THE NEED FOR DESIGN APPROACH IN OPPORTUNITY IDENTIFICATION STAGE OF PRODUCT INNOVATION

Gayatri Menon
Faculty of Industrial Design, National Institute of Design

Abstract

The role of innovation in organisational growth and survival is often emphasised, but the role of design in the critical phase of opportunity identification stage of innovation is yet not widely recognized. The broadening scope of invention and idea generation for opportunity identification beyond technology and marketing; the recognition of creative opportunity identification possibilities and the recognition of design beyond its role in new product development leads to interesting possibilities. Design is already playing an important role in new product development. It is argued that extension of this role to the opportunity identification phase will not only help in arriving at new opportunities but will also enable seamless integration between opportunity identification and new product development. A planned approach to opportunity identification through design thinking and approach can lead to establishing systems for continuous innovation.

Keywords: *Design approach, Opportunity identification, product Innovation*

Innovation is being increasingly recognized as a key factor for the growth of enterprises. As Drucker puts forth, every organization – not just business – needs one core competence: innovation."From an economic perspective, innovation is a matter of life and death. A company must innovate today if it wants to be in business tomorrow." (Esslinger, Hartmut, 2009) Innovation is often defined as invention plus implementation/commercialization. Innovation involves both opportunity identification and opportunity evaluation. Opportunity identification is considered to be the explorative creative phase which results in ideas and concepts whereas opportunity realization phase includes evaluation and planning for commercialization. In fact, it is even argued that the entire strategy innovation process should be considered as the fuzzy front end of an overall strategy creation process, leading seamlessly from opportunity identification and creation to opportunity evaluation and integration (Johnston, Robert, 2013).

The creative component of the innovation process is often emphasized. It is further stated that although sometimes innovation in organizations may happen through chance, considering the criticality of the same, innovation cannot be left to chance but has to be planned. In the current scenario, wherein there is cut throat competition it is even more imperative to come up with new products on a continuous basis. A planned, systematic approach to innovation, especially in the opportunity identification stage is required. The role of design in new product development i.e. designing and developing new products based on design briefs is well recognized. It is argued that design with its characteristic planned, creative approach can play a critical role in opportunity identification for product innovation

Innovation

The root of the word 'innovation; is from innova or 'new'. Innovation is an invention that has been commercialized (a definition first articulated by Chris Freeman and Luc Soete

in their book the economics of industrial innovation). Innovation is defined as invention plus implementation/commercialization wherein invention involves the process of taking an idea and developing it into a concept, which finally leads to innovation (Gaynor, 2000). The importance of innovation for business in the current competitive world is reflected in some of the definitions such as 'Innovation is the constant search for fresh approach to every aspect of running the business' (Mark and Spencer, 1996). Innovation is important for sustaining and growth of an organization. 'Innovation is the central issue in competitiveness' (Porter, 2000). As Drucker reiterates, except for innovation and marketing, the remaining activities of an organization are only expenditure. Thus the importance of innovation in today's competitive times is often reiterated.

There are various types of innovation. The generally accepted innovation categories include incremental, discontinuous, architectural, system, radical and disruptive. The simplified classification includes three categories: incremental, new to the market/society and breakthrough. Incremental innovation is described as improvements to current products, processes, services and systems. (Gaynor,2000) Breakthrough innovation is often the result of technical invention whereas new to the market innovation, innovates to fulfill the needs of consumers for the new markets. A majority of innovation happens in incremental innovation – they often reflect changes in market dynamics and issues related to product differentiation to cater to various market segments. This enables industries to sustain their product range for as long as possible.

The process of innovation reflects this approach. Innovation lies on a continuum of events that begins with a raw idea, which is developed into a concept, which then yields some type of invention and which is finally implemented and commercialized (Gaynor,2000).Innovation has focused on two strategies: quantum leaps in product performance by breakthrough technologies and improved product solutions by better analysis of user need. The former domain of

radical innovation is pushed by technology and the latter domain of incremental innovation is pulled by the market. (Verganti, Roberto,2009)

Further, it is recognized that Innovation involves both opportunity identification and opportunity evaluation phases. Opportunity identification is considered to be the explorative creative phase which results in ideas and concepts whereas opportunity realization phase includes evaluation and planning for commercialization. When an invention is done, the second half of innovation begins: turning the idea into a business success. (Gifford Pinchot, 1986) It is being increasingly recognized that innovation includes the whole organization.

Opportunity identification

Opportunity identification is considered to be the explorative creative phase which results in ideas and concepts. Opportunity implementation is given a lot of importance since it involves finances, organizational infrastructure, organizational resources and planning. Opportunity identification stage is critical since the seed of innovation for new product development takes place during this stage. Opportunity identification can itself happen in many ways: top down approach wherein the top management decides on the opportunity idea and then involves other people from the organization to explore the possibilities. Conversely, in the bottoms up approach, people from within the organization arrive at opportunity ideas and propose the same to the management. (Gaynor,2000).

The greatest weakness in product innovation is the fuzzy front end. New product development has become a core business activity that needs to be closely tied to the business strategy and a process that must be managed through analysis and decision making. Companies generally begin work on new product opportunities often called pre phase zero of the front end process when they first recognize in a semiformal way an opportunity(Khurana and Rosenthal,1997))A process of strategy innovation should be the fuzzy front end of an overall strategy creation process, leading seamlessly from opportunity identification and creation to opportunity evaluation and integration (Johnston and Bate,2003)

Process for identifying opportunities

A lot of study has been done in the various aspects of innovation: specifically opportunity implementation as well as the managing the innovation in a firm. However although opportunity identification stage is seen to be a critical phase, there is little study in terms of a planned process which would help in opportunity identification. Some of the existing innovation process models deal with recognition of opportunity followed by concept-product formulation (Roberts et al).

Robert Cooper introduced the stage gate system for moving product innovation to the marketplace. The six stages include problem identification, ideation, conceptualization, development, testing and launch wherein problem identification begins with identifying a particular problem or opportunity. This model is similar to the Robert and Frahmann model which is also a six stage linear process starting with the recognition of the opportunity idea to the technological diffusion stage. It includes recognition of the opportunity, idea formulation, problem solving, prototype solution, commercial development and technology utilization and /or diffusion. It is often argued that innovation is not a linear process. Sometimes recognition of opportunity and idea generation might happen simultaneously.

Quinn refers to innovation process as controlled chaos and suggests that independent innovator as well as bottom up innovation in organization is more innovative than organizational innovators. Van de van and his associates after doing longitudinal research in diverse industries for many years found that innovation involves dealing with unknowns, unpredictable events and ill defined and ambiguous goals. Van de Van believes that opportunity identification happens intuitively and acknowledges that innovation does not occur through some linear or mechanistic process but shows that common elements such as initiation, development and implementation exist in the innovation. He subdivides innovation into initiation period, the development period and the implementation /termination period. According to him, the initiation period is the time of churning ideas and trying to develop the same into workable concepts.

Internal or external trigger may shock the industry into recognizing some significant opportunity. The majority of creativity takes place in the idea concept invention stage or the ICI stage (Gaynor,2000). There are many idea generation methods. Some of these are followed to come up with a number of ideas. Discussions and critical feedback narrows down the number of ideas that could become opportunities. However there is a lack of clarity on how ideas actually become opportunities. There is also a lack of understanding on how opportunity areas lead to (product) ideas.

Design and design thinking

Design is a planned, structured process to arrive at creative products, systems and services. Designers today are dealing with complex realities while working on design projects. They need to deal with not only specific problems but also aspirations, issues and concerns. The initial phase of design is often termed as fuzzy front end of design because of the vague mixture of intentions and possibilities. It is expected that opportunity identification in design would help in bringing clarity to the 'fuzzy' initial phase of design and provide creative design directions for designing products. However, there exists very little work in terms of

methodologies/conceptual framework for this stage of design. Opportunity identifying process in the initial phases of design does not seem to have been extensively studied and is still seen to be 'Fuzzy'. The fuzzy front end is represented by Darrel Rhea in his article on ' Bringing clarity to the fuzzy front end' as a cloud with a vague mixture of ideas, trends, requirements etc. which gets into the funnel and through insight gets churned out as a product brief. The first phase of the inverted cone involves discovery and observations, forecasting and identifying opportunities.

This leads us to design and how design and design thinking can make a difference in opportunity identification for innovation. Design is a planned process. It is often understood as creativity with a purpose i.e contextual creativity. The importance of designers role in the initial phase of design could be quite critical to the shaping of the project. Designers are not just problem solvers but opportunists who can join others at the initial moments of an effort or a situation. (Sabatino, Peter Di, 2005).The term "design" itself is derived from its Latin root 'designare', meaning to mark out, trace, denote, or devise. In French the word *dessein* means plan or purpose. The English word design can function as either a verb or a noun. As a verb, it means to mark out, nominate, appoint; to plan, propose, intend; and to draw and sketch. As a noun, it represents a mental plan and artistic shape. The term design takes multiple meanings in its context of use (Bucciarelli 1988).As a noun, it may refer to an artifact. As an act of planning and conceiving it can be applied to a diverse range of human experiences. Design thinking is also integrative in nature ie. It is able to integrate various disciplines to come up with something new, novel. Simon (1969) proposed that the science of design could form a fundamental, common ground of intellectual endeavor and communication across the arts, science and technology. The study of design could be an interdisciplinary study accessible to all those involved in the creative activity of making the artificial world.

Esslinger from Frog design categorizes designers into four schools of design. According to him, the first school is represented by classic designers who generate individualistic-artistic statements that balance an appeal to the heart with an appeal to the mind. The second school of design is represented by artistic designers who rely on visceral methods to create products with spectacular visual appeal. The third school is made up of those who work in anonymity on corporate design departments. Esslinger further states that internal designers working in corporate design departments are often mismanaged and underappreciated. They work in organizations that have no consistent approach to incorporating design into their strategic plans or processes and they report to marketing and engineering managers who have a minimal understanding of the potential of design. Therefore the forth school of design which is made up of highly creative, strategic designers who are fluent in convergent technologies, social and ecological needs and business are critical for business leaders pursuing an innovation driven business model. The designers working in this area are able to feel and see opportunities that the other may not be able to identify.

This design approach may also help companies who do not face specific product related problems. Companies and other organizations don't so much seem to have "problems" that need to be solved, but situations or predicaments that they have to deal with.(Patrick Whitney).This requires an approach which to some extent intends to identify opportunities with a futuristic perspective. There are certain approaches in design such as V.I.P or vision in product design which are futuristic in nature and which try to envisage user-product experiences for the future. Everyone designs who devises courses of action aimed at changing existing situations into preferred ones (Simon 1996). Vip is a design method which is context driven and interaction centered. Designing according to Vip is about exploring what is possible tomorrow instead of solving the problems of today.(Hekkert,Paul,2011) It is believed that Designing is not only the making manifest of some physical object but foremost the generation and development of the idea that provides it with a raison d'tere. The method is unique as it enables designer to embrace three values: freedom, responsibility and authenticity. Artemide has followed a strategy of design driven innovation that is radical innovation of meaning. Meaning is driven by why people need a product than 'what they need in a product. (Verganti, Roberto,2009).This perspective brings forth interesting dimensions for opportunity identification. Opportunity identification is also considered from the product family perspective which is a part of design thinking in terms of new product development. A product platform, as described by Marc Meyer and Al Lehnerd, is a set of subsystems and interfaces that from a common structure from which a stream of derivative products can be efficiently developed and produced'. In this strategy, the platform is the innovation: the rest is the execution.

Need for design in opportunity mapping

Design thinking has a critical role to play in identifying opportunities and strategies for industries. There are many industries/institutions which are faced with the challenging task of deciding 'What new product/ service/scenarios can we come up with?" Design methods and approaches can help towards bringing about a collective and creative approach towards opportunity identification within industries. The problem of a lack of design approach in arriving at opportunities is perhaps more accentuated in entrepreneurship. Why is design approach required for opportunity identification? What are the aspects of the current

scenario which has led to considering design as a significant factor for opportunity identification?

Widening scope of innovation: Innovation is exploitation of technical invention. Traditionally, this has led to the setting up of massive research and development departments to come up with new inventions which could then be exploited. Although this approach worked well in a closed protected environment, this model also has many limitations. A lot of funding was used for R& D activities often with few successful inventions. These inventions were patented, protected and exploited to come up with proprietary new products. Often, entire business would sustain on a single new product for many years. Increase in competition and dynamic market and social trends has changed the scenario considerably. New demands of consumers are being fulfilled by new products in short time spans. Organizations have realized that innovations need to happen constantly to fulfill the dynamic needs of the consumers.

Just as exploiting technical inventions was one of the prime means of arriving at product innovation, identifying and exploring new markets became an important factor for innovation. Understanding the various market segments with the objective of fulfilling the needs /desires through new product development became important. Product differentiation for various market segments also became an important factor in product innovation. Apart from technical and marketing factors, other changes also started playing an important role in innovation. Technological changes, socio-cultural changes, changes in product supply chain and environmental issues are a few contextual changes elucidated. (Chiapponi, Medardo, 2005).The approach to invention and raw ideas has over the years broadened its scope beyond science and technology. Innovation's criteria is not science or technology, but change in the economic or social environment, a change in the behavior of people as consumers or producers (Drucker,2000) . As discussed, design considers multiple perspectives. The broadening of scope of innovation covering various sectors has enabled design to play a role in the same.

Creative aspect of innovation: The invention process covers all efforts aimed at creating new ideas and getting them to work. (Roberts,2009). As Levitt says Innovation may be viewed from at least two vantage points: 1. newness in the sense that something has never been done before 2. Newness in the sense that something has not been done before by the industry or by the company now doing it. (Gaynor,2000). Invention and innovation involves creativity. They require thinking about what could be, about doing things differently and about combining known facts into new combinations. Strategy innovation requires a creative process, not an analytical one. Strategic frontiers are to established companies what corporate visions are to start ups. The goal of a vision should be to identify what the company would like to achieve that will somehow have an important impact. (Johnston and Bate,2003) Innovations often result from combining things that have never been combined before.

The strategy innovation process starts with tomorrow and then plans backwards to today. To be successful, the search for new business opportunities cannot be constrained by today's corporate conditions or market conditions. (Johnston and Bate,2003). Therefore it is imperative to consider the future rather than the present alone while identifying opportunities. After identifying potential new business opportunities in the future, planning works backwards to identify the key strategic milestones to get there. New growth opportunities acts as a future pull. Strategy innovation becomes the fuzzy front end of the strategy creation process within a company(Johnston and Bate,2003). Design with its visionary futuristic perspective is well suited to arrive at opportunity areas which can pull innovative ideas.

Rapid changes in technology: One of the factors accounting for decline of products and the shortening of life cycles is the rapid change in technology. Technological change puts extreme pressures on companies to innovate or decline. Doing traditional market analysis may not help innovation which requires a new way. The creative act consists in combining previously unrelated structures so that you get more our of the emergent whole than you put in (Arthur Koestler) This is the reason design becomes an important criteria. Innovation's criteria is not science or technology, but a change in the economic or social environment. (Drucker, 2000). In order to come up with continuous innovation, technology cannot be the only answer. Design with its ability to extrapolate at both macro and micro level is ideally suited to arrive at opportunity areas incrementally as well as at breakthrough levels.

Conclusion

The motivation for investigating this area was to gain a better understanding the role of designers and design thinking in identifying opportunities for product innovation. It is quite clear that innovation is critical to industries and organizations and that they need to structure and integrate the process of innovation in their organizations in order to come up with continuous innovation. Considering the changing parameters, the significant role design can play in opportunity identification phase is established. The role of design and design thinking in arriving at new approaches to opportunity identification through creative, visionary approach is shown. It is expected that the integration of design in the opportunity identification phase will result in creative opportunity identification that can be seamlessly integrated to new product development. Organizations would benefit greatly through incorporating design thinking and approach to arrive at new opportunities areas that would lead to product innovations.

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