

Quality Platforms for Innovation and Breakthrough

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ABSTRACT

This paper focuses on Key issues of Innovation & Quality. Both 'quality' and 'innovation' play vital roles for businesses competitive. Quality aims for high and sustainable performance in existing business areas, while innovation intends for breakthrough Opportunity recognition is the bridge that connects a breakthrough idea to the initial innovation evaluation process-which in turn leads to the formation of a formally established commercialization effort. This research paper has been made to know how innovation leads to quality in an organization and also to tell relationship between quality and innovation. In this paper, secondary data in the form of research papers has been used. The findings of the research are useful in today's organizations.

Purpose- The importance of quality as regards to innovation is being documented in this paper, which is based on the literature available in other reports, that how quality is affecting the innovation. What basic companies are choosing to innovate which will ultimately lead to breakthrough.

Design/methodology/approach - The procedure applied here, is totally based on secondary data after reviewing various research papers and certain reports talking about the organizational capability to innovate and also impart quality in the products they deliver to the customers.

Findings – The dynamic innovation capabilities are having an inverted U – shape type of relationship with breakthrough innovation, which is substantiated by the data or facts sighted here in the paper. At the same time, there are strong possibilities of adopting open source innovation methods to justify the positive consequences of dynamic innovation on breakthrough results.

Research Limitations/implications – The open source of innovation develop effective coordination and cooperation among the employees and the leader just to provide a competitive edge to the companies. These facts and figures are highlighted with the support of existing literature.

Practical implications – The findings given here can be of some use to manufacturing and service organization for the purpose of improving their bottom-line and direct their employees to bring innovativeness through continuous improvement and dedication.



Originality/ value- It totally came out from this study that those firms, which are failed miserably just because not taken up the pace of developing novel product or services in the current competitive situation.

Keywords

Quality, Innovation, Breakthrough Innovation, Business

1. INTRODUCTION

Innovation focuses on thinking in a different way, as long as imaginative outlook and generating responses which may influence the social and economic values. Innovation is of great significance not only for creating competitive or collaborative advantage, though it is dealing many other criteria for mitigating confrontation faced by the general public, doing something to improve governance and creating academic importance.

In an Industrial or commercial set up innovation or creativity is generally described as proven augment in the worth of any product or services. The procedure may be incremental or breakthrough, which may take place occasionally or scientifically; it may be achieved by adopting any one of the following tactics;

- Launching better goods or services in terms of design or features;
- employing innovative or superior working methods and/or;
- applying novel or better organizational/ administrative measures.

This will result improved market share, competitiveness and quality along with reduced costs.

In today's globalize world, innovation encompasses using new and unique applications of old technologies, creating design to develop new products and services, new procedures and structures to improve performance in diverse areas, organizational creativity, and society's initiatives to enhance delivery of services. Further, innovation is also seen as a way to create sustainable and cost effective solutions for and by people at the bottom of the pyramid, to provide inclusive growth in developing economies. The innovation system is also focusing on absorbing hidden innovations in the services sector, creative industries and grassroots activities.

The profitable growth of the company is achieved by working on the quality and innovation part as mapped out by the quality professionals. The people associated and working in pioneering companies knowing the customer's need and the organization's capabilities, which are nothing but an intrinsic advantage of being innovative and competitive. To extract the crux, they only need an innovation methodology which actually utilizes the prospect offered by the customers.

2. LITERATURE REVIEW

Many firms invest heavily in developing innovation capabilities which is coming through their resources only. Radical innovations to produce new products are the result of open innovations only. Drawing from the absorptive competence point of view, organizational inactivity presumption, and open modernization, the writer search to argue that dynamic innovation capabilities which have a curvilinear effect on breakthrough innovation that is moderated by open innovation activities [1]. On the contrary of it the organizational inertia theory suggests that dynamic breakthrough innovation.

Researchers have conflicting view for open innovation used by firms [9]. Some firms adopt innovation process in collaboration with their partners and have preferences for exercising control over breakthrough innovation [10].

Organizational learning processes and routines leads to dynamic innovation capabilities which are rooted in innovation knowledge and become a part of transformation of a firm's innovation knowledge resources. In some situations customers play a vital role and pass an innovative idea to the firm for the development of attractive quality creation [24].

The data collected for the research purpose was taken from 30 respondents of a company, designing and manufacturing microwave ovens. It is very much clear that novelty in the product can be produced by the concept of attractive quality the theory of attractive quality. It has been clearly mentioned here that the idea of attractive quality can be encapsulate only at the early stage of product or service development process. As per the literature review it was found that the components of value chain like marketing, research and development, procurement, and operations processes basically linked to product quality and its innovation [16]. Firm's capabilities which are being used as a part of strategy providing them an edge over its competitors is basically rooted in the organizational expertise in all sort of value chain activities, as the concept of value chain proposed by Porter (1985). While in actual business scenario, core distinctive competencies are the creating the base for the purpose of formulating and banking upon it for the purpose of erecting greater knack in performing those value chain activities by way of directing more resources in that activity itself. Finally, that competency at the later stage of the life cycle of any organization will become a part of sustainable competitive advantage. Plenty of examples in the industry substantiate this concept. For instance; Honda, Intel, and Du Pont are well known for their exceptional research and development competencies. Similarly, Sony, Black and Decker and Toyota are noted for their excellent manufacturing

competencies while Gillette has been praised for its effective promotion of branded products and Wal-Mart for an effective distribution system. Generally a basic notion which is prevalent all over the businesses that the all innovative activities which are manifested as value chain activities can be easily copied and imitated by the competitor while this is not true in case of services. Further an analysis of value chain activities is the only source of performing the value chain activities in a new or innovative way extricating from the proper use of its resources. Because these types of innovation are firm specific - that is, they are based upon the firm's unique way of combining its resources and capabilities - they are difficult to interpret and measure ([47] Hitt et al. 1996). The present study addresses this shortcoming by directly focusing on competencies and capabilities in a way that is consistent with theory.

A data of Australian firms was collected considering 194 managers as respondents; structural equation modelling was used to test the hypotheses. The results are limited by the sample size and geography of the survey.

As per the study (H Fred (2007) [9], to have competitive advantage in global market, cost control and product quality is only source for innovating product or services. According to the author, innovation is preceded by process only and through quality tools the performance of the existing processes continuously improved, to highlight effectiveness and innovations as a whole. Thus, innovation includes advances in the products production processes, management systems, organizational structures, and strategies developed by a firm.

The study of Fred [9] shows that, the Total Quality Management (TQM) plays a vital role in forming contemporary management practices. In case of knowledge based society, the quality alone is not affecting the innovation process. Accordingly, the sustainable competitive advantage has transferred towards innovation rather than quality, which is considered as basic component of entrepreneurship.

Several studies have also recognized a direct relationship between TQM and innovation, while considering the aspect of speed to marketing case of new product development accruing due to innovation is checked ([25] Flynn,1994), after considering, the organizational performance(dependent variable) and TQM practices (independent variables) is taken into account for a large random sample of manufacturing companies surveyed by the researcher.

The positive impact of innovation in terms of new product or service introduced in a fixed period of time could not justify the ideology of innovation which affects on the performance of any organisation as such. They have also discovered that not all the TQM practices improve the firm's performance in the form of innovativeness. The study of



Pratibha, 2005[12] supports the fact that employee's perception of organizational culture is important.

The organization should focus on the key or main components for creating a supportive culture. Those key components are an outward looking focus breakdown barrier, creating cross functional teams and learning by doing rather than thinking (Exon, GE, and 3M). The technological intensive radical innovations are possible through defined business and management practices (Veryzer Jr, 1998, O'Connor Tushman and Anderson 1986) [22], rather employing people of having specialized knowledge and developing a new product through some idea, which finally comes into production, organizations actually require three kinds of people.

First category is of "arrow-shooters" who will express ideas to formerly uncharted parts of the forest, for example, the creation of Photoshop at a time where no one dealt with digital imagery. Then you must have a couple of "path finders" - fast programmers who can develop minimum prototype model for showing as an identity of the idea or thoughts.

Finally, you should look forward the persons who can work as a "road builders" - engineering teams; actually these people give final shape of the product in terms of detailing the requisite process and other inputs When Creativity (C) occurs within the right organization culture (OC), it results innovation (I).

The study (Wang Catherine & Ahmed Pervez, 2002)[23], in which the author has highlighted the role of creativity and value innovation, as a quality only. The proposed cross-disciplinary model taking knowledge and wisdom in the excellence and novelty procedure is a holistic process. The 5-Smodel of creative quality and value innovation comprises the following components, which stresses upon how to bring quality and innovation in the present system;

1. Satisfying -The essence of innovative quality, as compare to traditional quality, ultimately satisfy the customer needs.
2. Surprising - Creative quality stresses the anticipation and internalisation of customer preferences and therefore creates new products.
3. Surpassing - Creative quality and value innovation focuses on customers.
4. Superposing - Innovators surpass the traditional with the innovative by superposing organisational competency and building up new layers of organisational competencies.
5. Stimulating - Value innovators capture the core of the marketplace. They expand market by creating new demand and new customer preferences.

As a result the proposed model enhances the competitive advantage in the firm itself.

In order to be a competitor in the world, companies must study the leading examples of innovation and quality (Liu (2001) [11]. As Japanese firms already identify the success factors of a firm is totally depending on process innovation and quality and Total Quality Management become the driving force, which will create changes in today's organizations. Since basic guiding principle of Total Quality Management describe continuous improvement

in the processes, and it will be to be expected that new thoughts for maintaining innovation and quality will come forward to guide organisations to the next century and beyond.

The all associated entities got success using the Principles of Completeness as it will make employees successful, make suppliers successful, and make customers successful [4]. As the companies adopt Principle of Completeness as the basis for quality management and are integrated into every Total Quality Management process, the tasks covered would be broader and consequently the management would face tough challenges. Those organizations whereby innovation and quality become routine achieve success in long term. They follow more horizontal, organic, and decentralised structure and corporate management then truly become the small entrepreneurial units as dreamt of by many leading management experts.

The paper (Kunst, 2000), is related to analysis of factors associated with the success or high performance of any organization; connected to quality or something else is highlighted here. To sight the innovation capabilities, 3 service sectors had been chosen for the study namely hospital, transport and banking sectors in 3 European countries (Spain, UK and the Netherlands) early in 1995. Concentration is on the hospital sector. In general, the conclusion drawn was that TQM is the practice which leads to higher and profitable results of any service sector which affects the efficiency and made the unit cost effective. Not only the effectiveness is being improved but also the standard of perceived quality rose up significantly if the service companies follow TQM along with innovative practices.

3. THEORETICAL BACKGROUND

There are many types of innovations which exist in any organization set up ranging from incremental, radical or breakthrough, architectural or modular innovations.

Broadly incremental and radical innovations are totally depending upon the

degree of innovation and the newness deployed in the product or process.

Simple improvement in products or slight changes in the technology as well as line extension can be a part of incremental innovations which will enhance existing performance of the product. As against of it, using a new technology which offers considerably greater benefits to the customers as compare to existing products. This will create substantial changes to consumption or usage patterns (Chandy and Tellis, 2000; O'Connor and De Martino De Visser et al., 2010) [6]. For that matter, a new knowledge base and great amount of innovation capabilities (Song and Di Benedetto, 2008) [21] are required for getting a breakthrough innovation (Rogers, 2003) [18].

4. OBJECTIVES

The objectives of this paper are to explore the connectivity of quality just to achieve break through innovation. Accordingly:

1. To explore the relationship between quality and innovation.
2. To develop strategies to enhance innovations, coming out form the solid foundation of quality only.

5. RESEARCH METHODOLOGY

Research Design- The research design chosen is descriptive design. Descriptive design is helpful in obtaining information about the variables to be researched. It helps to get description on the topic concerned. Efforts were made to study the innovation and quality by using research papers. The variables used in this paper are technology, market, resources, environment, and organizational inertia to work upon the innovative ideas which ultimately results consider to be breakthrough for any organization as such.

The prevailing model working in most of the organizations banking upon the dimensions as listed below:

1. Guidance
2. customs
3. endowment
4. ecological unit
5. procedure
6. group
7. Control
8. Organisation
9. Financial support
10. Metrics and aspirator

Data Type- Secondary data has been used to conduct research. Secondary data like review of literature was used to get into the insights of the quality management and innovation. This research paper uses various researches of scholars in a summarized manner.

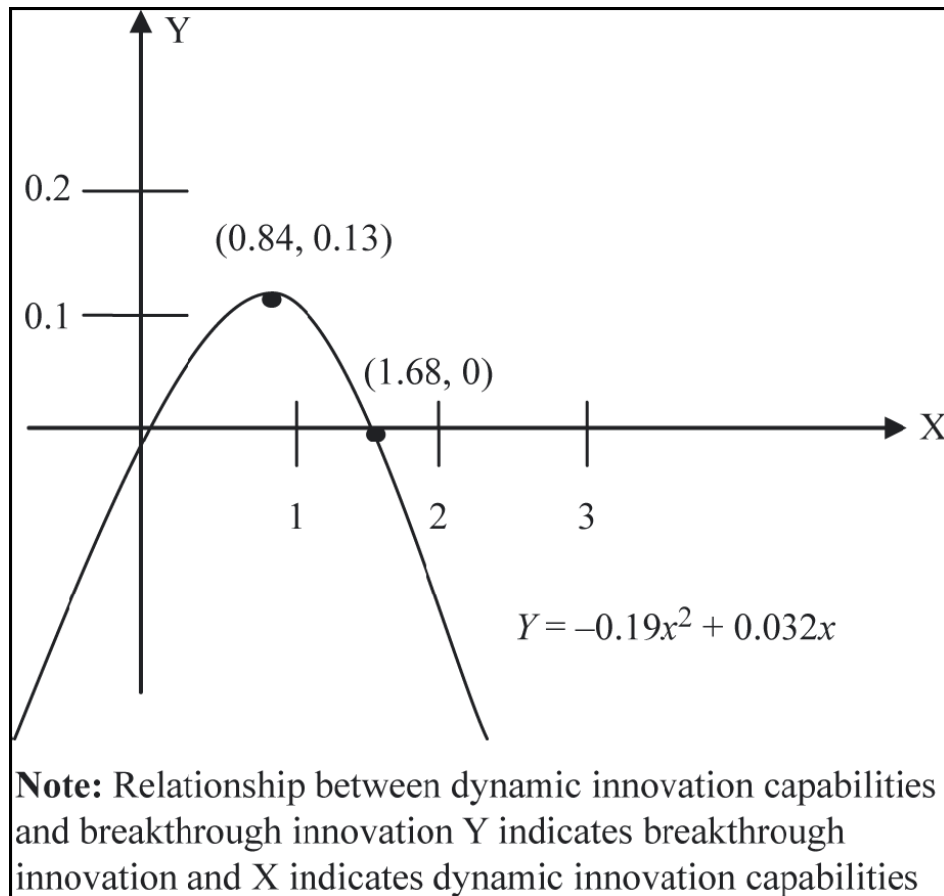


Analytical tool- The analytical tool is the observations of the researchers to find the dependence of quality on innovation and how does breakthrough innovation brings wider impact.

6. DATA ANALYSIS

The research paper of Colin & Shen, 2013[1], data were taken from the top 1,000 Taiwanese firms in terms of total revenue (China Credit Information Service, 2009). As in similar studies of innovation and dynamic capabilities (e.g. Morgan et al., 2009; Zhou et al., 2005; Narver, 2004) [12, 13] senior managers were selected. We first called each firm to identify a senior manager to be the key respondent. We then screened the key respondent to ensure that he or she possessed sufficient knowledge about the firm's various functional areas and was committed to cooperating with the research project.

The firms' annual sales ranged from \$US2.3m to \$US8.3bn. Finally, the number of firm employees ranged from 1,534 to 26,473, with 70.6 percent units reporting more than 1,000 full-time employees. The previous literature highlights the role of dynamic capabilities in new product success because a firm's dynamic capabilities to deal with rapid changes in the environment are critical for product innovation (e.g. Morgan et al Verona and Ravasi, 2003; Danneels, 2004). Extending this logic, the dynamic innovation capabilities has got inverted U – shape viz a viz to breakthrough innovation. That is, at the beginning stage, dynamic innovation capabilities relate to the highest degree of breakthrough innovation, whereas in later stages, dynamic innovation capabilities prevent breakthrough innovation (see Figure 1).



More precisely, the longer firms have dynamic innovation capabilities, the more rooted firms may become in existing environments such that they might ignore emerging changes in the environment; moreover, the longer firms have dynamic innovation capabilities, the more they are not able to manage changes in the environment. Organizational inertia further obstructs breakthrough innovation. As a result, the longer firms have dynamic innovation capabilities whereas the fewer firms intend to develop breakthrough innovation.

Wittel Lars, 2010 [24] In this research project; we worked together with a manufacturer of microwave ovens. In the microwave oven manufacturers sell their different products under a variety of different brands, ranging from low-priced ovens with few functions to high-end ovens with many functions. Both the technology and the market are mature and there is an interest for manufacturers to identify new ways of delivering customer value in order to survive in the long term.

The early phases of the product development process often include a phase of idea generation. In this case, idea generation consists of four main activities:



- (1) Generation;
- (2) Screening;
- (3) Identification; and
- (4) Evaluation (see Figure 1).

In the survey, the 21 most promising customer ideas were tested. The questionnaire consisted of three parts. The first section included regarding customers' usage of microwave ovens. Then a section with questions based on the theory of attractive quality followed, and finally came a section where the customer judged the value of the different ideas. In total, 87 adults participated in the study. In our study, attractive ideas that do not exist in the market are more original and provide higher customer value than the ideas perceived as indifferent. The research on the theory of attractive quality has previously focused on evaluating existing products, while we focus on evaluation of ideas that do not exist in the market. This change of focus is necessary to realise the full potential of the theory of attractive quality. An interesting finding is that customers and product developers judge value differently. One might argue that product developers' judge value based on the characteristics of the product or service, while the customers judge value based on value in use, i.e. how value is co-created during use in the context of the customer.

In Prajogo's, 2008[16] paper, the sample of the survey was derived from the database of individuals who subscribed to the membership of the Australian Organization for Quality (AOQ) encompassing both manufacturing and non-manufacturing sectors. A single business unit was selected as the unit of analysis (e.g. plant for a manufacturing firm) for the reason that the operations and practices were homogenous at this level. The respondents selected for this survey were manager(s) who have knowledge of past and present organisational practices relating to continuous improvement and innovation at the site.

The first insight drawn from these results is the uniqueness of the role of each function within a value chain in determining the performance of a firm. The marketing function, through the customer focus construct, shows a significant relationship with product quality performance and this is consistent with past studies ([24] Dow et al., 1999; [32] Grandzol and Gershon, 1997; [73] Samson and Terziowski, 1999).

Supplier management shows strong association with both product quality and product innovation. Those firms who involve suppliers early in the product development process, their product innovation performance is going to be enhanced considerably.

The empirical analysis evokes a number of important findings. First, the results suggest that each value chain function has a different relationship nature with different types of competitive performance, specifically quality and innovation.

A second finding from this study suggests that R&D is only significantly related to product innovation. The relationship between procurement and innovation was also significant.

Additionally, quality and innovation were shown positive and significant relationship with each other.

As per the research paper of Hoang Dinh, (2006)[8], for checking the TQM practices, a model developed based on 10 parameters and verified as well as checked by 14 specialists, and intellectuals of Vietnam, which was the result of previous studies, well justified with the criteria as defined in MBNQA, 1999, Award, Vietnam Quality Award. As in the final survey mainly 11 set of parameters being taken here which are as follows;

- the hard and soft aspects of TQM practices are very well covered through these practices;
- the most prestigious quality award comprises of direction, tactical arrangements, concentration of customers and market, and well defined practices as the most important dimension related to TQM philosophies followed by researcher and practitioners;
- TQM implementation in both manufacturing and service organizations require significant trainings in understanding the full deployment process;

All these procedures are related to Quality Award criteria and are therefore suitable for testing in the Vietnamese industry context.

The findings of various industries have resulted that TQM practices directly & positively associated with the level of novelty imparted and exactly how many in number would be able to produce as new products and services in a fixed time horizon.

The survey result of Vietnamese companies have highlighted that (see Table X), top management commitment was ranked 4.02 and came second after customer focus, followed by employee involvement, teamwork, open organization, strategic planning, and service culture, with mean values ranging from 3.5 to 3.9. The dimensions as analytical processing of the information gathered, proper guidance, full authorization of its employees, and process management were graded of values less than 3.5 which were

considered to be the lowest. The results depicted by Loan (2004) were quite comparable, and justified with suitable explanation.

Table 1

TQM dimensions	Mean	S.D.
Customer focus	4.08	0.69
Top management commitment	4.02	0.69
Service culture	3.88	0.68
Strategic planning	3.87	0.79
Open organization	3.73	0.80
Teamwork	3.66	0.84
Employee involvement	3.56	0.75
Process management	3.49	0.80
Employee empowerment	3.49	0.81
Education & training	3.49	0.85
Information and analysis system	3.39	0.90

The above data is checked against the hypothesis that the population from which the said samples are being extracted have the mean of 4.5 with standard deviation of 0.24, and then it has proved that the null hypothesis considered here is rejected at 5% level of significance.

To check the reliability of the above results, SPSS was run on the said facts & figures and the following results were found out.

Table 2: Case Processing Summary

		N	%
Cases	Valid	11	100
	Excluded	0	0
	Total	11	100

Table 3: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized item	N of items
0.555	0.955	2

Table 4: Inter – item Correlation Matrix

	Mean	SD
Mean	1.000	0.913
SD	0.913	1.000

As it is evident that the Cronbach's alpha is 0.555, which is acceptable to some extent. The correlation between the items considered here is very high i.e. 0.913.

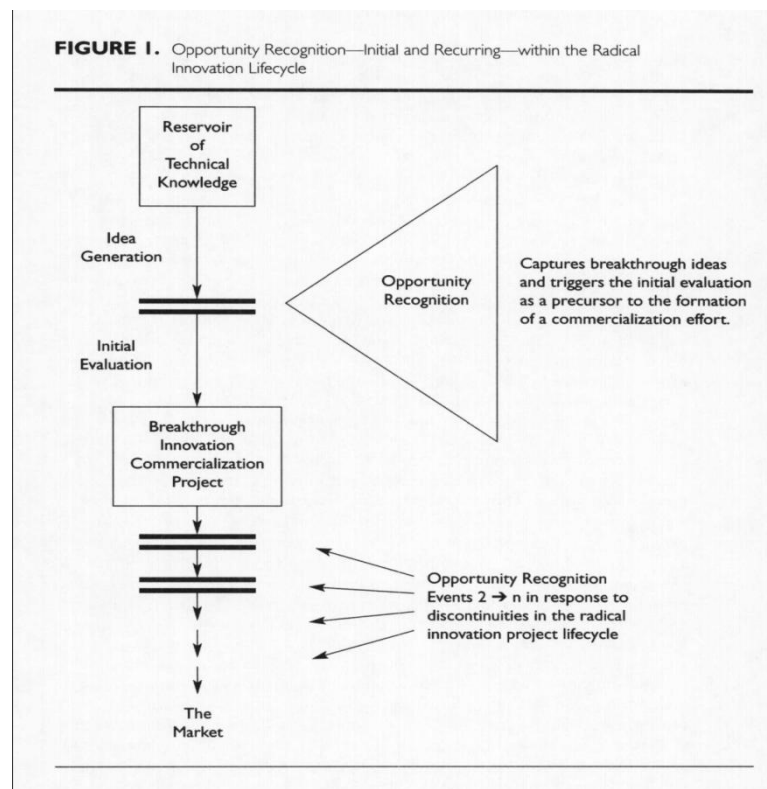
Those companies who are thinking differently with regards to competitiveness, strategy and organization accomplish position of leader (Pratibha Malaviya, 2005) [12]. The strategy adopted by the company should take into consideration, how an industrial revolution can occur, which is nothing but an extension of intellectual and emotional commitment (Hamel and Prahalad, 1994) [7]. To break away from global competition, company has to follow radical and nonlinear innovation. Company's financial performance can be improved if they persistently perform the activities related to discovery, development and commercialization of breakthrough innovations (Hamel 2000, Pethick and Ciacchella 1998) [12]. An integrated company wide holistic approach is required for innovation and the involvement of each and every individual is obligatory in the "creative idea processing and its management" (Tucker, 2002).

According to Wang Catherine, 2002[23], the quality paradigm is developed through evolutionary trajectory, which will take into describe the budge and instability in the competitive setting. By simply relying on the traditional quality competencies, building up of sustainable competitive advantage is just impossible to achieve. The above model of 5-S consisting of innovative quality and value provides a framework for those companies who are aspiring to move to higher quality platform.

As per the study of health care unit in US (Liu, 2001) [11] seven principles have been identified

1) effective relationships; (2) empowerment and decentralisation; (3) accountability and teamwork; (4) measurable, observable results; (5) process management; (6) customer satisfaction; and (7) collaboration. Any organisation, following the TQM practice must adhere to the above mentioned seven principles, which are complementary and significant in every day to day process. Those organizations where innovations and quality are considered as routine, has to function horizontal, organic and decentralised as compare to small entrepreneurial units as dreamt by many leading management experts.

The study (O'Connor, 2001) [6] was conducted on 10 large US firms, whereby the results of 12 radical innovation projects were discussed. The opportunity recognition process within and external to a firm promulgate from the individual initiative as well as informal network appears to very much require. As the breakthrough innovation are generally associated with high degree technical and market uncertainty the understanding changes over a period of time, therefore this process redefined as in the example of General Motors, multiple levels of opportunity recognition is involved.



7. RECOMMENDATIONS

Managers need to encourage creativity. They should make innovation as part of organizational culture. Treat employees fairly, insist on integrity, value diversity, communicate openly and honestly, provide honest feedback on performance, encourage risk taking and innovation, work as a team, motivate to do the best and which provide opportunities in advancement in the career as well as the work is equally compensated.

1. Firms should promote TQM so that innovation can be introduced in the firms. If innovation will come in the firm, quality will be enhanced of the products and processes.
2. Firms with strong dynamic innovation capabilities could use open innovation activities to coordinate their resources with outsourcing agencies. As a result the actions related to novel ness and developing something original provoke greater breakthrough innovation.

To develop new products or services what is required – align the innovative objectives with the business ones.

Accordingly, what comes out of this study is

- Distinguish the significance of innovation.
- Innovate with rationale (with business upshots in brain).
- Have a logical approach.
- Consider advancement as other management procedure.
- Testing with novel innovation working sculpts.

Employ public media which will assist you to construct new product or services.

8. Conclusion

The research paper tries to explore how does quality is linked to innovation. It studies their relationship. Breakthrough innovation which is must for any organization is also studied to depict its importance. Various research papers had been used as secondary data to find relationship between quality and innovation. Through research, it can be said that innovation brings quality in an organization and to introduce innovation, quality matters. In short, it can be said that both these terms are mutually exclusive. They are dependent on each other. Many organizations have not started breakthrough innovation in practice, which is need of an hour. An organization who does innovation on regular basis can sustain in competitive world by bringing quality in processes and products.

In this paper we have scrutinized if and how the process of innovation is being carried out in different industries and the quality can govern leads



toward innovation in that company itself. The insights of various researchers have been sighted here for the purpose of coming into a conclusion. Some of the study shown have clearly indicated that the quality play a major role in culminating the innovation in the organizations as such.

However, the type of internal processes associated in the value chain has also a very crucial role in depicting the process innovation. The part of product innovation actually accruing through the creativity of the employee at large. Sometimes framework like 5-S also governs the innovation situation at times.

Through studying different facts and figures it is very much clear that basically the growth in revenue can be achieved mainly through innovation, digitization, visibility in the customer's eyes and lastly globalization. Innovation has become a competitive necessity for any organization to survive and compete with the rest of the world. Innovations help the companies in transforming and also provide a tool of competitive edge.

Once any company achieves the status of successful companies highest degree of fear set forth not to leave the tried and tested philosophy for the sake of innovative companies.

The right leadership and environment and culture are the most important ingredient to be successful in innovative new regimes.

“The end of all knowledge should be in virtuous action.”

— *Philip Sydney*

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