BUSINESS PROCESS REENGINEERING METHOD VERSUS KAIZEN METHOD

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Abstract:
The essence of this paper is the comparison of the Business Process Reengineering method (BPR) and Kaizen method.

The BPR method is defined by Hammer and Champy as "the fundamental reconsideration and radical redesign of organizational processes, in order to achieve drastic improvement of current performance in cost, service and speed".

At it's turn, the Kaizen method is an management concept for incremental change. The key elements of Kaizen are quality, effort, involvement of all employees, willingness to change and communication.

When BPR is compared with Kaizen method, the BPR is harder to implement, technology – oriented, enables radical change. On the other hand, Kaizen method is easier to implement, is more people – oriented and requires long term discipline.

Key words: business processe reengineering, Kaizen method, incremental improvement, technology, standardization.

1. Introduction

Quite often it is necessary for an organization to revise and re-examine it's decisions, goals, targets etc., in order to improve the performance in many ways and this activity of re-engineering is called as Business Process Re-engineering which is also known as Business Process Re-design or Business Process Improvement.

2. Business Process Reengineering (BPR)

Business Process Reengineering began as a private sector technique to help organizations fundamentally rethink how they do their work in order to dramatically improve customer service, cut operational costs, and become world-class competitors. A key stimulus for reengineering has been the continuing development and deployment of sophisticated information systems and networks.

Business Process Reengineering involves changes in structures and in processes within the business environment. The entire technological, human, and organizational dimensions may be changed in BPR. Information Technology plays a major role in Business Process Reengineering as it provides office automation, it allows the business to be conducted in different locations, provides flexibility in manufacturing, permits quicker delivery to customers and supports rapid and paperless transactions. In general it allows an efficient and effective change in the manner in which work is performed.

2.1 What is the Business Process Reengineering

The globalization of the economy and the liberalization of the trade markets have formulated new conditions in the market place which are characterized by instability and intensive competition in the business environment. Competition is continuously

increasing with respect to price, quality and selection, service and promptness of delivery.

Removal of barriers, international cooperation, technological innovations cause competition to intensify. All these changes impose the need for organizational transformation, where the entire processes, organization climate and organization structure are changed. Hammer and Champy provide the following definitions:

▪ *Reengineering* is 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.

▪ *Process* is a structured, measured set of activities designed to produce a specified output for a particular customer or market. It implies a strong emphasis on how work is done within an organization." (Davenport 1993).

Business processes are characterized by three elements:

▪ *the inputs*, (data such customer inquiries or materials),

▪ *the processing* of the data or materials (which usually go through several stages and may necessary stops that turns out to be time and money consuming), and

▪ *the outcome* (the delivery of the expected result).

The problematic part of the process is *processing*. Business process reengineering mainly intervenes in the *processing* part, which is reengineered in order to become less time and money consuming.

The term "Business Process Reengineering" has, over the past couple of year, gained Increasing circulation. As a result, many find themselves faced with the prospect of having to learn, plan, implement and successfully conduct a real Business Process Reengineering endeavor, whatever that might entail within their own business organization.

2.2. The methodology of BPR

Re-engineering is defined (Hammer & Champy, 1993: 46) 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." This definition contains four key words.

1. The first key word is *fundamental*. In doing re-engineering, people must ask the most fundamental questions about their organizations and how they operate: *"Why do we do what we do? And why do we do it the way we do?"*

2. Secondly, *radical* design means getting to the root of things, not making superficial changes or fiddling with what is already in place, but throwing away the old.

3. The third key word is *dramatic*. Re-engineering isn't about making marginal or incremental improvements, but about achieving performance improvements.

4. Finally *processes*. Most organizations are not process-oriented, they are focused on tasks, on jobs, on people, on structures, but not on processes. A process can be defined as a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer (Hammer & Champy, 1993: 32-35).

This effort for realizing dramatic improvements by fundamentally rethinking how the organization's work should be done distinguishes re-engineering from process

improvement efforts that focus on functional or incremental improvement (Hammer & Champy, 1993). Therefore, Handy (1990) states that the theory of *Discontinuous thinking* is central to the BPR process, in stead of the continuous (incremental) thinking, which is largely derived from scientific thinking. This continuous thinking is the keystone to many of the quality management techniques. Although the principles of BPR and the quality management techniques differ, quality programs and re-engineering share a number of common themes (Beckford, 1998). They both start with the needs of the process customer and work backwards from there. However, the two programs also differ fundamentally. Quality programs work within the framework of a company's existing processes and seek to enhance them or continuous incremental improvement. Quality improvements seek steady incremental improvement to process performance. Re-engineering seeks breakthroughs, not by enhancing existing processes, but by discarding them and replacing them with entirely new ones.

BPR is achieving dramatic performance improvements through radical change in organizational processes, rearchitecting of business and management processes. It involves the redrawing of organizational boundaries, the reconsideration of jobs, tasks, and skills. This occurs with the creation and the use of models. Whether those be physical models, mathematical, computer or structural models, engineers build and analyze models to predict the performance of designs or to understand the behavior of devices. More specifically, BPR is defined as the use of scientific methods, models and tools to bring about the radical restructuring of an enterprise that result in significant improvements in performance.

Redesign, retooling and reorchestrating form the key components of BPR that are essential for an organization to focus on the outcome that it needs to achieve.

In resuming, the whole process of BPR in order to achieve the above mentioned expected results is based on key steps-principles which include redesign, retool, and reorchestrate.

Each step-principle embodies the actions and resources as presented in the table below.

Table 1. The 3 Rs of reengineering

REDESIGN	RETOOL	REORCHESTRATE
▪ *Simplify* ▪ *Standardize* ▪ *Empowering* ▪ *Employeeship* ▪ *Groupware* ▪ *Measurements*	▪ *Networks* ▪ *Intranets* ▪ *Extranets* ▪ *Workflow*	▪ *Synchronize* ▪ *Processes* ▪ *IT* ▪ *human resources*

Methodology of a BPR project implementation / alternative techniques BPR is world-wide applicable technique of business restructuring focusing on business processes, providing vast improvements in a short period of time. The technique implements organizational change based on the close coordination of a methodology for rapid change, employee empowerment and training and support by information

technology. In order to implement BPR to an enterprise the followings key actions need to take place:

- Selection of the strategic (added-value) processes for redesign
- Simplify new processes - minimize steps - optimize efficiency - modeling
- Organize a team of employees for each process and assign a role for process coordinator
- Organize the workflow - document transfer and control.
- Assign responsibilities and roles for each process.
- Automate processes using IT (Intranets, Extranets, Workflow Management)
- Train the process team to efficiently manage and operate the new process
- Introduce the redesigned process into the business organizational structure

Most reengineering methodologies share common elements, but simple differences can have a significant impact on the success or failure of a project. After a project area has been identified, the methodologies for reengineering business processes may be used. In order for a company, aiming to apply BPR, to select the best methodology, sequence processes and implement the appropriate BPR plan, it has to create effective and actionable visions. Referring to 'vision' we mean the complete articulation of the future state (the values, the processes, structure, technology, job roles and environment)

For creating an effective vision, five basic steps are mentioned below.

- the right combination of individuals come together to form an optimistic and energized team

- clear objectives exist and the scope for the project is well defined and understood

- the team can stand in the future and look back, rather than stand in the present and look forward

- the vision is rooted in a set of guiding principles.

2.3. Business Process Re-engineering Examples:

Example1: The entire organization's business processes or an individual department's business processes can be reengineered according to the needs of an organization.

- For example, a bank may have many activities associated with it like investing, credit cards, loans, etc., and they may be involved in cross selling(e.g. insurance) with other preferred vendors in the market. If the credit card department is not functioning in an efficient manner as the way the bank expected, it might reengineer the "credit card" business process.

In this situation, bank may think about decreasing the interest rate, offering promotion, redemption, balance transfers etc., to the customers in order to facilitate the performance. This would lead to re-engineer or re-design the current bank's credit card process. The net effect is the improvement in performance of credit card division and conversely, if anything goes wrong, major losses are also expected.

- Computer system's infrastructure, competition, financial strength, expenses reduction, customer satisfaction, product quality, better management, employees involvement are some of the areas that an organization is interested to do business process reengineering and change the existing processes.

Project Infrastructure:

An organization may migrate from X database to Y database for better performance, storage capabilities and reliability.

Competition:

An organization may buy a new and sophisticated application in order to overcome the competitive pressure.

Financial strength:

Many small and big companies need money to expand their business and in this situation, they may get loans, or issue shares etc.

Product Quality:

A calling card distributor may buy good calling cards from the vendors that are good in quality, time and easy connection.

Example2. A typical problem with processes in vertical organizational structure is that customers must speak with various staff members for different inquiries. For example, if a bank customer enters into the bank determined to apply for a loan, apply for an ATM card and open a savings account, most probably must visit three different desks in order to be serviced, as illustrated in Figure 1.

LOANS	ACCOUNTS	ATM CARDS
ORGANIZATION	**ORGANIZATION**	**ORGANIZATION**

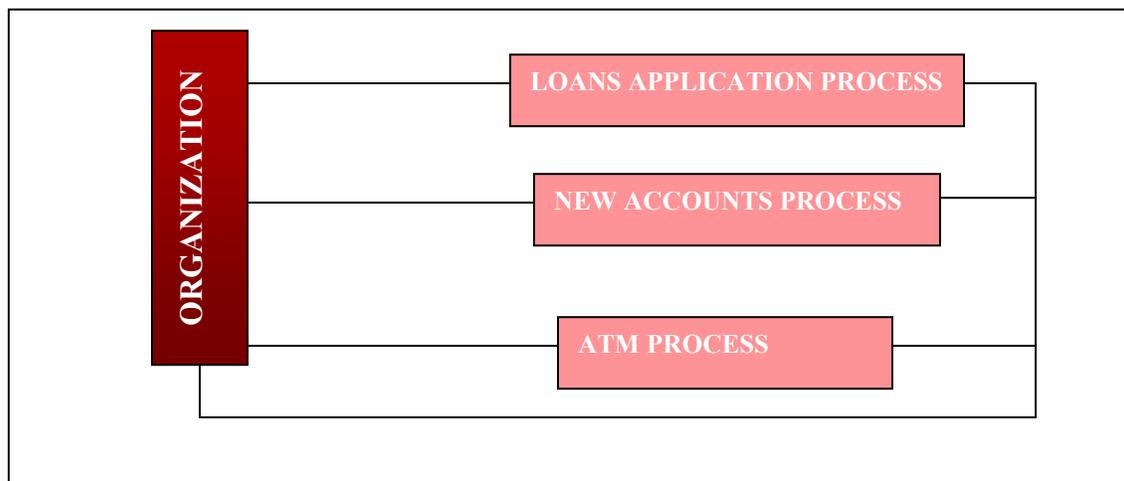Figure 1. Three inquiries three waiting queues

Figure 2. One Stop Service for all three inquiries

The difference between the vertical organization (Figure 1) and the cross functional organization (figure 2) lies in the way businesses are organized internally. The vertical organization is organized based on **functional units** (*e.g.* the sales, the accounting department). In cross-functional organizational units the main organizational unit is the **process.** Since "*doing business*" is mainly running processes, it would be very logical to organize companies based on processes. For instance, the ordering process crosses

different departments: the sales department for order taking, the accounting department for credit control and invoicing, the logistics department for inventory control and distribution, and the production department for producing the order.

3. Kaizen Method

3.1. The Beginnings of Kaizen

As stated earlier, Kaizen methods for work process improvement that include making the improvements originated in the World War II Job Methods training program. It was developed by the Training Within Industry (TWI) organization, a component of the U.S. War Manpower Commission during World War II. Kaizen methods that suggest improvements also originated in the work TWI. As suggestion rather than action improvement programs, Imai points out that, "Less well known is the fact that the suggestion system was brought to Japan...by TWI (Training Within Industry) and the U.S. Air Force" (1986, page 112). Huntzinger (2002) also traces Kaizen back to the Training Within Industry (TWI) program. TWI was established to maximize industrial productivity from 1940 through 1945. One of the improvement tools it developed, tested, and disseminated was labeled "How to Improve War Production Methods." It taught supervisors the skill of improving work processes. This program's name was changed to "How to Improve Job Methods" (War Production Board, 1945, page 191) and is most often referred to as Job Methods training. It taught supervisors how to uncover opportunities for improving work processes and implement improvements. It incorporated a job aid that reminded the person of the improvement process. This process began with recording the present method of operation including details about machine work, human work, and materials handling - much like a process observations would. It used challenging questions, to provoke the discovery of improvement opportunities. It provided tips for eliminating waste - e.g., discards unnecessary steps, combine steps where possible, simplify the operations, and improve sequencing. It incorporated operator involvement in identifying waste and developing better ways to do the process. It instructed people to check out their ideas with others, conclude the best way to make the improvement, document it, get authorization, and make the improvement. Its improvements included classic poka yoke solutions like the use of jigs and guides to reduce or eliminate errors. TWI emphasized incremental improvements focusing on the processes closest to the person and making improvements that did not require wholesale redesign of machines or tools.

3.2. What is Kaizen?

Kaizen is a system of continuous improvement in quality, technology, processes, company culture, productivity, safety and leadership.

Kaizen was created in Japan following World War II. The word Kaizen means "continuous improvement". It comes from the Japanese words "Kai" meaning school and "Zen" meaning wisdom.

Kaizen is a system that involves every employee - from upper management to the cleaning crew. Everyone is encouraged to come up with small improvement suggestions

on a regular basis. This is not a once a month or once a year activity. It is continuous. Japanese companies, such as Toyota and Canon, a total of 60 to 70 suggestions per employee per year are written down, shared and implemented.

In most cases these are not ideas for major changes. Kaizen is based on making little changes on a regular basis: always improving productivity, safety and effectiveness while reducing waste.

Suggestions are not limited to a specific area such as production or marketing. Kaizen is based on making changes anywhere that improvements can be made. Western philosophy may be summarized as, "if it ain't broke, don't fix it." The Kaizen philosophy is to "do it better, make it better, improve it even if it isn't broken, because if we don't, we can't compete with those who do."

Kaizen in Japan is a system of improvement that includes both home and business life. Kaizen even includes social activities. It is a concept that is applied in every aspect of a person's life.

In business Kaizen encompasses many of the components of Japanese businesses that have been seen as a part of their success. Quality circles, automation, suggestion systems, just-in-time delivery, Kanban and 5S are all included within the Kaizen system of running a business.

Kaizen involves setting standards and then continually improving those standards. To support the higher standards Kaizen also involves providing the training, materials and supervision that is needed for employees to achieve the higher standards and maintain their ability to meet those standards on an on-going basis.

Kaizen is focused on making small improvements on a continuous basis.

3.3. The Kaizen Philosophy

Improvement has become an integral part of theories and models of change such as structuration theory (Pettigrew, 1990), Ideal types of change (Van de Ven & Poole, 1995), and cycles of organizational changes within revolutionary, piecemeal, focused, isolated and incremental changes (Mintzberg & Westley, 1992). Imai (1986) introduced Kaizen into the western world when he and outlined its core values and principles in relation to other concepts and the practices involving the improvement process in organizations (Berger, 1997). Framed as *Continuous Improvement* (Lillrank & Kano, 1989; Robinson, 1991), the Kaizen philosophy gained recognition and importance when it was treated as an overarching concept for Total Quality Management (TQM) (Imai, 1986; Tanner & Roncarti, 1994; Elbo, 2000), Total Quality Control (TQC) or Company Wide Quality Control (CWQC) citing practices such as Toyota Production Systems (TPS) and Just in time (JIT) response systems (Dahlgaard & Dahlgaard-Park, 2006) that is aimed at satisfying customer expectations regarding quality, cost, delivery and service (Carpinetti *et al.*, 2003; Juran 1990). With this focus on improvement, the Kaizen philosophy reached notoriety in organizational development and change processes and has been explained as the "missing link" in western business models (Sheridan, 1997) and one of the reasons why western firms have not fully benefited from Japanese management concepts (Ghondalekar *et al.* 1995).

Kaizen is a compound word involving two concepts: change *(Kai)* and to become good *(zen)* (Newitt, 1996; Farley, 1999). To engage in Kaizen therefore is to go beyond

one's contracted role(s) to continually identify and develop new or improved processes to achieve outcomes that contribute to organizational goals. Kaizen can be understood as having a spirit of improvement founded on a spirit of cooperation of the people, suggesting the importance of teams as a fundamental design in this approach (Tanner & Roncarti, 1994; Imai, 1997).

Based on the past literature, i summarize the Kaizen methodology as:
1) one that involves all the employees of the firm;
2) improving the methods or processes of work;
3) improvement are small and incremental in nature and 4) using teams as the vehicle for achieving theses incremental changes.

Kaizen philosophy, however, includes the concept of Kaizen (Continuous Improvement) and Kairyo (Process Improvement). Imai (1986) proposes that the Kaizen philosophy embraces four main principles:

Principle1: Kaizen is process oriented. Processes need to be improved before results can be improved. (Imai, 1986, pp. 16-17).

Principle2: Improving and maintaining standards. Combining innovations with the ongoing effort to maintain and improve standard performance levels is the only way to achieve permanent improvements (Imai, 1986, pp. 6-7).

Kaizen focuses on small improvements of work standards coming from ongoing efforts. There can be no improvement if there are no standards (Imai, 1986, p. 74). The PDCA cycle (Plan-Do-Check-Act) is used to support the desired behaviors. This cycle of continuous improvement has become a common method in Kaizen, it is used to generate improvement's habits in employeess.

Principle3: People Orientation. Kaizen should involve everyone in the organization, from top management to workers. One of the strongest mechanisms aligning with this third principle is Group-oriented Kaizen (Imai, 1986). Kaizen teams focus primarily on improving work methods, routines and procedures usually identified by management (Imai, 1986).

3.4. The Benefits resulting from Kaizen

Kaizen involves every employee in making change--in most cases small, incremental changes. It focuses on identifying problems at their source, solving them at their source, and changing standards to ensure the problem stays solved. It's not unusual for Kaizen to result in 25 to 30 suggestions per employee, per year, and to have over 90% of those implemented.

For example, Toyota is well-known as one of the leaders in using Kaizen. In 1999 at one U.S. plant, 7,000 Toyota employees submitted over 75,000 suggestions, of which 99% were implemented.

These continual small improvements add up to major benefits. They result in improved productivity, improved quality, better safety, faster delivery, lower costs, and greater customer satisfaction. On top of these benefits to the company, employees working in Kaizen-based companies generally find work to be easier and more enjoyable--resulting in higher employee moral and job satisfaction, and lower turn-over.

With every employee looking for ways to make improvements, you can expect results such as:

Kaizen Reduces Waste in areas such as inventory, waiting times, transportation, worker motion, employee skills, over production, excess quality and in processes.

Kaizen improves the space utilization, product quality, use of capital, communications and production capacity and employee retention.

Kaizen provides immediate results. Instead of focusing on large, capital intensive improvements, Kaizen focuses on creative investments that continually solve large numbers of small problems. Large, capital projects and major changes will still be needed, and Kaizen will also improve the capital projects process, but the real power of Kaizen is in the on-going process of continually making small improvements that improve processes and reduce waste.

3.5. Varieties of Kaizen Methods

The collection of Kaizen methods can be organized into the following categories:
- Individual versus teamed,
- Day-to-day versus special event, and
- Process level versus subprocess level.

Individual Versus Teamed

While almost all Kaizen approaches use a teamed approach, there is the method described as Teian Kaizen or personal Kaizen (Japan Human Relations Association, 1990). Teian Kaizen refers to individual employees uncovering improvement opportunities in the course of their day-to-day activities and making suggestions. It does not include making the change itself, but simply the suggestion for the change.

Day-to-Day Versus Special Event

Another example of a day-to-day Kaizen approach is Quality Circles. Here, a natural work team (people working together in the same area, operating the same work process) uses its observations about the work process to identify opportunities for improvement. During any day or perhaps at the end of the week, the team meets and selects a problem from an earlier shift to correct. They analyze its sources, generate ideas for how to eliminate it, and make the improvement. This continuous improvement of the work process is made in the context of regular worker meetings.

Special event Kaizens are currently most common. These methods plan ahead and then execute a process improvement over a period of days. When they focus at the subprocess level, take place at the work site eliminate waste in a component of a value stream. These special events are performed in the *Gemba* - meaning, where the real work is being done" - e.g., on the shop floor or at the point where are service is being delivered.

Process Level versus Subprocess Level

Most times, Kaizen refers to improvements made at the subprocess level - meaning, at the level of a component work process. For example, imagine the end-to-end production process associated with manufacturing shoes. It includes the activities of acquiring materials (inputs) from suppliers, transforming them into shoes (output) and delivering them to customers. One subprocess would be the set of operations that apply the sole to the shoe.

The Common Elements. All Kaizen methods that include making change (as opposed to just suggesting a change) have these common features. They:

- Focus on making improvements by detecting and eliminating waste,
- Use a problem solving approach that observes how the work process operates, uncovers waste, generates ideas for how to eliminate waste, and makes improvements, and
- Use measurements to describe the size of the problem and the effects of the improvement.

4. Comparison of Business Process Reengineering vs. Kaizen

Table 2 Comparison of Business Process Reengineering vs. Kaizen

	Reengineering	Kaizen
Who leads?	Usually consultants, top management, and a cross-functional Project Team	The people that actually do the work (with strong guidance in the early years by top management and a Sensei)
Duration	Is a "project" with a defined beginning and end	Never ending. Every sub-process should be kaizened repeatedly forever
Type of process	Re-engineering works best for processes: - has cross organizational boundaries as complex inter-relationships of variables - that involve complex, integrated technologies - with medium-length, somewhat repetitive cycles	Kaizen works best for processes: 1. with well-defined boundaries 2. with most variables in the control of the kaizen team 3. that involve low technology - or islands of technology 4.with short, highly-repetitive cycles
Scope	An entire Value Stream process	Although kaizen usually starts with a kaikaku that addresses the entire Value Stream process - most kaizen events focus on one specific sub-process
Degree of change	Changes can be incremental or radical - and usually affect an entire integrated process	Changes can be incremental or radical - but usually only affect a limited sub-process at a time
Speed	Generally implemented in a Big Bang changeover	Each kaizen event generates immediately noticeable and measurable changes
Acceptance	High risk of things reverting back to the way they were soon after the consultants leave	Since the people that actually do the work are the ones making the changes - acceptance is very high
Cost	Often involves expensive technologies, computers, and other "systems"	Most "lean" changes are inexpensive or even free
Technology	Re-engineering projects are often led by computer consultants - who tend to "fix" most problems with (you guessed it) computers	Most "lean" methods minimize or even eliminate reliance on technology - with a preference toward visual methods and simplification

Similarities
- Both address the entire Value Stream of a process
- Kaizen usually starts out with a *kaikaku* "big change"
- Both require a qualified, competent, and committed Change to have any chance of success

5. Conclusion

The essence of this paper is that the Business Process Reengineering is the redesign of business processes and the associated systems and organizational structures to achieve a dramatic improvement in business performance and Kaizen is small improvements and a change for better. It must be accompanied by change of method.

Business Provess Reengineering is a "project" with a defined beginning and end, and Kaizen never ending.

6. References

[1] Berger, A., (1997). *Continuous improvement and Kaizen: Standardizations and organizational designs*, Integrated Manufacturing System, 8(2), 110-117.

[2] Brunet, A. P. and New, S. (2003), *Kaizen in Japan: an empirical study*. International Journal of Operations & Production Management, 23(12), 1426-1446.

[3] Carpinetti, L., Buosi, T., and Gerolamo, M., (2003), *Quality Management and improvement. A framework and a business-process reference model.* Business Process Management Journal, 9(4), 543-554.

[4] Dahlgaard, J. J., and Dahlgaard-Park, S. M., (2006), *Lean production, six sigma qualities, TQM and company culture*. The TQM Magazine, 18 (3), 263-281.

[5] Davenport, T. H., and Short, J. E., (1990). *The new industrial engineering: Information technology and business process redesign*. Sloan Management Review, 31(4), 11-27.

[6] Davenport, T. H., (1993). *Process Innovation: Reengineering work through information technology*. Boston MA: Harvard Business School Press.

[7] Elbo, R.A.H., (2000). *Inside's Japan Kaizen Power Houses*. Business World Philippines, 13, 1-2.

[8] Farley, C., (1999). *Despliegue de Políticas del KAIZEN*. In: CINTERMEX, ed. XI Congreso Internacional de Calidad Total, noviembre 1999. Monterrey Nuevo León México: Fundación Mexicana de la Calidad Total y Centro de Productividad de Monterrey.

[9] Gondhalekar, S., Babu, S., and Godrej, N., (1995), *Towards using Kaizen process dynamics: a case study*, International Journal of Quality & Reliability Management, 12(9), 192-209.

[10] Imai, M., (1986), *Kaizen: The key to Japan's Competitive Success*, NY: Random House.

[11] ImaI, M., (1997), *GEMBA KAIZEN. A common sense, low cost approach to management.* Kaizen Institute, Ltd.

[12] Juran, J., (1990)., *Juran y el Liderazgo para la Calidad. Un Manual para Directivos*. Madrid: Editorial Díaz Santos.

[13] Lillrank, P., and Kano, N., (1989). *Continuous Improvement: Quality Control Circles in Japanese industries.* Ann Arbor MI: University of Michigan.

[14] Mintzberg, H., and Westley, F., (1992).*Cycles of organizational change*. Strategic Management Journal 13, 39-59.

[15] Newitt, D. J., (1996). *Beyond BPR & TQM - Managing through processes: Is kaizen enough?* In: Proceedings Industrial Engineering, London*,* U.K: Institution of Electric Engineers.

[16] Pettigrew, A. M. (1990). *Longitudinal Field Research: Theory and Practice*. Organization Science*, 1*(3), 267-292.

[17] Robinson, A., (1991), *Continuous Improvement in Operations*. Cambridge, MA: Productivity Press.

[18] Sheridan, J., (1997). *Kaizen Blitz*. Industry Week, 246(16), 19-27.

[19] Tanner, C., and Roncarti, R., (1994), *Kaizen leads to breakthroughs in responsiveness and the Shingo Prize at Critikon,* National Productivity Review. 13(4), 517-531.

[20] Van de Ven, A. H., and Poole, M. S. (1995), *Explaining Developments change in organizations.* Academy of Management Review, 20(3), 510-540.

[21] Huntzinger, J. (2002), *The roots of Lean. Training Within Industry: The origin of Kaizen,* Association for Manufacturing Excellence, 18, No. 2. pg. 9 - 22. Available on line at: http://www.tdo.org/twi/RootsofLean.pdf, viewed February 10, 2005.

[22] War Production Board, Bureau of Training, Training Within Industry Service, September 1945, The Training Within Industry Report: 1940-1945, (Washington D.C.: U.S. Government Printing Office).

[23] Hammer, M., Champy, J. (1993). *Reengineering the Corporation: A Manifesto for Business Revolution,* New York: HarperCollins,