shetty. This is an important innovation, as quality health care and affordability do not go hand in hand. Narayana Health (Business Today, 2014) is a 26 hospital network with 6900 beds across 16 cities employing 13000 people and 1500 doctors performing over 100,000 cardiac surgeries and 250,000 cath lab procedures in the last 13 years. The health chain's mortality rate at 1.27% and infection rate at

1% for a coronary artery bypass graft procedure is as good as that of hospitals in USA. Incidence of bedsores after a cardiac surgery is globally anywhere between 8% and 40% whereas at Narayana Health it is almost zero in the last four years. The affordability is effected through economies of scale, asset light model for infrastructure expansion with no preference to invest in land and building; investment just in equipment; effective use of enterprise resource planning, business intelligence model to track efficiency; more number of surgeries on a weekly basis by doctors compared to global indications; a mindset of frugality; acceptance of failures and adoption of corrective measures.

For successful conversion rates from ideas to innovation, organizations have to pay attention to both R&D and the new product process or the new product development systems. R&D would include fundamental research or non-specific product development activities (both basic and advanced) and product-development oriented research. New product process consists of concept development and testing, business analysis and marketing strategy development, product design, prototype development and testing or virtual reality build up and testing (including the alpha tests and beta tests), test marketing and commercialization. Value engineering could also be used. The stage gate systems that consist of 'go', 'kill', 'hold' and 'recycle' structure the flow of product development. The 'drop error' and the 'go error' need to be avoided to improve the success rate of the new product process in the market. Market research processes during the new product development process and to continually validate project assumptions with customers are required; information and techniques of market research include sales feedback, surveys, conjoint analysis, Kano analysis, quality function deployment, focus groups, voice of customers and observation (Cotterman et. al, 2009). Innovation in organizational structures including intrapreneurship could also improve the conversion rate. New product process would also include planning the product portfolio for the business.

An illustration of innovation with the use of new product introduction process is also the engineering design and product development of the two cylinder engine by Tata Motors for the Tata Ace – a four wheeled small and light truck. The outsourcing for product development normally in the auto industry is 60% and for Tata Ace this was increased to 80% (Business Today, 2014). The suppliers met the cost and design targets of Tata Motors and components such as the rear axle were not separately engineered for this vehicle as this might made the vehicle heavier and more costly. Further the vehicle body was wedded to the frame to form a monocoque structure which gave weight efficiency to the vehicle. The new product introduction process designed by Warwick manufacturing group had seven stages with a gateway at each stage; Ace failed to pass the gateway more than once. The success of the product development is indicated by the fact that by 2014 every fourth truck sold is a Tata Ace and it created a new segment of a small light commercial vehicle.

As a part of understanding the deliverables of the new product development system, it is to be observed (Tatikinda and Montoya-Weiss, 2001) that product development capabilities such as product quality, unit cost and time to market are very valuable firm resources as they in turn influence market outcomes such as customer satisfaction, and sales relative to the sales objectives set for the new product. These capabilities are influenced by: (a) process concurrency or simultaneous execution of different organization functions such as manufacturing and design; (b) process formality or the degree to which rules, policies and procedures govern the work activities of product development (c) process adaptability or the degree to which product development officers can have discretion during the new product development process on work activities and decisions. Product development capabilities are affected by technological

uncertainty that includes both process task novelty and product task novelty. Market outcomes are affected by external uncertainty that includes market newness and environmentally caused disruption.

Successful conversion of ideas to innovations through the combination of creativity and execution that leads to breakthrough growth in established organizations using unproven business models has been termed as strategic innovation (Govindrajan and Trimble, 2007). The success of Apple iPod could be regarded as a strategic innovation as it combines characteristics of an innovative idea (high capacity, small size digital Walkman or the iPod itself); the high price of iPod and the low prices of songs / music through the iTunes which is the unproven reverse razor blade model that became successful; the execution of a product strategy and market strategy to deliver the iPod and iTunes and the resulting breakthrough growth for Apple Inc. which is an established organization. On similar lines technical innovations could also be defined that are not strictly within established organizations but lead to breakthrough growth in product and technology lifecycles as the case of emailing and social media that expanded the scope of the personal computer market; the introduction and rapid penetration of mobile telephony or cellular business that led to breakthrough growth in telecommunication is another example.

Commercial success with innovations is highly influenced by the success or failure of the execution efforts that go into bringing the innovation into the market place. An illustration of this is in the success of the IPL – the premier T20 cricket league in India run by the BCCI (Board of Cricket Control in India). The IPL T20 cricket league is an innovation in concept on two counts (i) the game was reduced from the one day 50 overs (per team) cricket to 20 overs (per team) cricket to reduce play time and increase aggressiveness and belligerence in the game (ii) the participating cricket teams were sponsored by famous Bollywood (Indian Film industry hub) film stars; this was the marriage of celebrities of two iconic classes in India – cricket and movies. The IPL league as of 2014 is BCCI's cash cow (Business Today, 2014) as a result of extraordinary execution by BCCI with careful auction of franchisees that engendered strong city loyalties among fans in cities hosting these games; IPL's player auctions became a television event creating match like drama with rising dollar figures (Business Today, 2014).

The number of innovators that participate in the system could be guided by information and intelligence systems supported with a reward and incentives plan within the organization. The people participating in the innovation process system should be talented with requisite engineering expertise and include (Afuah, 2003) idea generators, gatekeepers and boundary spanners who are conduits of information between firms and within firms, innovation champions who take the innovation from idea to completion, sponsors for resources / managing the organizational support and project managers who chart out the activities involved and get things done. The information system and intelligence of the innovation process system could be dynamically updated just as much Bayesian updating could be done to the events of the innovation process system. Communities of innovation and networks could be formed to transform the information and intelligence systems of organizations into active knowledge systems that are required for innovation; the community of innovation for the development of Linux – the operating system – as an open innovation is an example. Communities and networks bring to the table (i) multiple specializations in technical function (ii) combination of resources.

Organization design is also a theme of consideration with regarding to the number of innovators that participate in the system; issues include the effect of organization structure on innovation, communication patterns in innovative activity and decision making for innovation (Shane and Ulrich, 2004). Necessary reorganization of the business units to support and

encourage innovations needs to be effected and the learning process mediates the reorganization-innovation relationship (Karim, Samina, 2009).

TYPES OF PRODUCT INNOVATION

A product is a combination of one or more of (a) ingredients (b) attributes (c) benefits (d) advantages (e) features (f) functionality (g) performance (h) business model (i) usage experience (j) consumption experience. Innovations that manifest in products as defined are called 'product innovation'.

Product innovations are required by firms to cope with competitive pressures, changing tastes and preferences, short product life cycles, technological advancement (or contrarily technological obsolescence), varying demand patterns, and specialized requirements of customers. Reverse innovation of products is one emerging and high potential area that companies are actively trying to pursue to stay ahead and profitable in the global market. Reverse innovation is the opposite of glocalization. A firm such as General Electric, strong on glocalization, took up the challenge of reverse innovation with development of ultrasound machines in China and globalizing them (Immelt, Govindarajan and Trimble, 2009) in an attempt to preempt emerging market manufacturers from entering the global market. Reverse innovation can be strongly aided by local growth teams in emerging markets. Table 3 (Appendix) lists the major dimensions based on which product innovation could be effected.

ASSESSMENT OF INNOVATIONS

Product innovations is a cross functional activity and for innovations to succeed, marketing has to be integrated with R&D, manufacturing and finance (Mohr and Sarin, 2009). Innovations have to be assessed on multiple dimensions to obtain its added value to the firm and the customer / market place. First dimension is the return on marketing investment in innovation. Innovations are assessed by the equity (brand, firm, social), revenue, profits that accrue to the firm and the increase in the market capitalization that the innovation could bring about relative to the spending for innovation. One common measure is 'percent of revenue from new products' (Shapiro, 2006) wherein the firm has to have a common understanding of what constitutes 'newness / novelty' and what does not constitute 'newness / novelty'; in addition an average of annual revenue for the industry standard needs to be evolved (or a time frame such as half the product life cycle has to be adopted). To overcome the limitation of the measure that checks only products, a broader measure of 'percent of revenue' from new platforms (Shapiro, 2006) is used (product, technology, manufacturing, operational and business platforms). Closely associated with return on marketing investment is the ability to appropriate value and consequently profit in innovation ventures. Profits from innovation to innovators relative to profits from innovation to followers / imitators are determined by the appropriability regime, presence of complementary assets to exploit the innovation and the dominant design paradigm (Teece, 1986). Appropriability regime is classified as 'tight' when the technology is relatively easy to protect and classified as 'weak' when the technology is almost impossible to protect. Intellectual property rights (IPRs) including patents, copyrights, trademarks, trade secrets, industrial designs are some of the legal appropriability mechanisms used by innovating firms to profit from innovations. Other mechanisms such as exploitation of lead time in innovation with competition, learning curve effects are also used for appropriation. The nature of technology or innovation knowledge is also

a determining factor in appropriation being 'tight' or 'weak'; codified knowledge is exposed to industrial espionage while tacit knowledge is difficult to articulate and copy. Thus suitable combinations of legal appropriability mechanisms and tacit knowledge of innovation lends itself to better appropriability of innovation returns to the innovator. In addition complementary assets may be needed to exploit the innovations such as competitive manufacturing, distribution strength, service strength and availability of complementary technologies; if these are not available to the innovator but present with the imitator / follower then it is quite likely that the returns of innovation will accrue to the follower / imitator rather than to the innovator (inventor). Innovations to be commercial successes should lead to dominant designs and / or standards; if this does not occur then there could be design modifications or work around to the innovation by the imitator / follower and the returns to the innovator are likely to be weak (Teece, 1986).

Second, an assessment of an innovation system on a competitive dimension can be done with respect to the time taken for successful conversion rates from ideas to successful innovation for which organizations have to pay attention to the new product process or the new product development systems. This is also termed the development time that impacts the timing of entry in strategic marketing decisions. Timing of entry as is well known can spell the difference between success or failure of an innovation in the market place and applies well to both major innovations (what is major depends on the innovation history of the firm) and incremental innovations (one example is new models as in automobiles). When the innovation is major to the product category in the market, then timing of the first firm is the first mover advantage and the subsequent timing is the order of entry and has implications on market share. The process of bringing the innovation to the market could be done by one or more of inventor pioneers, product pioneers and market pioneers. Inventor pioneers such as Sony for Betamax technology format for video recording could later become product pioneers and market pioneers. Product pioneers such as Xerox Corp who is not the inventor pioneer for photocopying could be market leaders. Firms which are neither inventor pioneers or product pioneers could still be market pioneers; Coca-Cola was invented by John Pemeberton, a pharmacist; product developed by Asa Griggs Candler and market pioneered through the bottling concept by Ben Franklin Thomas and Joseph Whitehead.

Third is the impact to the firm and the customer. Impact is measured on cost dimension, accessibility to customers and quality improvement. Impact on product leadership, operational excellence and customer intimacy could also be assessed. For discontinuous innovations, their success is assessed based on its impact in the market place or to the firm. As such new products can be having significant differences and show an impact or new products may show no differences in functionality / performance but show an impact; both situations can be regarded as product innovations. The point to note is that the differences should be felt in the product and not just with the idea. Sometimes firms could come up with great ideas but not so good product innovations.

Fourth is the growth of the product category or product line net of cannibalization. Fifth is the effectiveness of the organization in the innovation exercise and one key metric is 'ability to work productively with internal partners'.

Sixth, product innovations can also be assessed with respect to the risk and reward of the market. Table 4 (Appendix) indicates the outcome strategic sense under low and high risk and reward conditions. Firms need to be careful in not missing out opportunities, encourage a couple of big bets to demonstrate commitment to innovation, foster innovation through options and no regrets moves, and wait for the appropriate product-market opportunity by reserving the right to

play. Opportunities could be either market arisen or technology arisen. Market arisen opportunities could from need gap analysis such as a stain removal detergent; changing needs, wants, tastes and preferences such as in the ready to eat market; perceptual reality changes such as those that occur with innovative business models, problem analysis and solution finding; constraints on customer usage or consumption such as those with the shampoo sachet in emerging markets. Technology arisen opportunities could emerge from state of art advancements, successive generations of technology, new technologies. Organizations can even develop custom made metrics to assess the success or impact of an innovation that include innovation appropriateness or usefulness and novelty (Sethi et. al 2001); adherence to budget and speed to market (Sarin and Mahajan 2001).

EMPIRICAL STUDY OF PRODUCT INNOVATION

Innovation efforts of Philips & Co. are studied through desk research (this section) followed by a primary interview with the CEO of Philips Innovation Campus, Bangalore, India (section 8.0.) as the empirical aspect of this paper.

Business Background

Royal Philips of the Netherlands is a diversified technology company, the foundation of which was laid in 1891 with light bulbs, by Gerard Philips and Frederik Philips at Eindhoven, the Netherlands and within a few years was one of the largest producers of light bulbs in the world. In 1914, Philips established its first research laboratory, with its first innovation in x-ray and radio technology (X-ray discovery was first made by German physicist Wilhelm Conrad Rontgen in 1895 and the radio technology patent goes to Serbian-American scientist Nikola Tesla in 1897 and tuned telegraphy patent to Italian physicist Guglielmo Marconi in 1898). The vision of Royal Philips is to improve the lives of 3 billion people a year by 2025. Their mission is to improve people's lives through technology enabled meaningful innovation, where mission is a journey and not a destination. The brand promise of Philips is 'sense and simplicity' with innovation and people-centric approach being the core of the company symbolized by the tagline 'innovation and you' (www.philips.com).

Philips Research

Philips Research is a global organization that helps Philips introduces meaningful innovations that improve people's lives. Philips Research is part of Philips Group Innovation (PGI) that enables business partners and creates new business options. PGI encompasses Philips Research, Philips Innovation Services, Intellectual Property and Standards, the Philips Innovation Campus, Healthcare Incubators as well as Philips Design (www.philips.com).

Target Markets and Focus Areas of Philips Research

The meaningful innovations of Philips Research touch consumer and professional markets in three areas – healthcare, consumer lifestyle and lighting. Global trends and challenges in these three areas include the demand for affordable and sustainable healthcare systems, energy efficiency imperative and people's desire for their personal well-being.

In healthcare the patient is at the center of everything they do and they target both developed and emerging markets with applications in cardiology, oncology and pre-natal care. The focus areas in healthcare include diagnostic imaging, image guided intervention and therapy, patient care, clinical decision support, home and personal healthcare, healing environments and services.

In the area of lighting with 19% of global electricity consumption, they deliver innovative and energy efficient solutions and work on alternate energy and smart technology solutions to address growing energy needs. Focus areas in lighting include LED conversion and systems, advanced light delivery, light and energy management, lighting services and light for health and well-being.

In consumer lifestyle their innovative capacity is to translate customer insights into meaningful technology and applications that improve the quality of people's lives enabling them to be healthy, live well and enjoy life (http://www.philips.com).

Nature of Innovation and Elements of the Innovation Process System at Philips Research

The innovation philosophy of Philips research includes putting people at the center and involving them in their research and development and scientifically validating the research to fit best to existing needs of market. Philips is positioned at the front-end of the innovation process ranging from spotting trends and ideation to translating unmet needs into proof of concept and where needed first-of-a-kind product development and technology enabled solutions. Ideas are shaped into concepts that are field tested with partners, customers and end users from all over the world. They work effectively across scientific and organizational boundaries in cross-disciplinary global teams that have experts in psychology, sociology, product technology and information technology and are a key player in today's innovation eco-systems. They also embrace open innovation with firms that are complementary to Philips and share their vision by actively leveraging their core competencies, know-how and IP to create win-win propositions. In open innovation, they use both 'inside-out' innovation or making Philips research resources available outside and 'outside-in' innovation where they use outside research resources from all over the globe; they are recently also exploring strategies like crowd-sourcing and social networking to come up with new technical solutions (http:\\www.philips.com).

Illustrations of Product Innovations at Philips Research

Philips Research focus on meeting global demands but at the same time fulfill local needs; come out with surprising and break-through innovations that include lamps, radios, televisions to medical equipment, electric shavers and semiconductors. A few examples of their innovations and standards include Rotalix X-ray tube, high pressure mercury lamp, the triple headed dry electric razor, the compact cassette, the Brilliance 40 slice CT scanner, CD, DVD and Ambilight TV (http:// www.philips.com).

The most recent innovation of Philips Research includes the world's most energy efficient LED lamp at 200 lumens per watt – the TLED prototype lamp. The LED bulbs have two problems; first they are less energy efficient and second they generate a very cool light. The TLED bulb uses a different combination of LED elements (two blue and one red element) to produce warm light of around 3,000 to 4,000 Kelvin, with more than twice lumens per-watt as Philips' current LED bulbs.This theoretically means that a 7.5-watt TLED could generate as

much light as a 100-watt incandescent bulb. The lamp thus combines efficiency, brightness and warmth and is to come into the market in 2015, but it'll be initially targeted primarily for office and industrial application and is a potential replacement for CFLs (http://www.engadget.com). Philips innovations also include EPIQ or Philips proprietary nSIGHT imaging architecture for ultrasound images.

Another interesting product innovation is the woodstove; the secret to the efficiency of the stove is a long life brushless fan that forces a controllable flow of air through the stove from below. The fan improves the fuel to air ratio helping the stove reach cooking temperatures in as little as a fifth of the time taken by a traditional three stone fire.

Philips Innovation Campus in Bangalore, India

The Bangalore innovation campus is a global development center using local talent and eco-systems with Bangalore being a vibrant innovative hub for all information technology and electronics related development. The mission of the Bangalore campus is to become the 'Philips innovator of choice' in India for front-end contributions to health care and energy with around 80% of activities in healthcare and 20% on energy topics. In health they provide end-to-end solutions, covering requirement definition, architecture design, development, integration and testing as well as on-site consultancy. Specific areas include cardiology, prenatal care, oncology, women's health. The product line includes technologies in X-ray, ultrasound, magnetic resonance, computed tomography, nuclear medicine, radiation oncology systems, patient monitoring and resuscitation products. In energy they are involved in solar photovoltaic based lighting solutions for hotels, digital power for lighting and energy investigations. They work in multidisciplinary teams with partners inside and outside Philips that include acclaimed research institutes, universities and hospitals in Bangalore area and have close partnerships with the relevant business units of Philips. They adopt a market oriented 'outside-in' approach to gather insights into the needs of emerging markets in India. Their approach is laid out in the slogan 'fueling growth through technovative diversity'. Their research includes automated test framework for selection of smaller test suite on deployment of COTS (commercial off-the-shelf) upgrades; application profiling for dynamic power management on Nexperia platforms, oral cancer screening for rural India. On 'Innovation day 2007' they showcased a flexible and powerful workstation – 'Imalytics', for obtaining valuable results in medical imaging based research that allow to go from images to insights in an intuitive and efficient way. Some of their recent innovations showcased in 2014 are (i) Mobile Obstetrical Monitoring (MOM) a prototype scalable tele-health solution for early high risk pregnancy detection in regions where increasing maternal mortality is a concern (ii) Air purifiers to manage indoor air quality (iii) ICCC delineated below (iv) Solar DC Grid a new LED based solution that realizes an efficient link between a renewable energy source and an efficient luminaire (v) power over ether-net connected lighting system (http://www.newscenter.philips.com).

The Indian healthcare environment is currently having lack of qualified critical care experts and access to quality critical care especially for people in smaller towns and villages, since only the most critical patients of a hospital are housed in ICUs. Although bedside care providers are present in the ICUs, monitoring all the patients all the time, including multiple high-acuity patients is a big challenge. The IntelliSpace Consultative Critical Care (ICCC) solution of Philips Innovation Campus, Bangalore, India is extremely useful for the needs of the community. The solution focuses to empower and provide the best, specialized advice to the

onsite clinical staff and work collaboratively with all other specialists. It is an advanced clinical decision support and documentation solution with the command center designed to manage many more patients by critical care experts who are miles away without having the patients to move to bigger cities. ICUs of remote hospitals can be connected to ICUs of major hospitals in cities through online data and real-time video images of patient conditions. ICCC thus enables critical care access to the masses, with improved clinical and financial outcomes. It addresses the challenge of growing shortage of qualified physicians and nurses, while significantly improving the quality of care.

Assessment of Innovation at Philips Research

Philips research believes to see the impact of their innovation in really making a difference to people and empower people to improve their life.

PRIMARY INTERVIEW AT PHILIPS INNOVATION CAMPUS, BANGALORE, INDIA

Subsequent to the desk research, an interview was obtained with The Chief Executive Officer, to elicit the opinions and judgments with regarding to the innovation processes at Philips Innovation Campus, Bangalore, India. Laid below is a summary of the understanding obtained.

The innovation process at Philips, Bangalore has been quite successful in recent years with innovations to local area problems in the Indian region, that includes the (i) Tele-ICU that has been termed as the ICCC in the section above; (ii) the Tele-ECG which is a first of its kind device; and (iii) the ultrasound scanner with both (ii) and (iii) having off-the-shelf tablets as their display units. The Tele-ECG had an idea to market time of 18 to 20 months; the Tele-ICU a bottom up innovation, developed along with Indian customers in agile mode had a time to market of around 8 months. All the three innovations have good potential for reverse innovation.

The innovation process broadly consists of two phases; the first being an ideation phase that starts with an identified problem and works towards a prototype; the second being the product creation process itself till the product innovation reaches business potential. The ideation process is supported by hackathon like events one or two times a year with around 20% to 25% of the organization engineers participating in teams who may take a green-field approach.

The philosophy of innovation at the Philips Innovation Campus is to work towards better products for customers with no compromise on quality and reliability even though the cost of the product turns out to be higher. It is an understanding that the author gained that the company finds customers at higher prices especially for high technology innovations; the concept of frugality is applied by boxing the product creation process with high resource / budget constraints in addition to time to market constraints giving freedom in engineering and technology in the innovation attempts to solve the customer end problem.

An important aspect of the innovation process is the mindset and culture required for innovation. Indian engineers are smart and at Philips they show deep firm loyalty with very low attrition levels. Consequently their knowledge and skill base within the firm and the range of experience given to the engineers is considerable; in addition the engineers who have a passion to innovate are taken in to the innovation teams. Hence, an environment of innovation is created and the firm has established relationships in the Indian eco-system especially with universities and health care professionals who work along with the engineers in the innovation process.

The firm assesses the success of its innovation in the scale of ideas and required enthusiasm generated; the Innovations in Designs and Patents filed; translation of ideas to prototypes and to business processes and how well the product innovation is doing in the market place. The processes of idea to prototype and the product creation process subsequent to prototype are seen as twin processes rather than attributing an increased weightage to any one of them keeping in mind that for successful innovations to happen the innovation ideas should flow through. As of the present time, market driving forces are on the increase and the business environment is posing its own constraints that innovation processes should take care. There is an increased understanding that innovations is just not about product innovations, innovations in end to end solutions and business models are also equally important for business success; second the firm needs to stay ahead in innovations to succeed; third the innovation success is driven by how good the user experience has been; fourth the success at Philips has also been due to excellent response time and maintenance of high up time in customer service of its product innovations; these could be keys to monetize innovations. Lastly superior value delivery and value maximization to the customer is what drives the innovation process.

IMPLICATIONS FOR MARKETING STRATEGISTS

Innovation is a driver of competitive advantage. Innovations are about 'newness' and 'differences' in market offerings and / or market delivery and strongly supports the generic competitive advantage and strategy of 'differentiation' as in feature rich cameras and computing and telecommunication devices. However for an innovation to succeed as a competitive advantage there should be a fructification of the innovation advantage through appropriate competitive marketing strategies. Some useful competitive marketing strategies include timely innovations, alignment of the competitive value proposition with the innovation advantage, product assurance through quality certifications, building extraordinary features at bearable prices to achieve superior value, customer focus to technology development, good after sale service to avoid customer dissatisfaction, good price promotions to achieve competitive transaction.

Innovations could also lead a firm into the value discipline of 'performance superiority' as has happened with Intel in microprocessors. Innovations could also lead to the generic competitive strategy of 'cost leadership' if innovative cost effective ways or methods or raw materials are discovered; plastics came in as a less expensive substitute to steel in the household utensil industry. Synergies are a possible competitive advantage and strategy when technological innovations could spin of multiple businesses as in the field of microelectronics that could spin off into consumer electronics, industrial electronics, defense, computing and communication. First mover advantages are possible with innovations as with market pioneers such as Coca-Cola. The 'newness' and / or 'differences' have to deliver superior benefits to firms and / or customers in a timely fashion that is relevant to customers and / or firms to make innovation meaningful and result in superior customer value and improved financial performance of the firms. Innovation requires change as much as it leads to a process of change in organizations. Overcoming resistance to change in organizations for purposes of innovation includes adequate performance measurement system, willingness to collaborate with others and an ability to tolerate failure. It can be surmised that creativity is to the individual level as much as what innovation means to the firm level. Obviously a unification of minds from the individual to the group and from the group to the firm is required for creativity to transform into successful

innovation for the organization. Marketing strategists need to obtain deep consumer insights to foster the process of innovation to realizable customer value. Innovation strategies need to be multi-faceted to include technology realizations, people synergies including networks / cooperation among firms in the same value chain, customization of organizational hierarchy for innovation. Innovations can be protected through patents, copyrights, tacit knowledge, integration or appropriate contractual arrangements as in franchises as deemed required.

Firms have different objectives to innovation depending on their resource positions of capital and intellectual capital as well as the capabilities of their firms; firms' objectives are also impacted by the market environment including demand patterns, technological change and competitive pressures (Hoonsopon and Ruenrom, 2012). For innovations to be competitive, firms need to be concerned about advantages in design, quickness to market, shortened product development times, constant upgrading that includes flexibility in R&D processes and technological leapfrogging. Six design innovation strategies were identified in Taiwanese computer and electronic enterprises(Hsu, 2011) – reducing production costs, simplifying manufacturing and maintenance, adding product value, uplifting product quality, improving product design and development, and enriching marketing information gathering and responsiveness. Market orientation has been shown to be positively related to product innovation and proactive market orientation is needed for innovations to succeed (Han et. al, 1998; Lukas and Ferrell, 2000; Narver et. al, 2004) and firms need to devote time to non-customers as well as customers to be able to bring out innovation successes (Drucker, 1999). The innovator's dilemma (Christensen, 1997) suggests that successful companies can put too much emphasis on customers' current needs, and fail to adopt new technology or business models that will meet customers' unstated or future needs and such companies will eventually fall behind; this is especially so when disruptive technologies emerge. Customer co-creation could help in generating break-through innovations.

Further budgeting for R&D is an important area that needs top management attention, both in terms of the number of projects that can be pursued by R&D simultaneously as well as the budget per R&D project. R&D investments will have to be tuned to cater to optimal base cost of the product from the design stage to the production stage and optimal transfer cost from the production stage to marketing of the product.

A business's product development efforts should include a successful product innovation strategy coupled with a technology strategy for the company with an effective business leadership (Cooper and Edgett, 2010). A product innovation strategy should be part of an overall firm's marketing strategy with goals and objectives emanating from the mission and vision of the organization; optimal resource allocation and explicit project selection, a deliberate selection of competitive advantages or strategic thrusts to be pursued, a clear product strategy with detailed examination of end user functionality requirements, an implementation team for the product strategy and feedback and incentive mechanisms put in place.

Marketing strategists can also consider and examine other types of innovation in the marketing offer. Avon demonstrated distribution innovation with its door to door selling operations for its cosmetics to challenge leaders such as Revlon, Estee Lauder who were well established in retail space; it also distributed its products through the multi-level marketing system thereby creating sales and distribution system and not just a sales system (extension of the hawker type selling). Airlines are as of recent times postulating and using dynamic pricing which is a kind of temporal pricing whose argument is dynamic load factor; this is a pricing innovation (which is a kind of preferred pricing or preferred rates as is used in the hotel

industry). In the cellular communication industry, Tata DoCoMo, India was the first in India to break the per-minute charge for air time, by introducing the per second tariff which is a pricing innovation; as of 2014, 40% to 60% of subscribers of most cellular operators, now use the per-second tariff plan (Business Today, 2014). The use of SMAC (social media, mobile, analytics and cloud computing integrated) for marketing and retail environments is a communication innovation (this is an extension of the earlier concepts of integrated marketing communications). In short in such situations, the concept of innovations is to come up with ingenious and clever combinations of existing technologies to come up with new applications in a fast changing world.

Innovation also links itself with shared value and co-created value. Shared value refers to an over-riding social model that embeds a business sub-model whereas corporate social responsibility refers to a principle business model that includes a social sub-model that could even be a social cause. Shared value refers to economic principles of market and socialism combined and hence is a kind of market socialism that lies in between market capitalism and socialism. Shared value conceptualization hinges on appropriability of value in a shared manner between the business firm and the society, whereas co-creation hinges on the identification and creation of value with the consumer as an active partner to the firm. Co-creation could act as a basis of shared value business principle. Innovation creates and generates value and could reflect in both co-created value and shared value. Ultimately the purpose of innovation is for improving and increasing the delivery of superior meaning and superior value to the customer while making it relevant, different or new and valuable from the customer's stand point, simultaneously achieving organizational goals and objectives.

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APPENDIX

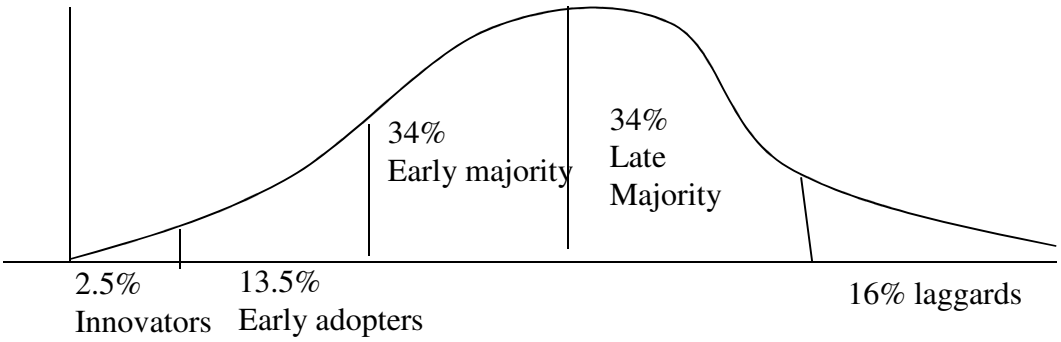

Figure 1: Adopter categories based on relative time of adoption of innovations

APPENDIX …. (Continued)

Table 1: Distinctive types of innovation

	Existing technologies	Radically new technologies
Creation of new markets (newness)		
Disruption of existing markets	successive generations of technology; jugaad; frugal engineering	disruptive innovation
No disruption of existing markets	evolutionary application (scalloped product life cycle);	revolutionary innovation
Existing markets (differences)		
Just noticeable differences	Incremental or continuous innovation; improvisation and adaptation innovation	discontinuous innovation
Significant differences	Evolutionary innovation	Substitute
New Competitive space	------Value innovation or Blue ocean strategy -------	

APPENDIX …. (Continued)

Table 2: Examples of distinctive types of innovation

	Existing technologies	Radically new technologies
Creation of new markets (newness)		
Disruption of existing markets	8 bit microprocessor to 64 bit microprocessor Jaipur leg (Jaipur foot)	iPod versus Walkman or DVD versus VCR
No disruption of existing markets	spreadsheet for project management; Nylon (scalloped product life cycle)	calculators vs. slide rule
Existing markets (differences)		
Just noticeable differences	Versioning; generics	Synthetic engine oil; generic innovations
Significant differences	Personal computers to tablets	Plastics vs. steel
New Competitive space	Shampoo sachet versus bottle	Digital Piano

APPENDIX ….. (Continued)

Table 3: Types of Product Innovation

Dimension of innovation	Example
a. Installation & commissioning	DIY kit
b. Manufacturing / mass customization	Color mixer – Jenson and Nicholson
c. Servicing	Maintenance free battery
d. Repair	Modular design - Computer
e. Style	Fashion watches - Swatch
f. New Solutions	Business Intelligence, data mining
g. Idea	Applying thought slogan – WIPRO, India
h. Usage	Disposables – razor, diapers
i. Packaging	Tetra pack
j. Form	Liquid face wash
k. Size	Sachet - shampoo
l. Formulation	Gel pen, Gel toothpaste, Gel shave cream
m. Business model	Apple iPod
n. Benefit	Antigravity sleep system – restful sleep - TempurPedic
o. Customer responsiveness	ATM / self-serving technology
p. Functionality	GUI (graphical user interface), menu driven
q. Performance	Synthetic engine oil
r. Ingredient	New molecule – Volcavir for Herpes
s. Material	Titan super fiber low cost watches
t. Technology	HDTV – high definition TV
u. Features / attributes	Bluetooth
v. Customer insight	Gillette Guard razor blade capable of reverse innovation
w. Surrogate reality	Virtual reality
x. Operational enablement / intervention	Automatic (car)
y. Mix and match – morphological analysis	Colors/paints; architecture, fast food
z. Cultural adaptation	McDonalds, KFC, PepsiCo's Aliva - a lentils based snack that has global potential; capable of reverse innovation
aa. Consumption based	Bronchial auto halers
bb. Fit and finish	Melamine unbreakable crockery
cc. Building products	Generics
dd. Time to prepare	Ready to eat, instant coffee
ee. Service time	On time arrival of aircraft
ff. Brand marketing	Private label, co-branding, symbiotic
gg. Engineering design	Bajaj's Twin spark technology in two wheeler

APPENDIX …. (Continued)

Table 4: Risk Reward matrix for innovations

Risk and Reward of the market	Strategic Sense
High risk, high reward	Big Bets, Shapers
High Risk Low Reward	Options or no regrets move / robust decision making
Low Risk, High Reward	Opportunity
Low Risk, Low Reward	Reserving the right to play

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