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TOTAL QUALITY MANAGEMENT VS. BUSINESS REENGINEERING

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This paper investigates the relatively new concept of business reengineering, and compares and contrasts this concept with the conventional TQM philosophy. First, the paper presents the unique concepts of TQM as compared to the traditional management philosophy. Then, the concept of business reengineering is described in terms of the seven principles prescribed by Hammer (1990). The similarities and differences between TQM and business reengineering are also discussed. Although both TQM and business reengineering recognize the importance of business processes and customers' needs, they differ in the magnitude of the process to be redesigned. For instance, TQM believes in redesigning small processes a few at a time by means of continuous and steady incremental improvement, business reengineering, on the other hand, believes in seeking major breakthroughs through dramatic, radical change. Finally, the paper concludes with an attempt to answer the question of whether business reengineering would be a good substitute for TQM.

1. INTRODUCTION

Since the 1920s, the United States utilize its efficient production and processes and the availability of natural resources to manufacture products for the world. For many years, U.S. produced nearly half of the world's manufactured products (Deming, 1993). The high quality of the American products leads to increasing demands. Also, at the end of World War II, U.S. was the only country in the world that could produce to full capacity since many countries were in ruin from the war. Unfortunately, the U.S. economy has been on the decline for the last three decades, resulting in huge trade deficits of more than \$150 billion a year, particularly with the country of Japan. This is because high-quality, reasonably priced goods started to flow into the U.S. from Japan since the 1950s. For instance, although U.S. is producing more automobiles today than thirty years ago, it is only selling to a small portion of the gigantic world's automobile market because the manufacturing of low-cost and high-quality products has gone to overseas countries.

The article "If Japan Can, Why Can't We?" broadcasted by NBC in the summer of 1980 examines industrial productivity, and reveals to the world that the Japanese had been fervently adopting the concept of total quality management (TQM) since the 1950s and has been able to produce better quality products than the Americans since then. Because industrial productivity in U.S. was essentially flat from 1973 through the 1990s, median

family income was also flat (Dobyns and Crawford-Mason, 1991). For instance, the Bureau of Labor Statistics reveals that the average American worker in private industry made \$187 per week in 1970 and \$167 per week in 1989. Productivity is defined as how much one can make and how much it costs to make it. Therefore, the more that one can make for less, the higher is one's productivity. So, the only way for a worker to make more money and live a better life is to increase productivity.

In the 1980s, a new concept, known as business reengineering, emerges as the new salvation to solving the financial, as well as operational, problems encountered by many aging, big, and bureaucratic American organizations. Advocates, as well as the skeptics, of this new concept begin to entertain the notion of whether the popularity of business reengineering would be inspired to replace the infamous TQM philosophy that has once captured the world's attention for decades.

2. TOTAL QUALITY MANAGEMENT (TQM)

Dr. Edward Deming introduces the concept of Statistical Quality Control (SQC) to the Japanese in the 1950s, and Japan has since manufactured some of the best products in the world using this management style. The objective of SQC is to control the production process by using trouble shooting and controlling the quality of the product. As time progresses, a new management philosophy, total quality management (TQM), evolves from the concept of SQC. Quality is the underlying foundation of TQM; it is a better way of producing goods and services, a way that eliminates wastes, gives employees pride in their work, and keeps the customers coming back for more. The increase in quality automatically leads to increases in industrial productivity, which in turns, automatically leads to decreases in cost.

2.1 The Principles of TQM

TQM means that the organization's culture is defined by a practical philosophy of management that supports the constant attainment of customer satisfaction through an organization-wide, integrated system of technical and statistical tools, fundamental management and behavioral techniques, and employee training to analyze, understand, and solve quality problems. This evolutionary concept involves the continuous improvement of organizational processes under a disciplined approach, focusing on process quality and resulting in high quality products and services (Carr, et al., 1992; Lakhe and Mohanty, 1994;

Sashkin and Kiser, 1993). Therefore, the three important aspects of TQM are: (1) *counting*: statistical tools, behavioral techniques, and employee training; (2) *customer service*; and (3) *organizational culture* that defines and supports quality.

Generally speaking, the following are some common principles and characteristics of TQM (Dale and Cooper, 1992):

1. Everyone in the organization is involved in continually improving the production process under his/her control and takes responsibility for his/her own quality assurance;
2. Each person is totally committed to satisfying his/her customers, and these customers can be either internal or external to the organization;
3. Teamwork is practiced in a number of forms;
4. The organization has a devoted commitment to the development of employees through involvement;
5. Total participation by everyone in the business is positively encouraged and practiced;
6. A formal program of education and training is in place and is viewed as an investment in developing employees' ability and knowledge and helping them to realize their full potential;
7. Suppliers and customers are integrated into the product improvement process;
8. Honesty, sincerity, and care are an integral part of daily business life; and
9. Simplicity in processes, systems, procedures, and work instructions is pursued.

2.2 Comparisons Between TQM and the Traditional Management Philosophy

TQM offers a way of maintaining positive dynamism in processes and ensures the constant enhancement of performance. A TQM organization has a very different management style than the traditional management approach. These differences can be better understood by classifying their characteristics into the following three categories: product development, customer focus and product quality, and management/organization (Lakhe and Mohanty, 1994).

2.2.1 Product Development

The characteristics that pertain to the product per se are classified as follows:

1. *Production tolerance*: TQM does not tolerate any errors, waste, and work that does not add value to products and services, versus a set standard of acceptance for the traditional approach;
2. *Problem handling*: TQM emphasizes the prevention of problems and utilizes a structured approach to identify and solve problems. On the contrary, traditional management detects problems of the

- products and services during the product manufacturing process and fixes them as they occur;
3. *Product design*: TQM allows multiple departments to design products simultaneously, while the traditional approach allows isolated departments to design products sequentially;
4. *Product planning cycle*: TQM focuses on long term planning based on improving mission performance. Traditional management, on the other hand, focuses on short term planning based on budget cycle;
5. *Quality improvement*: TQM emphasizes continuous improvement of every aspect of how work is done, while traditional management is interested in one-time breakthrough improvement such as computers and automation;
6. *Product orientation*: TQM is process-oriented compared to the results-oriented philosophy of the traditional approach. Means are always important to achieve successful end, but if means are not of high quality, then the end product would be polluted; and
7. *Production schedule*: TQM focuses on economy of time, just-in-time production, quick customer response, and smallest lot sizes, but the traditional approach focuses on long production runs for low cost and high efficiency.

2.2.2 Customer Focus and Product Quality

The second category compares the customer focus and product quality between TQM and the traditional management approach. Some of these characteristics are listed as follows:

1. *Customers' Needs*: TQM states that the needs of users of products and services are defined by customers instead of product or marketing specialists;
2. *Organizational goal*: TQM stresses absolutely customer satisfaction through the production of high quality products and services, rather than merely performing management's requirements, marketing functions, and growth in sales, profits, and returns on investment;
3. *Product quality*: TQM views quality as a set of multi-dimensional attributes and believes that profits follow quality, not the other way around as believed by the traditional managers;
4. *Quality organization status*: TQM believes that quality is through the leader, starting from the quality managers leading to the board of directors. But, the traditional managers considers quality as hidden in the manufacturing process and is not an integral part of the organization; and
5. *Responsibility for quality*: TQM believes that the responsibility for quality lies with the corporate management and shares with every employee. In contrast, the traditional managers believe that the responsibility for quality is delegated to a few subordinates (i.e., the quality control department).

2.2.3 Management/Organization

The third category consists of characteristics that pertain to the management and the organization as a whole:

1. *Decision making style:* TQM managers use the analytical (e.g., use of hard data and scientific procedures) style of decision making, while traditional managers use the intuitive (i.e., use of judgment and heuristics) style of decision making;
2. *Employee/Management style:* TQM creates goal-directed connections and encourages teamwork among managers, specialists, employees, vendors, customers, and partner agencies. TQM also motivates employees to contribute and to find better ways to perform their duties. Traditional management, in contrast, is governed by individual managers and specialists who dictate to their workers through rules and procedures;
3. *Organizational span of control:* TQM favors a long/large span of control (horizontal), with authority pushed down almost to the lowest level (decentralization) based on maximizing value added to products and services. Traditional managers prefer a short span of control (vertical) and many layers of authority (centralization) based on control;
4. *Vendorship:* TQM utilizes a long term buyer/seller obligation based on quality and continuous improvement, versus the traditional approach of short term contracts awarded based on price; and
5. *Work force:* TQM insists on a multi-skilled workforce with job rotation, in contrast to the division of labor (functional specialization) dictated by traditional managers.

3. THE CONCEPT OF BUSINESS REENGINEERING

Business reengineering¹ is also known as business process redesign (BPR) (Carr, et al., 1992). In an era of rapidly changing technologies and ever-shorter product life cycles, the concept of reengineering is a radically new methodology that emerges from the traditional industrial improvement approaches to produce the efficiencies and capabilities that lead to market success.

3.1 What is Business Reengineering?

Business reengineering is described as "a conceptually new business model and an associated set of techniques"

¹ Business reengineering must not be confused with software reengineering. Software reengineering is an approach to dealing with the problem of aging software by salvaging, rebuilding, and upgrading obsolete information systems using modern technology so as to dodge a prolong and costly replacement project (Laudon and Laudon, 1995: 315).

used to reinvent competing organizations (Hammer and Champy, 1993:1). It is defined as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance, such as cost, quality, service, and speed" (Hammer and Champy, 1993:32).

Reengineering is proclaimed to achieve fast, immediate, massive breakthrough change by integrating and enlarging the scale of existing business improvement disciplines to a company-wide level, instead of applying improvement techniques to individual functions and isolated processes that may not be critical to a company's success (Hammer, 1990; Hammer and Champy, 1993). Companies are told to completely revamp their functional approach to process, to redesign outdated processes, and to enhance competitive potential.

At the heart of reengineering is the notion of *discontinuous thinking* - of recognizing and challenging the traditional approach to management, the outdated rules of work design and fundamental, but invalid, assumptions about technology, people, and organizational goals. Quality, innovation, and service are now more important than cost, growth, and control. Reengineering cannot be planned meticulously or accomplished in small and cautious steps. It is an all-or-nothing proposition with an uncertain result. Unlike the traditional process improvement, BPR aims for 60, 80, or 100% improvements in process performance.

Reengineering triggers changes of all kinds and in many functions of the organization, including, though not limited to, job design, organizational structure, and management systems (Hammer, 1990). For instance, information technology offers many options for reorganizing, rather than merely automating, existing work and process, and can radically redesign business processes to achieve dramatic improvement in work performance. Reengineers believe that a large portion of the population is educated and capable of assuming responsibility, and workers cherish their autonomy and expect to make business decisions.

3.2 Seven Principles of Business Reengineering

Hammer (1990) defines reengineering in terms of the following seven principles:

1. *Job design:* Management should organize and design a person's job around an objective or outcome instead of a single task. In other words, management should compress the responsibility for the various steps of the task and assign it to one person to perform;
2. *Work process:* Management should allow those who use the output/result of the process to perform the process so that there is little need for the overhead associated with managing it. For example, departments can make their own purchase using

modern technologies such as expert systems and shared databases without sacrificing the benefits of specialized purchases. Interfaces, liaisons, and the mechanisms that are used to coordinate the performers and benefactors of the process can be eliminated;

3. *Information processing:* Management should attempt to include information-processing work into the real work that produces the information. In other words, managers should reorganize/redistribute the work so that an organization that produces the information also processes it;
4. *Network technology:* Management should treat geographically dispersed resources as though they were centralized by using databases, telecommunications networks, and standard and coordination while maintaining the benefits of flexibility and service;
5. *Parallel processing:* Managers should link parallel activities instead of integrating their results. Product development typically operates in parallel process; i.e., separate units perform the same function, or separate units perform different activities that must be integrated. There is a need to forge links between parallel functions and to coordinate them while their activities are in process rather than after they are completed, using means such as communications networks, shared databases, and teleconferencing;
6. *Decision making:* Decision making should be delegated to the person who performs the work, and management should build control into the process. In most organizations, the workers are distinguished from their supervisors and the decision maker. Reengineering suggests that the performer should make the decisions and that the process itself can have built-in controls, resulting in self-managing and self-controlling employees. Pyramidal management layers can therefore be compressed, the organization flattened, and hierarchy disappeared. For instance, information technology can capture and process data, and expert systems can, to some extent, supply knowledge, to enable people to make their own decisions; and
7. *Information storing:* Information should be captured once and at the source. Bar coding, relational database, and electronic data interchange (EDI) help organizations to collect, store, and transmit information more easily and quickly.

4. RELATIONSHIPS BETWEEN TQM AND BUSINESS REENGINEERING

Most reengineering projects provide at least some opportunity to apply TQM methods of improvement, both as a means of maintaining and enhancing gains in a process, and as a first step towards adopting TQM as a total corporate management style. The purpose of TQM is to encourage and enable all employees in an organization

to make improvements, whether large or small, that will increase customer satisfaction. Thus, a TQM organization may use reengineering when appropriate.

Continuous improvement is a new style of quality management based on the goal of increasing customer satisfaction through process improvement. Therefore, the management structure of the product can be completely redesigned with TQM. Elements of TQM that can be integrated into a process during reengineering include customer focus, goals and objectives, management planning for improvement, training in improvement goals and objectives, training in TQM methods, formal training in job skills and tasks, teamwork at all levels, feedback systems, and reward systems.

4.1 Similarities Between TQM and Business Reengineering

The following are some similarities between TQM and business reengineering (Carr, et al., 1992):

1. First of all, both the TQM philosophy and the concept of business reengineering honor the importance of business and product processes and the needs of the customers;
2. In many cases, the methods and tools used for both TQM and reengineering are the same, such as the use of cross-functional teams. In reengineering, these are usually *ad hoc* teams of managers and experts who work together for the duration of the redesign project. In TQM, they are usually *permanent* teams of managers from all parts of a production process, who meet regularly to plan and coordinate ongoing improvement. Sometimes, TQM uses short-term special project teams consisting of managers, employees, suppliers, and even customers, who focus solely on a part of a larger core business process;
3. Both TQM and reengineering teams utilize objective decision making based on facts. Thus, both teams may use measurement and analysis tools such as check sheets, cause-and-effect diagrams, bar charts, scattergrams, run charts, and control charts, or data gathering and analysis methods such as brainstorming and the nominal group technique; and
4. Reengineering, like TQM, is customer/market-driven and quality-oriented, and requires those involved in the redesign process to quantify their objective. A customer orientation, which derives from the TQM philosophy, is equally fundamental to successful reengineering. Yet, the new methodology has broadened the customer focus to include the competitors with whom customers could choose to do business.

4.2 Differences Between TQM and Business Reengineering

The key differences between TQM and business reengineering, particularly in the scope and the underlying assumptions, are given as follows:

- The focus of improvement in TQM is smaller processes that integrate to become a larger business process, while the focus in reengineering is a large, cross-functional business process. In other words, TQM attempts to enhance the existing process by means of continuous and steady incremental improvement, while reengineering, on the other hand, seeks major breakthroughs through dramatic, radical change;
- TQM usually focuses on improving one or more parts of the process, such as its inputs (information and materials), transformation components (people, supplies, methods, machines, and environment), and outputs (information and materials). However, mature TQM organizations always improve their smaller processes with the larger process in mind, in order to ensure that all improvements maximize total performance. In contrast, reengineering means discarding the entire old system, starting over from scratch, and searching for new models and approaches of organizing work; and
- It is *generally* assumed that the fundamental purpose and structure of a process in an TQM will remain intact. On the contrary, reengineering assumes that the whole process would be completely redesigned. Reengineering also involves a different approach from TQM to change the management.

4.3 Is Business Reengineering a Good Alternative to TQM?

Technically, reengineering cannot be considered as an alternative to TQM because business reengineering is a method of doing things while TQM is a philosophy of management. Although reengineering has been quite successful with several huge organizations, it is still too early to speculate on the long-term impacts. In fact, reengineering can be generally redefined as a subset of TQM, but with a larger span/scope of operations.

4.3.1 Business Reengineering as a Good Alternative to TQM?

Based on a handful of successful cases analyzed by Hammer and Champy (1993), there are evidence to indicate that reengineering can be quite promising and resourceful. It seems that reengineering is suitable for major corporations, particularly with corporate management who are flexible and believe in constantly adapting to changes caused by the external environment such as competitors, suppliers, and regulatory agencies. A

good example of a candidate for reengineering is the United States Postal Services, in which an overhaul of the whole inefficient operations is long overdue. Also, reengineering is best for organizations which have the resources (both capital and human) or are willing to invest in advanced technology such as computers, massive telecommunications services, gigantic databases, and sophisticated information systems such as expert systems and neural networks. For instance, the corporate management at Kodak did not hesitate to use the innovative computer aided design/computer aided manufacturing (CAD/CAM) technology to redesign their product development process (Hammer and Champy, 1993). However, companies interested in reengineering must not be distracted by the glittering of new technology; it can be confusing and disruptive if management did not have a good control over the whole reengineering process.

4.3.2 Business Reengineering as a Bad Alternative to TQM?

The direct quote from Hammer and Champy's (1993) book jacket, "Forget what you know about how business should work - most of it is wrong!", is an overstatement. TQM, because of its gradual change process, would be more suitable for most organizations. Many American companies, such as Toyota Motor Corporation (Monden, 1983), Honeywell Information Systems, Lawrence Manufacturing Operations, Campbell Soup Company (Walton, 1988), and Motorola (Dobyns and Crawford-Mason, 1991), to name a few, have been pretty successful with producing quality products and services using the TQM philosophy. Many of the principles and basic concepts of reengineering, such as autonomy in jobs and quality control, are also the foundation of TQM and are at work in many organizations. Also, given the long history of TQM and the countless number of successful businesses, it would be a long time before reengineering can replace TQM. Further, to revamp the whole working system in an organization would cost a lot of money and time, and both resources are very scarce in many firms right now. It is also very unlikely for organizations to completely uproot their beliefs and culture, take on an all-or-nothing proposition, and implement a radical tool and extreme approach that promises uncertain results. Reengineers must also bear in mind that many managers and employees are resistance to change, even to minor changes in the organizations. Further, it would be difficult to make all major changes at the same time, since changes in one division of the process will have a domino effect on changes in other divisions. Somehow, the gradual change and subtle approach of TQM will remain appealing to many risk-averse organizations.

5. CONCLUSIONS

Although both TQM and business reengineering recognize the importance of business processes and the needs of the customers, they differ in the magnitude of the process to be redesigned. For instance, TQM believes in redesigning small processes a few at a time by means of continuous and steady incremental improvement, business reengineering, on the other hand, believes in seeking major breakthroughs through dramatic, radical change. However, given the limited number of successful cases (Ford Motor Company's accounts payable department, IBM Credit Corporation, Kodak's product development process, and Mutual Benefit Life, to name a few) and the short history (of about ten years) of business reengineering, it is indeed premature to conclude that reengineering is a good or bad alternative to TQM. Further, TQM is a philosophy of management, and reengineering is merely a tool. Therefore, it is difficult to compare a management philosophy with a management tool. In conclusion, it would be more beneficial for organizations to combine the TQM philosophy and the reengineering tool to achieve more substantial and practical results.

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