

Kaizen, a continuous improvement practice in organizations

Improvement practice in organizations

A comparative study in companies from Mexico and Ecuador

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Abstract

Purpose – The purpose of this paper is to compare the practices of continuous improvement that are applied in medium and large manufacturing and service companies in two Latin American countries. At the same time, benefits and barriers experienced by these companies with regard to sustainability of continuous improvement are explored.

Design/methodology/approach – In order to generate a comparative study between two Latin American countries, interviews were conducted with managers linked to continuous improvement in medium and large companies in the State of Puebla and the Metropolitan District of Quito, which are important areas in Mexico and Ecuador, respectively. Data were collected by means of document analysis, semi-structured interviews, and direct observation.

Findings – Companies in both countries identify the use of various techniques and/or tools for continuous improvement. The results of the empirical evidence show how the impact of the application of the techniques has been beneficial in economic and human terms. Thus, the exploratory study has permitted the identification of the drivers and inhibitors in the maintenance of continuous improvement.

Research limitations/implications – The research is based on only two areas of the Latin American countries: Mexico and Ecuador. Their results can therefore not be generalized. The approach is applied in a specific environment, namely, the State of Puebla and the Metropolitan District of Quito. This study incorporates the perception of managers, directors, and/or supervisors involved in continuous improvement processes.

Practical implications – This paper seeks to provide analytical input. The study is of great interest to researchers, managers, consultants, and professionals linked to projects of continuous improvement who wish to incorporate continuous improvement practices which are sustainable over time. A new managerial behavior is the basis of continuous improvement, where the training and development of the human resource increases the commitment to achieve organizational changes.

Originality/value – This research makes an empirical contribution to the literature through the understanding of practices of continuous improvement in a Latin American context, highlighting the factors that improve or impede the process of continuous improvement. Particularly in Mexico and Ecuador, the empirical evidence on this subject is still scarce despite the existence of theoretical academic literature.

Keywords Barriers, Practices, México, Benefits, Ecuador, Kaizen

Paper type Research paper

1. Introduction

In all fields of business corporate managers today face major challenges in which competitiveness is an important element (Arya and Choudhary, 2015). It is precisely this competitiveness in today's markets which calls for an approach of continuous improvement



of excellence and innovation (Ramadani and Gerguri, 2011), in order to respond satisfactorily to the changing needs and expectations of customers. Continuous improvement can be achieved via different avenues, whose methodologies have been evolving over time (Marin-Garcia *et al.*, 2008; Emiliani, 2004). In its beginnings, it was widely used in the field of manufacture to achieve organizational competitiveness (Marin-Garcia *et al.*, 2008; Emiliani, 2004). Currently, it focuses on all aspects related to the organization (Singh and Singh, 2015). Thus, Kaizen is an approach historically applied to production and services and is considered key to organizational competitiveness (Emiliani, 2004; Brunet, 2000).

Kaizen specifically is a managerial approach that seeks to achieve competitive advantage through continuous learning and small and gradual improvements in the processes of any organization (Lewis, 2000). In this sense, Kaizen involves all personnel of the organization in search of continuous improvement (Suárez-Barraza and Ramis-Pujol, 2010) and is oriented toward processes, improvement and maintenance of standards, and personnel (Oropesa *et al.*, 2016; Imai, 1986). Therefore, daily efforts made by workers and managers promote a culture of continuous improvement, where learning and innovation make the success of Kaizen viable (Trostel and Light, 2000).

However, several studies indicate that the search for a culture of sustained improvement presents not only success factors, but also barriers to its implementation (Idris and Zairi, 2006; Prajogo and Sohal, 2004; Bateman and Rich, 2003). In addition, the lack of understanding of the Kaizen philosophy due to cultural limitations has become evident in some organizations at the time of its implementation (Macpherson *et al.*, 2015; Oliver and Delbridge, 2002). Therefore, the purpose of this paper is to analyze the benefits and barriers experienced by medium and large manufacturing and service companies of the State of Puebla, Mexico (SP/Mexico) and the Metropolitan District of Quito, Ecuador (MDQ/Ecuador) in the implementation and sustainability of continuous improvement, and furthermore, to provide greater knowledge about Kaizen and its practices in the permanent search for this improvement cycle.

2. Literature review

2.1 What is Kaizen?

The incorporation of sustainable improvements over time has received a great deal of attention in academic literature in recent years (Singh and Singh, 2015; Suárez-Barraza and Smith, 2014). This has resulted in several guidelines that support the implementation of continuous improvement (García *et al.*, 2013). Among the various methods applied in continuous improvement are: total quality management, Six Sigma, reengineering, strategic management, and Kaizen (Singh and Singh, 2015). Each method mentioned employs various tools and techniques for improvement. However, for the program to be successful, it is essential for staff to be involved. For this reason, total quality management makes use of quality tools and the plan, do, check, act (PDCA) approach (Hariharan *et al.*, 2006), in order to integrate learning culture and drive organizational change (Idris and Zairi, 2006). The Six Sigma approach seeks to reduce variability in organizational processes; the development of the define, measure, analyze, improvement, and control improvement cycle supports this approach (Linderman *et al.*, 2003). Reengineering is linked to enterprise resource planning, while strategic management uses information management and leadership (Singh and Singh, 2015). As for Kaizen, it is conceived and defined as a scenario that allows continuous improvement in personal, family, social, and work life (Imai, 1986). The Japanese word Kaizen is derived from two Japanese words, “Kai” (改) meaning change and “Zen” (善) meaning for the better (Newitt, 1996). Thus, Kaizen focuses on changing for the better (Lillrank and Kano, 1989). Some authors consider that Kaizen is not only continuous improvement, but rather, it is the means and the result of human and non-human resources

management in the pursuit of business excellence (Macpherson *et al.*, 2015). As such, a vast literature argues that characteristically the tools that support Kaizen are process-oriented and human-based, while Kaizen is incremental, continuous, and participatory in nature (Suárez-Barraza *et al.*, 2011; Brunet and New, 2003; Imai, 1986). Therefore, Kaizen, as a continuous improvement, emphasizes that permanent efforts of all people involved in the organization are necessary to attain improvements that contribute to the achievement over time of superior results (Wittenberg, 1994; Lillrank and Kano, 1989), while understanding management as the maintenance and improvement of working standards (Wittenberg, 1994).

2.2 Factors that influence continuous improvement

Previous research has identified several factors that are considered critical to the success of continuous improvement processes. Management commitment is one of the main factors (Bessant, 2003; Imai, 1986), as managerial work through daily activities promotes the establishment of a culture of learning and continuous innovation. Also, the use of practices, tools and/or techniques allows the development of continuous improvement among all members of the organization. Some studies have shown that quality tools such as Pareto charts, check sheets, cause-effect diagrams, and brainstorming are the most widely used (Alvarado and Pumisacho, 2017; Yokozawa and Steenhuis, 2013; Bessant *et al.*, 1994). In this sense, the link to quality management systems as support for daily continuous improvement activities has a positive influence on the organization (Singh and Singh, 2015). The organizational structure is revealed as another important factor to consider in the processes of continuous improvement, where the degrees of centralization or decentralization, lines of authority, ways of making decisions, levels of communication, among others (Liker and Morgan, 2006; Nonaka and Takeuchi, 1995), are critical at the time of implementation. Other social factors such as the organization of improvement teams or the generation of networks (Dabhilkar and Bengtsson, 2004; Bessant, 2003) are essential for the success of continuous improvement.

2.3 Benefits and barriers of continuous improvement

The literature recognizes qualitative and quantitative benefits (Alukal and Manos, 2006; Prajogo and Sohal, 2004). In qualitative terms, the benefits are linked to the organizations' human resources (Table I) involved in the process of continuous improvement (De Menezes, 2012; Lillrank and Kano, 1989), where the presence of managers is key in order to achieve improvement in workers' skills, in addition to notable motivation, participation and training, among other factors (Smadi, 2009; Marin-Garcia *et al.*, 2008; Berger, 1997; Bessant *et al.*, 1994). In this sense, the participation of workers is essential for the correct application of continuous improvement (Suárez-Barraza and Ramis-Pujol, 2010; Marin-Garcia *et al.*, 2009). In quantitative terms, the benefits are linked to the economic component (Table I), and are related to increased productivity, reduced lead times, reduced stages in production processes, increased inventory turnover, reduced cost, reduced defects, among others (Ramadani and Gerguri, 2011; Suárez-Barraza *et al.*, 2011; Alukal and Manos, 2006; Bessant, 2003). In this way, the implementation of Kaizen is attractive to many companies, because it allows benefiting from the maximum potential of human resources and at the same time enjoying countless economic benefits (Oropesa *et al.*, 2016; Topuz and Arasan, 2013; Alukal and Manos, 2006; Prajogo and Sohal, 2004).

3. Research methodology and data analysis

This research was carried out based on an earlier study on continuous improvement practices with a Kaizen approach in companies in the Metropolitan District of Quito, Ecuador (Alvarado and Pumisacho, 2017). Taking into account the results of that research,

Author(s)	Benefits	Barriers
Oropesa <i>et al.</i> (2016)	Maximizing profits, increasing productivity, reducing operating cycles, reducing machine failures, reducing waste, cutting costs, reducing production process stages, improving material handling, reducing defective products, among others	Lack of knowledge about the scope of the philosophy
Suárez-Barraza <i>et al.</i> (2011), Suárez-Barraza and Ramis-Pujol (2010)	More trained personnel, communication fluency, staff participation, greater job satisfaction, better customer focus, holistic and transversal thinking, service improvement, process improvement, reduction of cycle time, continuous flow of processes, higher performance, among others	Structural, management style, lack of understanding of the philosophy and continuous improvement techniques, isolated efforts in the application of continuous improvement, resistance to change, among others
Marín-García <i>et al.</i> (2008, 2009)	Skills development, commitment, teamwork, inventory reduction, reduction of work accidents, reduction of delivery times, among others	Resistance to change, interest of senior management in extending the improvement to all areas of the organization, implementation time, among others
Alukal and Manos (2006)	Costs reduction, reductions of waiting time, reduction of functions that do not add value, reduction of distances in the handling of materials, reduction of inventory, increase of productivity, greater motivation of the personnel, improvement of the abilities of workers, increase of self-esteem, greater participation and collaboration of workers, improved communication, among others	Time, structure, management style, environment, among others
Prajogo and Sohal (2004)	Reduced waste, improved productivity, increased production volume, improved resource use, improved organizational climate, increased staff participation, among others	Long-term commitment, leadership of top management, provision of resources for program financing, recognition of intangible results, organizational policies, change process, among others
Bessant (2003), Bessant <i>et al.</i> (1994)	Quality improvements, reduced use of materials, costs reduction, productivity gains, workforce empowerment, among others	Effectiveness of communication systems, degree of formal commitment of senior management, among others

Table I.
Benefits and barriers
in the implementation
of continuous
improvement

the same interview was conducted in medium and large companies, manufacturing and/or services in the SP/Mexico. This study uses the exploratory qualitative approach to examine continuous improvement practices (Glaser and Strauss, 2010; Ritchie and Lewis, 2003).

Data for this study were mainly collected by means of interview because it allows examining the perceptions of 53 directors and/or managers involved in continuous improvement projects. The interview was directed at companies that have more than 50 employees and an annual sales volume of more than \$1,000,000. In addition, companies needed to have had at least one quality certification and/or quality practice. These selection criteria ensure that the participating companies are medium or large and that they are committed to quality. The companies were divided according to their size: large companies (more than 200 employees, with a sales volume exceeding \$5,000,000); and medium-sized companies (between 50 and 199 employees, with a sales volume between \$1,000,001 and \$5,000,000).

In the study, three data collection techniques were employed: direct observation, semi-structured interviews, and documentary analysis (Yin, 1994; Stake, 2009). The semi-structured interview was conducted in 33 companies in Ecuador and 20 companies in Mexico between August and November 2016 (Table II). The interview was composed of five sections (Appendix): application of managerial practices for continuous improvement, benefits obtained from the implementation of continuous improvement, challenges in the application of continuous improvement, human resource involvement in continuous improvement, and understanding the practice of continuous improvement (Pettigrew, 1997). In addition, documents related to continuous improvement practices were collected and visits were made to each of the companies that participated in the study (Yin, 1994; Stake, 2009). Regarding direct observation, visits were made to each of the companies with the purpose of examining workplaces and collecting material linked to continuous improvement practices such as web portals, improvement projects, formats, reports, etc. Evidence and documentary analysis completed the data set.

Finally, the generation of codes and labels allowed a grouping, comparison and validation of the information, without making classifications necessary (Glaser, 1978). Following the design established for the research, a comparison was made in order to determine frequencies and differences in each of the axes outlined for the investigation. Finally, to obtain a graphic representation, Wolfram Mathematica version 10 was employed. The validity of the study was based on the triangulation of various sources of information, establishing a planned chain in the collection of data at all times (Pettigrew, 1997).

4. Findings

According to the study, the companies of the Metropolitan District of Quito (MDQ/Ecuador) and the SP/Mexico apply management practices under the continuous improvement approach – Kaizen (Figure 1). Knowledge of Kaizen practice as such is recognized by 15 percent in MDQ and by 20 percent in the SP. The study shows that those companies applying the Kaizen philosophy more strictly are large companies, as Brunet and New (2003) also observed.

The study also detected differences between the two locations. It was observed that in the Ecuadorian companies a high percentage of the executives are still unaware that these continuous improvement efforts can be categorized as Kaizen (Shang and Sui, 2013), evidencing a low understanding of Kaizen terminology. Basically, the managers of the companies mention the application of the PDCA cycle in daily activities of continuous improvement. On the other hand, the executives from the companies of the SP/Mexico believe that they carry out activities of continuous improvement, and that the combination of approaches or programs is reflected in the improvement of the quality of processes and in management systems (as proposed by Liker, 2004).

The understanding of Kaizen by managers tends to coincide with the continual quest to satisfy internal and external customers of the organization, which has an impact on

Puebla – México	Distrito Metropolitano de Quito – Ecuador
<i>Type of company</i>	
Medium: 85%	Medium: 73%
Manufacturing: 47%	Manufacturing: 25%
Services: 53%	Services: 75%
Large: 15%	Large: 27%
Manufacturing: 67%	Manufacturing: 44%
Services: 33%	Services: 56%

Table II.
Characterization of the
group of companies
involved in the study

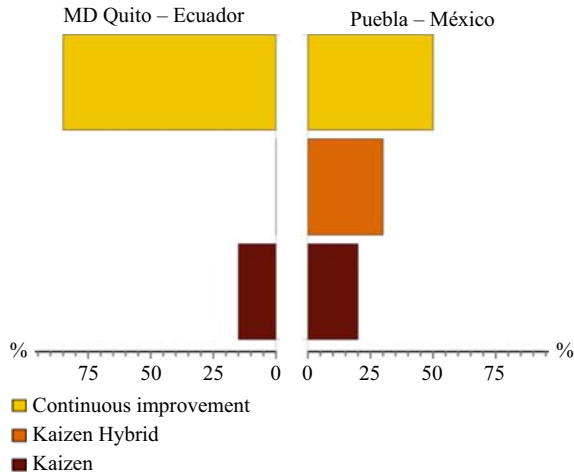


Figure 1.
Understanding the
Kaizen practice

economic performance and sustainability of continuous improvement (Alukal and Manos, 2006; Prajogo and Sohal, 2004).

On the other hand, continuous improvement seeks to involve operational and managerial staff of the organization at all times (Lillrank *et al.*, 2001; Imai, 1986). Evidence indicates that the average percentage of workers involved in continuous improvement practices is in the low (54 percent) and middle (40 percent) levels of the organizational hierarchy. These findings indicate that the participation of top management is relatively low, with a 21 percent average (Figure 2). It is therefore necessary to strengthen mechanisms in which all improvement teams are jointly involved in gradual changes that generate better performance, taking advantage of full human potential (García *et al.*, 2013; Van Scyoc, 2008; Brunet and New, 2003).

Thus, although there is evidence of a process of continuous improvement in both locations, the responsibility for improvement continues to be shared with the organization's operational functions as sources of technical advice.

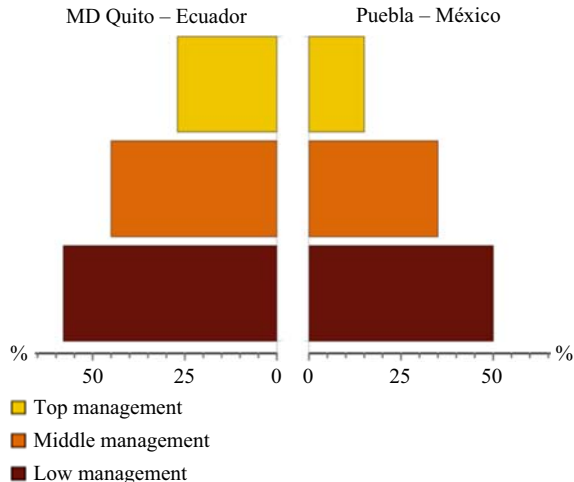


Figure 2.
Staff participation in
Kaizen programs

4.1 Tools and/or Kaizen techniques

The company executives point out the use of more than one technique and/or tool simultaneously (Figure 3).

Results show that the most commonly used tools in the two countries are: training programs, checklists, and flowcharts. In this sense, staff training and education programs (Bessant *et al.*, 1994) are the most used with an average of 30 percent. These projects are people-oriented, as they seek to involve staff in working team networks so that they help achieve improvement projects. Checklists aid data collection from the various processes of the organization and are used on average in 17 percent of the companies. However, it is observed that the percentage of companies that have adopted the checklist tool in the SP/Mexico is higher than in the Metropolitan District of Quito. On the other hand, flow diagrams of the methodology of process redesign are applied 14 percent on average in the two locations, enhancing the standardization and measurement of organizational processes. The remaining methodologies show lower percentages and include quality circles, implementation of the 5'S program in order to organize the work, root-cause analysis with 5'W in order to understand the problem, use of indicators for improving productivity, application of continuous improvement philosophies such as six sigma, just in time "JIT" Lean manufacturing; application of quality tools such as: problem trees, Ishikihawa diagram, introduction of quality certifications such as ISO 9000, use of kiwotsukau technique, which is derived from "ki" meaning energy and "wo" "tsukau" which means to use; which can be interpreted as: "worry about," and implies a concern for the clients in search of the improvement of all the processes; finally other companies use the OPV technique that means "Other Point of View" and allows to put itself in the place of the other person; it is generally used as a technique to encourage creativity. Finally, the Kaizen "training" technique analyzed in this research focuses on "On-the-job Training," that is, technical training in the *gemba* (Japanese word for shop floor), which is fundamental to consolidate human development and change of the staff's mindset.

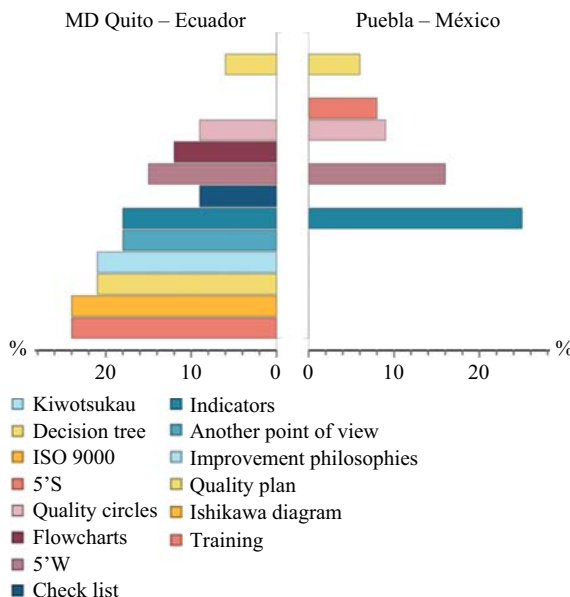


Figure 3.
Tools and/or
techniques for
Kaizen practice

The study made it possible to establish that the permeation of the philosophy Kaizen in cultural contexts other than Japan is complex, even when that companies apply different techniques and/or tools for continuous improvement. This is due to a lack of understanding of other continuous improvement practices, the potential of tools used not being fully exploited and efforts being made isolated in the area of sustainability of continuous improvement (Aoki, 2008; Brunet and New, 2003).

4.2 Barriers to the implementation of continuous improvement

Inhibitors or barriers are factors that hinder the implementation and maintenance of continuous improvement. Bateman and Rich (2003) mention that maintaining systems for continuous improvement is complicated and costly. In light of this, the study shows the factors identified as barriers at the time of implementation, and the sustainability of continuous improvement systems over time. Managers consider the main inhibitor to be related to the low understanding that exists regarding the philosophy of continuous improvement – Kaizen. Barriers differ between the two locations, as shown in Figure 4.

Both locations evidence a low understanding of the Kaizen philosophy regarding the formal application of this methodology (64 percent in the SP/Mexico and 61 percent in MDQ/Ecuador). This can be attributed to the difficulty of applying this methodology in companies whose management systems have not yet reached a certain maturity.

Lack of staff involvement is another result that poses an influential barrier (Lillrank *et al.*, 2001) in both locations. Although this factor is more evident in MDQ/Ecuador, the managers of the companies of the SP/Mexico, also consider it as an inhibitor to the sustainability of continuous improvement. Some managers agree that lack of methodologies, strategies and assessments provoke a lack of clarity of the purpose of continuous improvement, which leads to a lack of motivation among the staff (Bateman and Rich, 2003; Bessant *et al.*, 1994).

The formal commitment and support of senior management remains a barrier in both localities. However, this factor is more influential in the MDQ/Ecuador companies, resulting in isolated efforts (Bessant *et al.*, 1994) in the suggestion and continuous improvement groups. On the other hand, resistance to change (Rapp and Eklund, 2002) is considered a

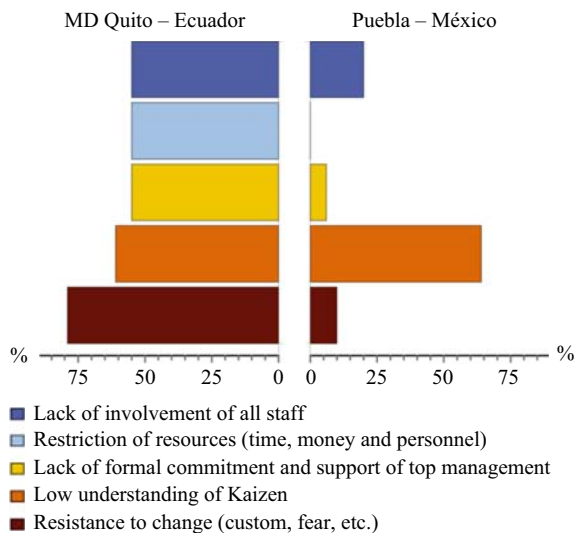


Figure 4. Barriers to the application of Kaizen

major barrier by the company executives in MDQ/Ecuador, due to the conflict between the Kaizen philosophy and the organizational culture present in the companies. On the other hand, managers in the SP/Mexico consider it a low barrier because this methodology has already been introduced in the country, thanks to its proximity to American companies. Finally, only MDQ/Ecuador companies consider resource constraints (Bateman and Rich, 2003) as a barrier to maintaining continuous improvement, since this involves time, money, and personnel.

The results show that company managers in MDQ/Ecuador perceive more barriers to the sustainability of continuous improvement systems, although the reasons therefore are the same in both localities.

4.3 Benefits linked to the implementation of Kaizen

The literature recognizes qualitative and quantitative benefits derived from continuous improvement practices (Alukal and Manos, 2006; Prajogo and Sohal, 2004). Interviews have revealed various perceptions regarding the benefits inherent after the implementation of continuous improvement. Both locations display the same three benefits (as shown in Figure 5), as the implementation of continuous improvement has allowed them to improve productivity rates and increase sales. Productivity increased by 32 percent in the SP/Mexico and by 21 percent in MDQ/Ecuador, while sales figures rose by 11 and 30 percent, respectively. It is worth highlighting that the Ecuadorian companies incorporated practices that allow maintaining a better relationship with and service to clients while providing companies with prestige, growth and organizational competitiveness. The company managers in the SP/Mexico detected problems and created teams for continuous improvement.

Finally, another important benefit is the reduction of costs and production times (20 percent in the SP/Mexico and 27 percent in MDQ/Ecuador). Managers of the Ecuadorian companies perceived a minimization of processes, while the managers of the Mexican companies emphasized the elimination of the organizational muda or waste.

5. Discussions and conclusions

The Kaizen philosophy is not easy to adopt and apply in other cultures and much less in Latin American environments such as Ecuador and Mexico; although there is vast literature available on its application (Aoki, 2008; Macpherson *et al.*, 2015; Kumar and Kumar, 2014;

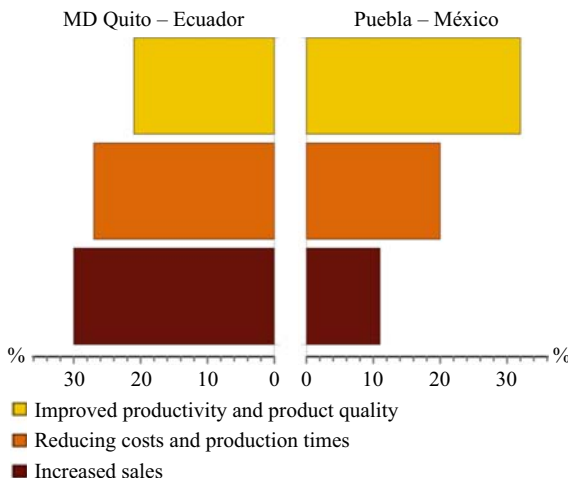


Figure 5. Benefits following the application of Kaizen

Yokozawa and Steenhuis, 2013; Suárez-Barraza *et al.*, 2011; Awad and Shanshal, 2017). Therefore, senior management's commitment to continuous improvement processes is key to the successful implementation and sustainability of the Kaizen philosophy. The application of the Kaizen philosophy in Latin American organizations has had remarkable advances and tangible benefits in the improvement and redesign of the operative processes; Therefore, as shown in the study results, managers in both Ecuador and Mexico maintain a permanent effort to reduce costs, improve operational efficiency and, of course, improve productivity. These results are found in previous studies in Latin America that confirm the positive trend of productivity, cost and operational efficiency benefits (Suárez-Barraza and Ramis-Pujol, 2010; Suárez-Barraza *et al.*, 2012).

In addition, timely training and development of human resources is a key element in promoting change in companies (Oropesa *et al.*, 2016). Thus, studying human behavior and organizational structure becomes a vital task for Kaizen sustainability (Lam *et al.*, 2015; Oprime *et al.*, 2011). Therefore, managers must be leaders in the implementation of improvement programs, developing a sense of belonging in the workers, providing training and professional development, as human talent fosters the culture of change and is the key to the successful achievement of continuous improvement (Awad and Shanshal, 2017). In the face of this, the managerial commitment and the development of human talent are presented as a key factor in this study, when training is planned and structured. This is shared by other authors in previous qualitative and quantitative studies in Asia (Brunet and New, 2003; Aoki, 2008) and in Mexico (Oropesa *et al.*, 2016).

The lack of consolidation of the Kaizen philosophy means that principles, practices, techniques, and/or tools used in organizations experience sustainability problems over time, and this may prevent derivation of all possible benefits that continuous improvement provides to organizations (Shang and Sui, 2013; Suárez-Barraza *et al.*, 2011; Suárez-Barraza and Miguel-Dávila, 2011). Thus, the findings demonstrate the need to incorporate a Kaizen system that allows the integration of personnel in continuous improvement initiatives, which in turn requires the support of process and management policies that support institutionalization of the improvements resulting from continuous effort. In this way, the Kaizen system shows the philosophy of Kaizen principles (DO – philosophy or path), and its application through techniques and tools (JYUTSU – technique) as indicated by Kobayashi *et al.* (2008).

This exploratory empirical work enables us to conclude that although companies of the two localities apply practices, tools and/or techniques of continuous improvement, it is still necessary to devise a methodology that allows taking advantage of the efforts of all the personnel involved in the organization.

6. Limitations and future research

This paper presents some limitations, such as the small number of case studies and selected study areas, which in turn limits the generalization of the theory. In spite of this, the research contributes to the existing literature through an empirical work on the practices and benefits of and barriers to the maintenance of continuous improvement.

As researchers we are aware that these findings need to be researched in a wide range of industries and countries. Including a more extensive area of Latin America would therefore reinforce the results. In addition, future research could use the results of the present study as hypotheses to be tested in a broader sample through a longitudinal type quantitative research, where the participation of human talent in the process of continuous improvement is measured.

However, it is important to note that, based on the results recorded and the context indicated, an analytical generalization is possible. This contribution can be expanded with future research which should seek to evaluate the role of human resources in the sustainability of continuous improvement, since the literature on behaviors that contribute to the success of such projects is scarce at present.

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Further reading

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Appendix. Questions used in the data collection questionnaire with coding results

- (1) Question 1: In the company you work for, is Kaizen practiced or applied?
 - Code: Yes, with the "Kaizen" label ($n = 9$).
 - Code: Yes, but with the "Continuous Improvement" label ($n = 6$).
 - Code: Yes, but with the combination of other techniques ($n = 38$).

- (2) Question 2: What techniques or tools does the company use as a method for continuous improvement?
- Code: Training ($n = 15$).
 - Code: Ishikawa diagram ($n = 8$).
 - Code: Quality plan ($n = 7$).
 - Code: Improvement philosophies ($n = 7$).
 - Code: Other Point of View ($n = 6$).
 - Code: Indicators ($n = 6$).
 - Code: Checklist ($n = 8$).
 - Code: 5W ($n = 5$).
 - Code: Flow diagrams ($n = 7$).
 - Code: Quality circles ($n = 3$).
 - Code: 5S ($n = 2$).
 - Code: ISO 9000 ($n = 2$).
 - Code: Decision tree ($n = 2$).
 - Code: Kiwotsukau ($n = 1$).
- (3) Question 3: What benefits has Kaizen provided?
- Code: Sales increase ($n = 12$).
 - Code: Reduced costs and production times ($n = 13$).
 - Code: Productivity and product quality improvement ($n = 13$).
- (4) Question 4: What have been the barriers or inhibitors that do not allow Kaizen application?
- Code: Resistance to change ($n = 28$).
 - Code: Little understanding of the Kaizen philosophy ($n = 33$).
 - Code: Lack of commitment and formal support from senior management ($n = 19$).
 - Code: Resource restriction ($n = 18$).
 - Code: Lack of involvement of all staff ($n = 22$).
- (5) Question 5: At what levels is Kaizen applied?
- Code: Operatives ($n = 29$).
 - Code: Middle management ($n = 22$).
 - Code: Senior management ($n = 12$).

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