



NUANCES OF INNOVATION –A CONCEPTUAL STUDY

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Innovation

The perspectives on innovation vary, so do the descriptions of what constitute innovation. Innovation as a vital phenomenon, therefore, necessitates the essentiality to review the previous definitions of innovation.

Definition and Classification

Innovation is a new idea, device or process. Innovation can be viewed as “the application of better solutions that meet new requirements, inarticulate needs, or existing market needs. This is accomplished through more effective products, processes, services, technologies, or ideas that are readily available to markets, governments and society” (Ezenwakwelu and Ikon, 2014). As cited by Hassanien & Dale (2012), innovation refers to any good, service or idea that is perceived by someone as novel or new.

National Knowledge Commission (2007) defined innovation as a process by which varying degrees of measurable value enhancement is planned and achieved, in any commercial activity. This process may be breakthrough or incremental, and it may occur systematically or sporadically.

It may be achieved by introducing new or improved goods or services and/or, implementing new or improved operational processes and/or implementing new or improved organizational/ managerial processes, in order to improve market share, competitiveness and quality, while reducing costs.

There are many ways of defining and classifying innovation. Innovation is distinguished from invention and organizational change. Becker and Whisler (1967) viewed invention as creative acts of individuals and innovation as collective action by a group of individuals as cited by Stephen R. Herting (2000). Mohr (1969) differentiated innovation from invention by describing invention as new creation and innovation as new application. According to Robey and Sales (1994), as cited by Joseph, B., (2011), innovation is a particular type of change and change is any kind of alteration in structure, process or output of an organisation.

O’Neil, Poudier & Bucchotz (1998) extended the definition of innovation to include corporate strategies but subject to diffusion process and tangible innovation. Watkins and Marsick (1993) refer to innovation as the end product of organization learning process.

Kanter (1984) took an elaborate effort to define innovation as indicated in the following excerpt:

“Innovation refers to the process of bringing any new problem solving idea into use. Ideas for reorganising, cutting costs, putting new budgeting system, improving communication or assembling products in teams are also innovation. Innovation is generation, acceptance, and implementation of new ideas, processes, products or services. It can thus occur in any part of the corporation and it can involve creative use as well as original invention. And there are many different kinds of innovations brought about by many different kinds of people; the corporate equivalent of entrepreneurs.”

“Innovation is [.....] the act of creating a new product or process. This includes invention as well as the work required to bring an idea or concept into final form. An innovation may have various degrees of newness, from very little to highly discontinuous, but that must include at least some degree of newness to the market not just to the firm” as cited by Hassanien & Dale (2012).

An innovation indicates any new product, service or creative element considered to be novel, including technological improvements, new changes to product and production, and new marketing methods (Porter, 1990). According to Vrakking (1990), innovation also represents updates to design that distinguish an organization from its competitors whereas to De Brentani (2001) innovation indicates the degree of developing new products or gradual improvement and simultaneously took into account novelty in technologies and markets as cited by Wu & Chen (2014).

Innovation could be referred to as either the process of bringing new products, equipment, programs or systems into use or object of innovation process, that is, new products, equipment, programme or system as cited by Joseph, B., (2011).



Just as innovation has many definitions, it also has many classifications. Kleinknecht (1987) classified product innovation into following six categories namely pure product innovation for final consumers, new medical procedures, apparatus and drugs, new investment goods, new technical devices or technological materials, scientific instruments and pure process innovation. This research study examines the first category as, the perception of project team which represent the software development professionals involved in developing software products, on pure product innovation. Higgins (1995) also classified innovation into four types- product innovation, procedure innovation, marketing innovation and management innovation. Betz (2003) divided innovation into product innovation, manufacturing process innovation and services innovation. Rogers (1995) argued that innovation had five features namely relative advantage, compatibility, complexity, trialability and observability. He suggested that these features are identified by consumers as perceived innovation (Wu & Chen, 2014).

Analysing product innovation, Chesbrough & Teese (1996) talked about two types of the same namely autonomous and systematic innovation. Autonomous innovation could be pursued independently as single act whereas systematic innovation involved interrelated innovation efforts from diverse segments of the organisation. Systematic innovation involved simultaneous change in all the parts and the way parts are hooked together.

Henderson and Clark (1990) differentiated radical, incremental and architectural innovation. Radical innovation required new knowledge and technology while incremental innovation builds on existing products.

Wang and Rafiq (2012) measured product innovation on the basis of radical innovation, incremental innovation and speed to market. Kim & Mauborgne (1997) discussed value innovation in terms of three platforms within which innovation creates value for the company and its customers, product, service and delivery. The researchers contended that companies tend to focus on product innovation while ignoring the other two platforms that may be equally important to ultimate success.

Daft (1986) tends to examine the following innovation types: technological, administrative, human resource and product/service. Technological innovations are defined as those which would increase production or ultimate quality of product or service. Administrative innovations are concerned with organization structures, goals or performance systems. Human resource innovations are those which would improve/change employee attitude or behaviours including communication, group interaction, problem solving and similar activities. Product/service innovations were changes in the organization output to customers involving new products/new markets.

Stephen R. Herting (2000) cited that human-resources innovations refer to changes in the attitudes, skills, beliefs, expectations, and behaviour of employees by creating a positive work climate, which in turn, improves organizational performance. Administrative innovations involve the management process of the organization and effect changes in the organizational structure, goals, systems, and linkage devices.

According to Pohjola (1977), management or administrative innovation includes inventions and implementation of management practice, management process and management technique and organizational structures to attain organizational goal. He further cited that management innovation differed from technological innovation specially product innovation.

Observing and Measuring Innovation

Freeman (1982) proposed that “not to innovate is to die” that means innovation would influence enterprise growth and determine whether or not enterprise would survive as cited by Wu & Chen (2014). Innovation is a broad, multidisciplinary subject. As a phenomenon, it is observed, classified, and measured via many different methods with varying degrees of precision (Stephen R. Herting, 2000). There is no established general way to measure organizational innovation. However, innovation in organizations can be measured through surveys, workshops, consultants, or internal benchmarking. Generally, innovation is observed and measured at political levels and organizational levels. The measures of innovation at political levels are more focussed on a country or region. There are several frameworks to measure capabilities of an organization at a political level such as those of European Foundation for Quality Management. The standard guidelines for measuring product and process innovation are provided by the Oslo manual (1995). But the major limitation of the Oslo manual is that they have overlooked the key drivers involved in producing innovative products, the professionals who are involved in the process. This shows that measurement of product innovation from the perspectives of the professionals involved in the process is highly desirable and their perceptions are significant. There are several indices to measure innovation. In the United States, The Indiana Business Research Center developed the innovation index, to measure innovation capacity at the county or regional level. The State Technology and Science Index, developed by the Milken Institute is a U.S.-wide benchmark to measure the science and technology capabilities that furnish high paying jobs based around key components. The Oslo Manual is focused on North America, Europe, and other rich economies as cited by Ezenwakwelu1 and Ikon (2014).



The Bogota Manual, similar to the above, focuses on Latin America and the Caribbean countries. The Creative Class developed by Richard Florida, the Innovation Capacity Index (ICI) was published by a large number of international professors working in a collaborative fashion. The Global Innovation Index is a global index measuring the level of innovation of a country, produced jointly by the Boston Consulting Group (BCG), the National Association of Manufacturers (NAM), the Manufacturing Institute (MI) and the NAM's nonpartisan research affiliate. The INSEAD Global Innovation Index, the INSEAD Innovation Efficacy Index, the NYCEDC Innovation Index are some other indices. All of the above pertain to measuring innovation at a country or regional level. However, the measurement of innovation of the country or region does not come under the scope of the present research study.

The measurement of innovation at the organizational level may be done using balanced scorecards which cover several aspects of innovation. These aspects include business measures relating to finance, innovation process efficiency, employees' contribution and motivation, as well benefits for customers. The value of innovation thus measured will differ widely between businesses and depends on product revenue, spending in R&D, time to market, customer and employee perception, number of patents, additional sales resulting from previous innovations (Davila et al, 2006).

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