KEY FACILITATORS TO CONTINUOUS IMPROVEMENT: A SPANISH INSIGHT

ABSTRACT

Purpose: the aim of this paper is to analyse the nature of the facilitators of continuous improvement, proposing a classification of them and identifying the different profiles of companies based on them

Design: To achieve this objective, first, a literature review was done in order to identify the main facilitators; second, some of them were included in a survey based on experts' opinions; third, a survey was conducted among people responsible for implementing continuous improvement; and finally factorial and cluster analysis were applied.

Findings: Based on the results, three main factors were identified: "cultural facilitators", "tactical facilitators" and "human resources involvement facilitators". Additionally, five clusters were defined.

Practical implications: As many companies still struggle when implementing continuous improvement, the results of this study can help all them to focus on the most important aspects in order to guarantee the sustainability of the continuous improvement system.

Originality: From a theoretical point of view, this work contributes to the continuous improvement field by analysing the nature of the main facilitators companies can find when implementing these initiatives. Thus, not only does this study provide a hierarchy of the most important facilitators, but also classifies them. As far as authors are concerned, this is the first attempt to categorise continuous improvement facilitators.

Keywords: continuous improvement; kaizen; facilitators; factorial analysis; cluster analysis

1. INTRODUCTION

In the current competitive environment, companies are subjected to an exercise of constant adaptation since market conditions vary from one day to the next. At present, doing things right does not guarantee business survival: it is essential to be prepared to face the new challenges that the immediate future brings. In this sense, many companies have adopted a philosophy of continuous improvement.

The concept of continuous improvement (CI), understood as synonymous with kaizen, can be defined as the planned, organized and systematic process of continuous and incremental change (Garcia-Sabater and Marin-Garcia, 2011). There are numerous studies framed in the CI field as this is a topic that has aroused a great deal of interest over the last few decades (Sanchez and Blanco, 2014, 2016).

In the academic literature on continuous improvement, there is a clear predominance of case studies presenting individual initiatives focused on implementing continuous improvement. In these works, the experience of a specific company is described with a rather informative purpose; the main objective being the presentation of experiences that can serve as an example for other companies. Some recent examples may be the works Khan, Kaviani, Galli and Ishtiaq (2019), Rossini et al. (2020), Bresciani *et al.* (2020), and Tezel, Koskela and Tzortsopoulos (2021), among others. In some of those studies, the concept of continuous improvement is related with other management philosophies such as Lean management, Total Quality Management or Theory of Constraints, among others (Scott and Migliaccio, 2009; Lee et al, 2010; Chen, Li and Shady, 2010; Gupta et al. 2010; Van Looy et al. 2011).

Similarly, there are also numerous studies focused on the proposal and validation of implementation methodologies (Sanchez-Ruiz and Blanco, 2016; Awas and Shanshal, 2017; Farrington, Antony and O´Gorman, 2018; Ko and Stein, 2019; Meraz Rivera et al. 2021).

Additionally, there is a miscellaneous group of works that analyse continuous improvement from different perspectives. That is, from the point of view of human resources (Middel Fisscher and Groen, 2007; Hyland et al. 2008; Jorgensen, Hyland and Busk Kofoed, 2008; Blaga, 2020), business culture (Tarnoff, 2009; Huang, Rode and Schroeder, 2011; Yamamoto and Bellgran, 2010), innovation (Boer et al. 2001; Boer and Gertsen, 2003; Moore, 2005) or what is usually called factors.

According to the literature review carried out, which will be discussed in greater detail in later sections of this work, the topic of factors is one of the least studied in the scientific literature on continuous improvement. This topic would include all those works that, in one way or another, analyse the motivations, obstacles, facilitators and/or benefits derived from the implementation of continuous improvement.

Given the lower relative weight of this topic compared to the others, it could be interpreted that the topic of factors is a field of little interest. However, if continuous improvement implementation data is analyzed, what should actually be concluded is that it is a field in which more research is still needed.

The implementation of continuous improvement must be understood as a process of change within the organisation and, as a result, it poses a challenge for companies. Despite the high number of examples and research that present successful implementation experiences, the percentage of companies that currently still fail is certainly high. Some analysts indicate that up to 50% of the projects might fail to successfully implement continuous improvement in a sustainable manner. The business world therefore seems to signal that more evidence is still needed in this field. Why is this happening? How could that rate be lowered? Academia should try to support business in this respect.

Given the gap identified between the development of the scientific literature and the real needs of the business world, it is clearly necessary to know more about the implementation process of CI, and more precisely, it is important for all companies to understand and encourage the implementation facilitators both before and during the CI implementation, taking into account that there are still companies that find it difficult to implement (Maarof and Mahmud, 2016; McLean and Antony, 2017).

In relation to the facilitators, which are the focus of this work, there has always been a great interest in identifying and enhancing them, since they are considered key when implementing and sustaining a CI process. Hence, the wide range of works that analyse them (Albors Garrigós *et al.*, 2009; Garcia-Sabater and Marin-Garcia, 2009; Rich and Bateman, 2003; Sabater and Garcia, 2011; Gonzalez Aleu and Keathley, 2013; McLean and Antony, 2014; Gonzalez Aleu and Van Aken, 2016; McLean, Antony and Dahlgaard, 2017; Sreedharan *et al.* 2018; Sanchez-Ruiz, Blanco and Gomez-Lopez, 2019).

In this sense, there is a strikingly large number of studies that identify and comment on the facilitators in an individual and, generally, descriptive way. That is, most studies go no further than to analyse the specific case of one or several companies, and to identify/explain the aspects that enabled the implementation. Therefore, to the authors' knowledge, there are no studies that categorise the facilitators in different groups/typologies. Thus, it is at this point, where this work makes its greatest contribution.

Therefore, the objective of this paper is to fill the gap identified in the literature by studying the different typologies of facilitators of CI, suggesting a classification, and finding the different profiles of the companies based on it. To achieve this goal, first, a literature review has been done in order to identify the facilitators. Second, multivariate techniques such as factor analysis and cluster analysis have been used. Factor analysis aims at representing the

interrelationships among a set of variables by a number of underlying, linearly independent reference variables called factors (Hair et al., 1995), reducing a large amount of information into more meaningful concepts (Jaca et al., 2014; Dabhilkar and Bengtsson, 2004). Consequently, it goes one step further than the traditional descriptive and qualitative analysis that have predominated in the CI field. Adopting this new approach seems more realistic than the individual perspective that has predominated in the CI field up to now. Although it seems logical to think that a company can be affected by more than one facilitator simultaneously and that there may be relationships between them, as far as authors are concerned it has never before been analysed. Finally, cluster firms and these groups are analysed to establish their profile by cluster analysis.

To achieve this objective, the work is divided into several sections. Section 2 presents the theoretical background used to carry out the research. Section 3 describes the methodology used, while the Section 4 includes the analysis of results. Finally, Section 5 summarise the theoretical and managerial implications, Section 6 presents the main contribution of the paper, indicates limitations, and suggests directions for future research.

2. THEORETICAL BACKGROUND

2.1. Continuous Improvement Defined

Imai (1986), who was a pioneer in this field, defined CI as the *progressive improvement that involves everyone, including both managers and workers*. In this same line, thirteen years later, Bessant and Francis (1999) defined CI as an *organization-wide process of sustained incremental innovation*.

Other definitions focus on pointing out the importance of CI as a means to achieve the company's objectives, whether internal (efficiency, trying to do things faster, with less

resources) or external (effectiveness, trying to do the right things). This is the case of Grütter, Field and Faull (2002), who defined CI as *the set of small incremental changes in production processes or work practices that allow improving some indicator of performance*. Similarly, Brunet and New (2003) considered that CI could be understood as *generalized and continuous activities, beyond the responsibilities of the company, aimed at identifying and achieving results that, in the opinion of the company, will contribute to the organizational objectives*. Boer *et al.* (2017), meanwhile, described it as *the systematic, planned and organized process aimed at incremental change of existing practices in the company with the aim of improving the performance of the company*. Finally, Chang (2005) stated that *the cycle of continuous improvement consists of establishing the requirements of the clients, reaching and satisfying those requirements, measuring the results obtained and continue to improve to detect areas where new improvements can be made*.

Taking the above definitions into account it might be said that CI is a broad concept that encompasses both the internal and external objectives of the company and involves the entire organization in the process of incremental improvement. This, far from being simple, might become a serious challenge for companies. Indeed, there is a worrying percentage of CI projects that still fail (Carnerud *et al.*, 2018; Raj and Attri, 2010; Jorgensen *et al.* 2003; Mendelbaum, 2006; Oakland and Tanner, 2007; Pillet and Maire, 2008; Candido and Santos, 2011; Bhasin 2012; Maarof and Mahmud 2016). This is the reason why it is paramount to understand the implementation process better in order to increase the success rate (McLean *et al.* 2015; Moosa and Sajid, 2010). These are the reasons why this paper focuses on the study of the aspects that facilitate the implementation of CI.

Some authors suggest that continuous improvement philosophy has not been included within any theory or framework, remaining somehow atheoretical and disorganized (Karim, Somers and Bhattacherjee, 2007; Melao and Pidd, 2000). This, in turn, may lead to misunderstanding

of the concept and implementation problems which might cause CI failure (Attaran, 2004). Trkman (2010) make a first attempt to cover this gap by proposing a new framework based on the combination of three theories: contingency, dynamic capabilities and task-technology theory. This author considers that, due to the complexity of the concept, that includes organizational, managerial, information and social aspects, a single theoretical framework is not enough. According to their results, the three theories might be somehow interrelated. However, the study is based on a single case study and further research is needed in order to validate the proposal.

In this study we consider and understand that continuous improvement might be framed within Lewin's Theory of Change (Lewin, 1947). The authors of this work consider that this theory is broad enough to cover the undoubted complexity that exists in a process of continuous improvement. In addition, and unlike what happened with the theory proposed by Trkman (2010), it has been widely studied and validated.

According to this theory, developed by the social scientist Kurt Lewin in the 1940s, when a company faces organizational change it goes through three stages (Hussain et al., 2018): *unfreeze*, *change* and *refreeze*. In the first stage (*unfreeze*) it is important to make all staff aware of the change that is going to be made and make them understand that the change is necessary and positive. At this stage, resistance to change might appear because many beliefs and behaviours, that may be deeply rooted in the company, are questioned. Thus, the most important point in this phase is to get everyone involved in the process of change and reduce reluctance. The second stage (*change*) is where the changes take place. Management and good communication strategies play a very important role at this time. Finally, in the third stage (*refreeze*) is where the changes take hold, are absorbed and internalized as part of the business culture.

It is not difficult to see certain similarities between the phases described by Lewin and the Plan-Do-Check-Act method, which can be considered the basis of many continuous improvement programs. For this reason, we consider that this is the theory that best frames CI and that is where we want to frame the results that we obtain in this work.

2.2. CI facilitators

According to Caffyn and Grantham (2003) a CI facilitator can be defined as any policy, mechanism, instrument, procedure, behaviour or structure that serves to promote CI. Therefore, it could be understood as a positive factor which fosters implementation in contrast with a negative factor (barrier) which will hinder the process.

In comparison with other topics included in the field of CI, the theme of the key implementation factors is one of the least developed (Sanchez and Blanco, 2014, 2016). Therefore, and taking into account that there are still many CI initiatives that fail (Carnerud *et al.*, 2018; Jorgensen *et al.*, 2003; Raj and Attri, 2010), it seems that studies like this one are highly necessary.

Considering this idea, the next step consisted of carrying out a review of the existing literature that would allow us to identify the main facilitators that had already been described in the literature. For this, a search was carried out in the Web of Science, Scopus and Dialnet databases (keywords: CI and / or kaizen). Initially, 1365 scientific articles on the topic of CI were identified. Among them, only 65 analysed the topic of the factors and, in turn, only some of these dealt with the facilitators in some way (Figure 1).

Figure 1. Process of the literature review

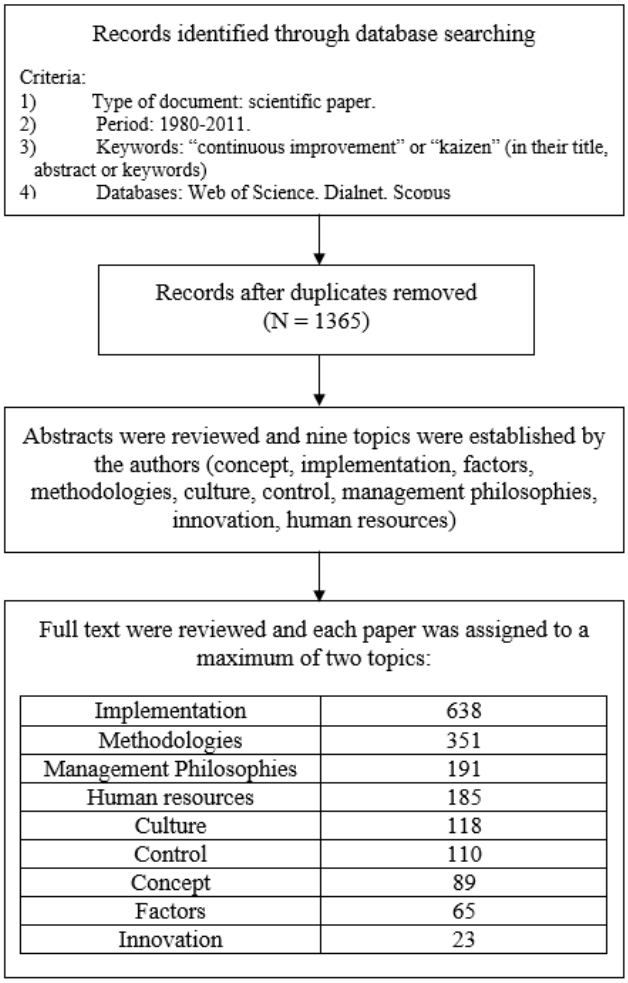

Table I includes, as a summary, the main facilitators related to CI that were identified in the literature based on the analysis of the aforementioned articles. In any case, the authors have not identified any study that analyses the different types of facilitators applying methodologies such as factorial analysis.

INSERT TABLE I AROUND HERE

Finally, based on the above-mentioned review, a total of 29 facilitators of a very diverse nature were identified (Table I). A more detailed analysis of them allows us to make the following reflections.

In the first place, it is observed that the level of study of the different facilitators is very heterogeneous. Thus, some of them have been treated more frequently in the literature, having been analyzed in more than a dozen works. In contrast, other facilitators have barely been mentioned in one or two studies. Closely related to the previous comment is temporal analysis. While some of the facilitators began to be analysed in the 1990s, others have not been identified until the last decade. All this could be an indicator of the need to carry out studies on facilitators on a regular basis to check, on the one hand, if the existing ones are still important in the current environment and, on the other, if, given the new environmental conditions, new facilitators need to be considered.

In line with the last idea raised, the importance of the environment, the fact that all facilitators seem to have an internal orientation is striking. It seems that there is no external factor that influences the implementation of continuous improvement. It would be interesting to delve into this aspect since, a priori, it seems logical to think that some external factors (for example, the fact that other companies in the group or other business partners have done it previously and share their experience) could be relevant and might act as facilitators.

To finish, one last reflection, it should be noted that in the reviewed studies there is a clear predominance of the managers' perspective. That is, when collecting data (either through surveys, interviews or case studies) the opinion of senior and middle managers is taken into consideration, above all. It would seem logical to try to incorporate the opinion of other workers in the company to find out if their perceptions are the same and if they can incorporate new ideas.

All these reflections raise future lines of work that, although they are beyond the objective of this work, it seemed appropriate to collect in this section.

3. METHODOLOGY

3.1. Sample

This research was intended for companies from Cantabria, a region in the north of Spain. All firms from Cantabria with more than 20 people were asked (808 companies). Finally, 209 managers confirmed that CI was practised in their companies, and they were sent a second survey. Concerning the facilitators, managers responsible for implementing CI were asked to rank whether the selected 14 facilitators had been important for them or not. In order to do so, a five-point Likert scale was proposed (1 – it was an unimportant facilitator- to 5- it was a very important facilitator). Finally, 109 valid responses were collected. As Albors and Hervás (2007) highlighted, the lack of a national database of firms practising CI makes it difficult to assess the representativeness of the sample.

3.2. Study design

Once the literature review was done and facilitators were identified (Table 1), the selection and validation of the items (from a content perspective) was done using the Delphi Technique (Linstone and Turoff 2002, Landeta 2006; Hsu and Sanford, 2007).

In this work, the application of the Delphi method includes the following stages:

1) Questionnaire design based on the literature review carried out. Specifically, experts should assess whether the facilitators identified in the review (Table 1) were or were not suitable for inclusion in the final survey.
2) Expert selection: in our study, eight experts (academics and practitioners) were contacted. The inclusion of academics and practitioners was aimed at obtaining a

good balance between theory and practise. Table II contains information on the professional profile and the area of specialisation of the experts consulted.

INSERT TABLE II AROUND HERE

3) First round: obtaining the answers from the panel of experts. In addition to indicating whether the item in question should be included or not, the experts had a space for the contribution of proposals, modifications or changes.
4) Analysis of the answers obtained: all the changes they proposed were analysed by the authors of this study. Most of their suggestions involved the unification of some items that, given their relationship, should be treated together; the modification of the wording so that there was no confusion at the time that the companies interpreted it; or the exclusion of some items that might be considered irrelevant or obsolete or that, indirectly, were implicit in others (Table III).

INSERT TABLE III AROUND HERE

5) Second round: the selected items were shown to the experts again. In this case, as the consensus achieved was high, no more changes were included. Thus, finally, 14 facilitators were selected (Table IV).

INSERT TABLE IV AROUND HERE

3.3. Statistical tools and methods

The following statistical tests were executed:

- Communalities.
- Cronbach's alpha test for reliability
- Principal components analysis with VARIMAX rotation.

- Cluster analysis.

First, the communalities of all items identified in the literature were analysed. Communalities indicate the amount of variance in each variable that is accounted for. Small values of less than 0.5 indicate variables that do not fit well with the factor solution and should be dropped from the analysis (Jackson, 1991).

Cronbach's alpha (Cronbach, 1951) was then used to check the internal consistency of the measurement scale. Cronbach's alpha coefficient is a lower limit estimation of the population reliability and its value varies between 0 and 1; the closer it is to one, the greater the internal consistency of the scale. In the early stages of research, as is the case with this exploratory study, instruments that have values of 0.7 or above will suffice (Nunnally, 1967; Hair *et al.,* 1995). One of the advantages of this measure is the possibility of evaluating how much better (or worse) the reliability of a test is if a particular item is excluded. SPSS statistical software was used for the empirical analysis, and this information was obtained when the Cronbach's alpha test was carried out.

Thirdly, principal components analysis with VARIMAX rotation was performed. Factor analysis is a multivariate statistical method whose primary purpose is data reduction and summarisation (Hair *et al.,* 1987). Using factor analysis, a factor loading for each item and its corresponding construct was determined. In order to verify that the items tapped into their stipulated constructs, a principal components analysis with a VARIMAX rotation was executed. The items were divided into three factors and the output was sorted and ranked based on a 0.5 loading cut-off. Typically, loadings of 0.5 or greater are considered very significant (Hair *et al.,* 1987).

The VARIMAX rotation was used because it centres on simplifying the columns of the factor matrix. With the VARIMAX rotational approach, there tend to be some high loadings (i.e. loadings closer to 1) and some loadings near 0 in each column of the matrix. The logic is that

interpretation is easiest when the variable–factor correlations are either closer to 1, thus indicating a clear association between the variable and the factor, or 0, indicating a clear lack of association (Hair *et al.,* 1987).

In order to determine whether a study scale is suitable for factor analysis, the Kaiser–Meyer–Olkin (KMO) and Bartlett tests are typically used (Kaiser, 1974). Regarding the statistical KMO test, the value varies between 0 and 1, and a value of less than 0.5 indicates that the factor analysis with the sample data being analysed may not be used. Meanwhile, the Bartlett test scores must give a critical level (Sig.) of less than 0.05 in order to ensure that the factor model is adequate to explain the data. Finally, the reliability of each factor was analysed using Cronbach's alpha, where an alpha value exceeding 0.7 indicates high reliability in each factor. In this case, the analysis can also identify those items whose removal helps to increase the reliability of the factor.

Once the factor analysis had been done, which enabled the relevant variables to be selected to identify the groups, hierarchical cluster analysis was applied with Ward's method and Euclidean distances, because of the sample size (Nunnally, 1967; Hair *et al.,* 1995). The goal was to group the firms according to the facilitators that they obtain with CI implementation.

4. RESULTS

4.1. Descriptive analysis

Before presenting the results of the factorial analysis, a descriptive analysis is shown. Table V displays mean scores, standard deviations, and the percentage of companies for which each facilitator is unimportant or important.

INSERT TABLE V AROUND HERE

As can be observed from table 4, establishing clear objectives (3.74), promoting teamwork (3.75) and open communication (3.74) are the most valued facilitators. On the other side, focusing on stakeholders, mainly the customer (2.83), monitoring continuous improvement initiatives (3.01) and focusing on the critical processes (3.23) are the least valued ones. Nonetheless, it should be highlighted that all the facilitators are important for companies as even the lowest mean is higher than 2.5 (the average in the scale). This idea is reinforced by the fact that, for all the items, the percentage of companies that consider the facilitators important is higher than 60%, in some cases, it is around 90%.

4.2. Factorial analysis

A "Principal Components Factor Analysis" with varimax rotation was done. First of all, communalities were analysed. Two items with communalities lower than 0.5 were removed: "Monitoring continuous improvement initiatives" and "Establishing clear objectives". The Cronbach alpha obtained for the 12 remaining items is 0.90, indicating an appropriate degree of internal consistency of the measurement scale.

Based on the criterion of percentage of variance, three factors can be distinguished: (1) Cultural facilitators; (2) Tactical facilitators; and (3) Human resource involvement facilitators. These account for 68.34% of the total variance (Table VI).

INSERT TABLE VI AROUND HERE

Moreover, in all cases, the factor loadings of the items are satisfactory (greater than 0.4). Bartlett's sphericity test allows us to reject the null hypothesis that states that the variables are uncorrelated; the test value is high and is associated with a significance value below 0.05. Meanwhile, the Kaiser-Meyer-Olkin (KMO) in our case is 0.87, indicating the suitability of the analysis.

Additionally, the reliability analysis provides a Cronbach alpha of 0.901 for factor 1, 0.702 for factor 2 and 0.797 for factor 3, indicating that all items should be considered for the construction of these factors.

Regarding the meaning of the factors:

- Factor 1: “Cultural facilitators”: It includes facilitators that foster the creation of a CI culture that extends over time. This factor includes items such as “implementing a culture tolerant with mistakes for learning”, “integrate continuous improvement objectives in strategic objectives”, “motivation”, “recognising the achievements and learning from the continuous improvement itself”, “leadership” and “establishing measurement system”.
- Factor 2: “Tactical facilitators”: This includes the facilitators that help the company focus its efforts on what is really important: the customer, the processes and quality improvement. It is made up of three items “existence of quality improvement systems”, “focusing on stakeholders, mainly the customer” and “focusing on critical processes”.
- Factor 3: “Human resources involvement”: integrates facilitators that help to involve the company's human resources in the process of continuous improvement. It is made up of three items: “training”, “team work” and “open communication”.

4.3. Cluster analysis

Complementary to factorial analysis, a cluster analysis has been developed. It is aimed at examining whether there are common patterns among the companies so that different categories might be distinguished. Given the lack of previous studies of this type in the field of continuous improvement that serve as a starting point, in this work we have used the

dendrogram and the agglomeration coefficient (Gómez-López *et al.*, 2016, 2017). Thus, in Table VII, it can be seen that the biggest difference between the percentages of change is given in the 5 clusters (2.18). Therefore, that will be the number of groups.

INSERT TABLE VII AROUND HERE

Based on the results shown in table VIII, “human resources involvement facilitators” are the most important ones since they have the highest average ratings for all groups, except for cluster 5, where the first factor predominates. In second position, there would be the "cultural facilitators" and, finally, "tactical facilitators".

INSERT TABLE VIII AROUND HERE

Based on the above information, and analysing in greater depth the differences detected between the 5 proposed groups, it is intended to characterise each of the defined clusters in greater detail, always from the perspective of the CI facilitators.

The first defined cluster (firms highly orientated to people) is made up of 38 companies. It gives greater weight to team work and training. It also considers motivation and communication important. Cultural facilitators, although important, are less valued than human resources involvement facilitators. Finally, the tactical facilitators are the least valued.

The second cluster (firms moderately orientated to people), composed of 20 companies, is a group in which human resource involvement and cultural facilitators are basically equally important. Thus, four of the five most valued facilitators are cultural and one of them is part of the human resource involvement facilitators (open communication). In this case, the tactical facilitators are again the least valued ones. Therefore, this group of companies places a lot of importance on the culture, with a marked leadership, and recognises that communication towards the rest of the company is a means to achieve it.

The 11 companies that make up the third cluster (firms not very orientated to people) are characterised because they also value human resource involvement facilitators as the most important ones. However, in comparison with the other two previous clusters, their values are much lower. Secondly, the cultural facilitators would be ranked and the tactical ones would be the least valued.

The fourth cluster (firms orientated to process), made up of 30 companies, gives the highest scores to the tactical facilitators. In particular, they consider the existence of quality systems to be of great importance. Secondly, the human resource involvement facilitators would be ranked and the cultural ones would be the least valued.

Finally, cluster 5, which is made up of 10 companies, gives the highest scores to the cultural facilitators, followed by tactical facilitators.

5. DISCUSSION

This research contributes to our understanding of the CI field and, applying factor and cluster analysis, manages to obtain a typology of CI facilitators. Taking into account that there are still companies that find it difficult to implement CI (Maarof and Mahmud, 2016; McLean and Antony, 2017), a study like this one was needed to understand the different typologies of facilitators.

Regarding the factorial analysis, results lead to the existence of three large groups of facilitators: cultural facilitators, tactical facilitators and human resource involvement facilitators. Among them, human resource involvement facilitators seem to be the most important ones, followed by cultural facilitators, and finally by tactical facilitators. The absence of similar studies that grouped the facilitators makes comparing the results difficult. However, it is true that what has been obtained follows the same trend as that expressed by other studies which, focused on the individual analysis of the facilitators, concluded that staff

involvement is key when implementing a sustainable CI process (Beheshti and Lollar, 2003; Bhuiyan et al., 2006; Garcia-Sabater and Marin-Garcia, 2009; Marin-Garcia et al., 2012; Suárez-Barraza, M.F.; Castillo-Arias, I.; Miguel-Dávila, 2011; Suárez-Barraza, M.F.; Ramis-Pujol, 2008). In fact, this result is in line with those of Sanchez-Ruiz et al. (2018), Heras et al. (2011) who conclude that resistance to change, understood as the negative consequence of not involving staff in the process, is one of the most important obstacles.

Beyond the greater or lesser importance of each of the factors, in the opinion of the authors, the classification obtained is coherent and fits with the three stages defined in Lewin's Theory of Change.

The first factor, human resource involvement facilitators, is clearly related with the first stage of Lewin's Theory (unfreezing). As stated before, employee involvement is crucial in order to overcome resistance to change. Therefore, companies should strengthen this kind of facilitators, especially at the beginning of the process, if they want to ensure the participation of the company's personnel and the sustainability of the CI (Hyland et al., 2008; Jorgensen et al., 2003; Furst and Cable, 2008; Oreg, 2006; Armenakis and Harris, 2009).

At the second stage of Lewin's Theory, change is developed. Thus, companies should focus on the key aspects of their businesses (processes, customers, stakeholders) so that changes are meaningful. Here, tactical facilitators become paramount. This factor includes customer orientation, process orientation (of a more internal perspective) and orientation towards quality.

Finally, it is time to refreeze. This means that all the developed changes and improvements should be reinforced and included in the organizational culture. Change in general, and CI in particular, can not be understood as a one-time experience but as a life time project. Therefore, promoting cultural facilitators is vital in this last stage. In this factor, techniques

such as motivation, leadership and the recognition of achievements have special relevance together with the measurement systems that provide information on the incremental improvements that are taking place in the processes (Marin-Garcia et al., 2012; Suárez-Barraza, M.F.; Castillo-Arias, I.; Miguel-Dávila, 2011; Warwood, S.J.; Roberts, 2004).

Overall, results obtained from factor analysis seem to fit Lewin's Theory of Change, supporting authors' suggestion of framing CI within this theory.

With regard to the cluster analysis, 5 groups of companies have been identified. Clusters 1 (firms highly orientated to people), 2 (firms moderately orientated to people) and 3 (firms not very orientated to people) give greater value to HR involvement facilitators. Based on Lewin's model these companies are clearly focused on strengthen the foundations (stage 1: unfreezing).

The forth cluster of companies (firms orientated to process) values the existence of quality systems, which is considered a tactical facilitator, to a greater extent than the other groups. Additionally, these companies are also aware of the key role played by human resources and, therefore, HR involvement facilitators also occupy a predominant position. In contrast with the first three clusters, companies in this group seem to go one step further promoting employee involvement and process improvement. It might be concluded that these companies have evolved to the second stage of the Lewin's model (change).

Finally, the fifth cluster (firms orientated to culture) is the most distant from the other four. For this group of companies, the HR involvement facilitators occupy the least valued positions. Instead, the cultural facilitators seem to predominate, they seem to be more focused on building a long-time CI culture. This group of companies seem to follow a completely different strategy that the one proposed by Lewin. The question is, which strategy is better? Which one obtains better results? More research is needed in this respect.

6. IMPLICATIONS

6.1. Theoretical Implications

Although existing research had identified the main facilitators that might influence CI implementation, those studies were mainly focused on descriptive studies, usually based on the experience of a few companies or even one. Therefore, it was high time to go one step further and enrich the analysis applying more advanced analysis on bigger samples. It is at this point where this work makes its greatest theoretical contribution. Thus, it proposes a classification for CI facilitators and, in turn, defines different company profiles based on the answers of more than one hundred companies.

This kind of analysis is novel in the CI facilitators field and could be seen as the basis for more complex studies. For instance, the relationship between the different factors and the results achieved during the implementation could be analysed through other methodologies such as structural equation modelling.

6.2. Managerial/Practical Implications

These findings have important managerial implications for companies that are trying to implement CI.

First, it seems to be clear that each group of facilitators acquires more or less importance depending on the moment of CI implementation in which the company is. In this sense, a new line of research appears, as it could be interesting to analyse whether the companies reach a higher or lower level of development when implementing the CI, depending on the profile to which they belong and how the facilitators have influenced them should be considered. For this, the cluster results of this study could be cross with the level of development achieved, measured through the scale of Bessant *et al.* (2001). This study would be of interest for practitioners in order to analyse which profiles are more successful.

Overall, knowing the profile to which a particular company belongs to can be interesting from two perspectives. On the one hand, it is interesting for the companies themselves since they can perform a benchmarking exercise, comparing themselves to other companies that have the same profile. On the other hand, this information is of interest to consultants. The fact of knowing the profile of their customers (the companies that want to implement CI) allows them to know their main characteristics. And this, in turn, can help them to define and carry out different implementation strategies and tools. Overall, it could be understood that not all companies should approach CI in the same way, hence the importance of knowing their profile and adapting their path to reach the final goal that is the success of the implementation of CI process.

7. CONCLUSION

This study is aimed at analysing the different typologies of facilitators of CI, proposing a classification of them and detecting the diverse groups of the companies based on them. First, a review and an expert consultation were done, which led us to the identification of 14 facilitators. Nonetheless, the factor analysis was based on only 12 of them, since two had to be removed because they had very low communality values. Finally, three groups of facilitators were identified: "cultural facilitators", "tactical facilitators" and "human resource involvement facilitators". This last group seems to be the most important one among the surveyed companies, followed by the cultural factors, and by the tactical facilitators. Additionally, a cluster analysis was carried out in order to analyse in greater depth the profile of the companies based on the facilitators that they detected when implementing CI. Five groups of companies were identified: Cluster 1-firms highly orientated to people, 2-firms moderately orientated to people, 3-firms not very orientated to people, 4-firms orientated to process, and 5-firms orientated to culture.

The main contribution of this work is the study of the types of facilitators of CI, an analysis that had not been carried out until now and that represents an advance in this field of research. Although it is true that the study is based in facilitators included in previous studies, the aim is completely different as we are not identifying or describing what the facilitators are, but we are classifying them and defining companies' profiles.

Finally, several limitations of the present study should be noted. The present study is based on cross-sectional data based on 109 firms located in Cantabria, a region of the North of Spain. Consequently, future research with a larger sample of firms is needed to extend our research. It would also be interesting to incorporate a wider perspective by including the opinion of the operators and middle managers, not only top managers.

We also suggest research considering the perception of companies that succeeded in implementing CI. They would be asked, for each of the three factors, how important they were, how they promoted them, and how they affected their strategy of implementing CI. This information would be very interesting so that other companies, which are in the process of CI, can follow in their footsteps. Similarly, it would be interesting to know the experience of companies that failed. Why didn't they get their employees involved? What problems or obstacles did they encounter? Again, this information would be very useful since, although the study of failure is not very well considered in research (Mellahi and Sminia, 2009), it is a source of information to consider.

REFERENCES

Achanga, P., Shehab, E., Roy, R. and Nelder, G. (2006), "Critical success factors for lean implementation within SMEs", *Journal of Manufacturing Technology Management*, Vol. 17 No. 4, pp. 460-471.

Akkermans, H. A., Bogerd, P., Yücesan, E., and Van Wassenhove, L. N. (2003), "The impact of ERP on supply chain management: Exploratory findings from a European Delphi study", *European Journal of Operational Research*, Vol.146 No.2, pp. 284-301.

Albors Garrigós, J., Hervás Oliver, J.L. and Segarra Oña, M. del V. (2009), "Análisis de las prácticas de mejora continua en España: barreras y facilitadores", *Economía Industrial*, Ministerio de Industria y Energía [Secretaria General Técnica del Miner], No. 373, pp. 185–195.

Albors, J. and Hervas, J.L. (2007), "CI practice in Spain: its role as a strategic tool for the firm. Empirical evidence from the CINet survey analysis", *International Journal of Technology Management*, Vol. 37 No. 3/4, p. 332.

Almenara, J. C., and Moro, A. I. (2014), "Empleo del método Delphi y su empleo en la investigación en comunicación y educación", *EDUTEC. Revista electrónica de tecnología educativa*, Vol. 48, pp. a272-a272.

Álvarez-García, J., Durán-Sánchez, A. and del Río-Rama, M.C. (2018), "Systematic bibliometric analysis on Kaizen in scientific journals", *TQM Journal*, available at:https://doi.org/10.1108/TQM-12-2017-0171.

Attaran, M. (2004). "Exploring the relationship between information technology and business process reengineering", *Information & Management,* Vol. 41 No. 5, pp.585-596.

Armenakis, A.A. and Harris, S.G. (2009). "Reflections: Our journey in organizational change

research and practice", *Journal of Management Studies,* Vol. 38 No.6, pp. 811-829.

Awad, M., and Shanshal, Y. A. (2017), "Utilizing Kaizen process and DFSS methodology for new product development". *International Journal of Quality & Reliability Management,* Vol. 34, No. 3, pp. 378-394.

Baines, T., and Shi, V. G. (2015), "A Delphi study to explore the adoption of servitization in UK companies", *Production Planning & Control*, Vol.26 No.14-15, pp. 1171-1187.

Beheshti, H. and Lollar, J. (2003), "An empirical study of US SMEs using TQM", *Total Quality Management & Business Excellence*, Vol. 14 No. 8, pp. 839–847.

Berling, C. (2000), "Continuous improvement as seen from groups and 'improvement agents'", *Total Quality Management*, Vol. 11 No. 4–6, pp. 484–489.

Bessant, J., and Caffyn, S.(2001), "An evolutionary model of continuous improvement behaviour", *Technovation*, Vol. 21 No. 2, pp. 67–77.

Bessant, J. and Francis, D. (1999), "Developing strategic continuous improvement capability", *International Journal of Operations & Production Management*, Vol. 19 No. 11, pp. 1106–1119.

Bhasin, S. (2012), "An appropriate change strategy for lean success", *Management Decision*, Vol. 50 No.3, pp. 439-458.

Bhuiyan, N., Baghel, A. and Wilson, J. (2006), "A sustainable continuous improvement methodology at an aerospace company", *International Journal of Productivity and Performance Management*, Vol. 55 No. 8, pp. 671–687.

Blaga, P. (2020), "The importance of human resources in the continuous improvement of the production quality". *Procedia manufacturing*, Vol. 46, pp. 287-293.

Boer, H., & Gertsen, F. (2003), “From continuous improvement to continuous innovation: a (retro)(per) spective”. *International Journal of Technology Management*, Vol. 26 No.8, pp. 805-827.

Boer, H., Berger, A., Chapman, R. and Gertsen, F. (2017), *CI Changes from Suggestion Box to Organisational Learning: Continuous Improvement in Europe and Australia: Continuous Improvement in Europe And*, Ashgate Publishing Ltd, Aldershot.

Boer, H., Caffyn, S., Corso, M., Coughlan, P., Gieskes, J., Magnusson, M., ... and Ronchi, S. (2001), “Knowledge and continuous innovation: the CIMA methodology”. *International Journal of Operations & Production Management*, Vol. 21 No.4.

Bresciani, J. B., Bianchet, F. S., Zanetti, M., de Mello, J. M. M., Costella, M. F., and Dalcanton, F. (2020), “Kaizen as a continuous improvement system: a case study in an animal nutrition industry”, *Sistemas & gestao,* Vol. 15, Nº.3, pp.213-222.

Briceño Marcano, M., and Romero Tena, R. (2011), "Aplicación del método Delphi para la validación de los instrumentos de evaluación del libro electrónico multimedia “Andrés quiere una mascota”, *Anales de la Universidad Metropolitana*, Vol. 12 No.1, pp. 37-67.

Brunet, A. and New, S. (2003), “*Kaizen* in Japan: an empirical study”, *International Journal of Operations & Production Management*, Vol. 23 No. 12, pp. 1426–1446.

Caffyn, S. and Grantham, A. (2003), “Fostering Continuous Improvement within new product development processes”, *International Journal of Technology Management*, Vol. 26 No. 8, p. 843.

Candido, C. J., and Santos, S. P. (2011), "Is TQM more difficult to implement than other transformational strategies?", *Total Quality Management & Business Excellence*, Vol. 22 No.11, pp. 1139-1164.

Carnerud, D., Jaca, C. and Bäckström, I. (2018), “Kaizen and continuous improvement – trends and patterns over 30 years”, *TQM Journal*, available at:https://doi.org/10.1108/TQM-03-2018-0037.

Chang, A. M., Gardner, G. E., Duffield, C., and Ramis, M. A. (2010), "A Delphi study to validate an advanced practice nursing tool", *Journal of advanced nursing*, Vol.66 No.10, pp. 2320-2330.

Chang, H.H. (2005), “The influence of continuous improvement and performance factors in total quality organization”, *Total Quality Management & Business Excellence*, Vol. 16 No. 3, pp. 413–437.

Chen, J. C., Li, Y., and Shady, B. D. (2010). “From value stream mapping toward a lean/sigma continuous improvement process: an industrial case study”. *International Journal of Production Research*, Vol. 48 No. 4, pp. 1069-1086.

Cronbach, L. J. (1951), "Coefficient alpha and the internal structure of tests", *Psychometrika*, Vol. 16, pp. 297-334

Dabhilkar, M. and Bengtsoon, L. (2004). “Continuous improvements in Sweeden: Results of the 2nd International Continuous Improvement Survey.”. *Proceedings of the 5th International CINet Conference,* pp. 114-126.

Ebrahim, M. I. M. (2019), "Determining Critical Success Factors for Quality and Accreditation through Delphi Technique", *International Journal of Higher Education,* Vol. 8 No. 3, pp. 148-158.

Falzarano, M., and Zipp, G. P. (2013), "Seeking consensus through the use of the Delphi technique in health sciences research", *Journal of allied health*, Vol.42 No.2, pp. 99-105.

Farrington, T., Antony, J., & O'Gorman, K. D. (2018). "Continuous improvement methodologies and practices in hospitality and tourism". *International Journal of Contemporary Hospitality Management*, Vol. 30, No. 1, pp. 581-600.

Furst, S.A. and Cable, D.M. (2008). "Employee resistance to organizational change: Managerial influence tactics and leader member exchange.", *Journal of applied Psychology,* Vol. 93, pp. 453-463.

García-Ruiz, M.E. and Lena-Acebo, F.J. (2018), "Aplicación del metodo delphi en el diseño de una investigación cuantitativa sobre el fenómeno FABLAB", *Empiria. Revista de Metodología de Ciencias Sociales*, Vol. 0 No. 40, p. 129.

Garcia-Sabater, J.J. and Marin-Garcia, J.A. (2009), "Facilitadores y barreras para la sostenibilidad de la mejora continua: un estudio en proveedores del automóvil de la Comunidad Valenciana", *Intangible Capital*, Vol. 5 No. 2, pp. 183–209.

Garcia-Sabater, J.J. and Marin-Garcia, J.A. (2011), "Can we still talk about continuous improvement? Rethinking enablers and inhibitors for successful implementation Valoración e inclusión en meta-análisis de la calidad de los estudios de cohortes y de casos y controles View project FINCODA EU PROJECT -Inno", *International Journal of Technology Management*, Vol. 55 No. 1/2, pp. 28–42.

Gómez-López, R., López-Fernández, M.C. and Serrano-Bedia, A.M. (2017), "Implementation barriers of the EFQM excellence model within the Spanish private firms", *Total Quality Management & Business Excellence*, Vol. 28 No. 7–8, pp. 695–711.

Gómez-López, R., Serrano-Bedia, A.M. and López-Fernández, M.C. (2016), "Motivations for implementing TQM through the EFQM model in Spain: an empirical investigation", *Total Quality Management & Business Excellence*, Vol. 27 No. 11–12, pp. 1224–1245.

González Aleu F.G. and Keathley H. (2013), "Critical success factors for continuous improvement projects: Maturity of the field", *International Annual Conference of the American Society for Engineering Management,* pp. 370–379.

Gonzalez Aleu, F. and Van Aken, E. M. (2016), "Systematic literature review of critical success factors for continuous improvement projects", *International Journal of Lean Six Sigma*, Vol. 7, No. 3, pp. 214-232.

Gordian, B. (2014), "KAIZEN as a Strategy for Improving SMEs' Performance: Assessing its Acceptability and Feasibility in Tanzania", *European Journal of Business and Management,* Vol. 6 No. 35, pp. 79-91.

Grütter, A.W., Field, J.M. and Faull, N.H.. (2002), "Work team performance over time: three case studies of South African manufacturers", *Journal of Operations Management*, No longer published by Elsevier, Vol. 20 No. 5, pp. 641–657.

Gupta, M., Chahal, H., Kaur, G., and Sharma, R. (2010), "Improving the weakest link: a TOC-based framework for small businesses". *Total Quality Management*, Vol. 21 No. 8, pp. 863-883.

Hair, J., Rolph, A. and Tatham, R. (1987), *Multivariate Data Analysis*, 2nd ed., Macmillan. New York, NY.

Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1995), *Multivariate Data Analysis,* Upper Saddle River, New Jersey, Prentice Hall.

Hasson, F., Keeney, S., and McKenna, H. (2000), "Research guidelines for the Delphi survey technique", *Journal of advanced nursing*, Vol.32 No.4, pp. 1008-1015.

Heras-Saizarbitoria, I., Casadesús, M. and Marimón, F. (2011), "The impact of ISO 9001 standard and the EFQM model: The view of the assessors", *Total Quality Management*

& Business Excellence, Routledge , Vol. 22 No. 2, pp. 197–218.

Hyland, P., Becker, K., Sloan, T. and Jorgensen, F. (2008), "CI in the work place: does involving the HRM function make any difference?", *International Journal of Technology Management*, Vol. 44 No. 3/4, p. 427.

Hsu, C. C., and Sandford, B. A. (2007), "The Delphi technique: making sense of consensus", *Practical assessment, research & evaluation*, Vol.12 No.10, pp. 1-8.

Huang, X., Rode, J. C., and Schroeder, R. G. (2011), "Organizational structure and continuous improvement and learning: Moderating effects of cultural endorsement of participative leadership". *Journal of International Business Studies*, Vol. 42 No.9, pp. 1103-1120.

Hussain, S.T., Lei, S., Akram, T., Haider, M.J., Hussain, S.H. and Ali, M. (2018). "Kurt Lewins's change model: A critical review of the role of leadership and employee involvement in organizational change". *Journal of Innovation & Knowledfe,* Vol. 3 No. 3, pp.123-127.

Imai, M. (1986), *Kaizen: The Key to Japan's Competitive Success*, McGraw-Hill, New York.

Inan, G. G., and Bititci, U. S. (2015), "Understanding organizational capabilities and dynamic capabilities in the context of micro enterprises: a research agenda", *Procedia-Social and Behavioral Sciences*, Vol. 210, pp. 310-319.

Jaca, C., Viles, E., Jurburg, D., and Tanco, M. (2014). "Do companies with greater deployment of participation systems use visual management more extensively? An exploratory study.", *International Journal of Production Research,* Vol. 52, No. 6, pp. 17551770.

Jorgensen, F., Boer, H. and Gertsen, F. (2003), "Jump-starting continuous improvement

through self-assessment", *International Journal of Operations & Production Management*, Vol. 23 No. 10, pp. 1260–1278.

Jorgensen, F., Hyland, P., & Busk Kofoed, L. (2008), "Examining the role of human resource management in continuous improvement". *International Journal of Technology Management,* Vol. 42 No. 1-2, pp. 127-142.

Karim, J., Sommers, T.M. and Bhattacherjee, A. (2007), "The impact of ERP implementation on business process outcomes: A factor-based study", *Journal of Management Information Systems,* Vol. 24 No. 1, pp. 101-134.

Kennedy, J., and Hyland, P. (2003), "A comparison of manufacturing technology adoption in SMEs and large companies". In *Proceedings of 16th Annual Conference of Small Enterprise Association of Australia and New Zealand,* pp. 1-10.

Khan, S. A., Kaviani, M. A., Galli, B. J. and Ishtiaq, P. (2019), "Application of continuous improvement techniques to improve organization performance: A case study", *International Journal of Lean Six Sigma*, pp. 2040-4166.

Khoo, H.H. and Tan, K.C. (2002), "Critical success factors for quality management implementation in Russia", *Industrial and Commercial Training*, Vol. 34 No. 7, pp. 263–268.

Ko, P., and Stein, M. (2019), "Design methodologies for continuous improvement". In *International Conference on Applied Human Factors and Ergonomics*, pp. 413-421. Springer, Cham.

Landeta, J. (2006), "Current validity of the Delphi method in social sciences", *Technological Forecasting & Social Change,* Vol. 73, pp. 467-482.

de Leede, J. and Kees Looise, J. (1999), "Continuous improvement and the mini-company

concept", *International Journal of Operations & Production Management*, Vol. 19 No. 11, pp. 1188–1202.

Lee, V. H., Ooi, K. B., Tan, B. I., and Chong, A. Y. L. (2010), "A structural analysis of the relationship between TQM practices and product innovation". *Asian Journal of Technology Innovation*, Vol. 18 No.1, pp. 73-96.

Lewin, K. (1947). *Field theory in social science.* New York: Harper & Row.

Linstone, H. A., and Turoff, M. (Eds.). (1975), *The delphi method*: *techniques and applications*. Reading, MA: Addison-Wesley.

Maarof, M.G. and Mahmud, F. (2016), "A Review of Contributing Factors and Challenges in Implementing Kaizenin Small and Medium Enterprises", in Lean, H.H., Saleh, N.M. and Sohail, M.S. (Eds.), *7th International Economics & Business Management Conference (Iebmc2015)*, Vol. 35, pp. 522–531.

Marin-Garcia, J.A.. and Baustista Poveda, Y. (2010), "The implementation of a continuous improvement project at a Spanish marketing company: a case study", *International Journal of Management*, Vol. 27 No. 3, p. 593.

Marin-Garcia, J.A., Baustista Poveda, Y. and Garcia-Sabater, J.J. (2012), "Etapas en la evolución de la mejora continua ¿cómo viven las empresas el proceso? Estudio de un caso", *Economía Industrial*, Vol. 384, pp. 153–166.

McLean, R. and Antony, J. (2014). "Why continuous improvement initiatives fail in manufacturing environments? A systematic review of the evidence", *International Journal of Productivity and Performance Management*, Vol. 63, No. 3, pp. 370-376.

McLean, R.S. and Antony, J. (2017), "A conceptual continuous improvement implementation framework for UKmanufacturing companies", *International Journal of Quality &*

Reliability Management, Vol. 34 No. 7, pp. 1015–1033.

McLean, R. S., Antony, J., and Dahlgaard, J. J. (2015), "Failure of continuous improvement initiatives in manufacturing environments: a systematic review of the evidence", *Total Quality Management & Business Excellence*, Vol. 28 No.3-4, pp. 219-237.

McLean, R.S., Antony, J. and Dahlgaard, J.J. (2017), "Failure of Continuous Improvement initiatives in manufacturingenvironments: a systematic review of the evidence", *Total Quality Management & Business Excellence* , Vol. 28 No. 3–4, pp. 219–237.

Melao, N. & Pidd, M. (2000). "A conceptual framework for understanding business process and business process modelling", *Information Systems Journal,* Vol. 10 No. 2, pp. 105-129.

Mellahi, K. & Sminia, H. (2009). "Guest editors' introduction: The frontiers of strategic management research", *International Journal of Management Reviews,* Vol. 11 Nº 1, pp. 1-7.

Mendelbaum, G. (2006), "Keep your eye on the ball", *APICS The Performance Advantage*, Vol. 16 No. 1, p. 24.

Meraz Rivera, L. A., Castiblanco Jiménez, I. A., Cruz González, J. P., and Mateo Díaz, N. F. (2021), "Design of a guide tool based on continuous improvement methodologies applicable to SMEs in the dairy sector in Latin American y Caribbean countries". *Ingeniería y Desarrollo*, Vol. 39 No. 1, pp. 86-104.

Mérida, R., Serrano, A., and Tabernero, C. (2015), "Diseño y validación de un cuestionario para la evaluación de la autoestima en la infancia", *Revista de Investigación Educativa*, Vol. 33 No.1, pp.149-162.

Middel, R., Fisscher, O., and Groen, A. (2007), "Managing and organising collaborative

improvement: a system integrator perspective". *International Journal of Technology Management*, Vol. 37 No. 3-4, pp. 221-236.

Middel, R., Op De Weegh, S. and Gieskes, J. (2007), "Continuous Improvement in the Netherlands: A Survey-Based Study into Current Practices", *International Journal of Technology Management*, No. Y, pp. 0-000.

Mira, J. E. B., Padrón, A. L., and Mengual-Andrés, S. (2010), "Validación mediante el método Delphi de un cuestionario para conocer las experiencias e interés hacia las actividades acuáticas con especial atención al Winsurf", *Ágora para la educación física y el deporte*, Vol.12 No.1, pp. 75-94.

Moosa, K., and Sajid, A. (2010), "Critical analysis of Six Sigma implementation", T*otal Quality Management*, Vol. 21 No.7, pp. 745-759.

Moore, M. H. (2005), "Break-through innovations and continuous improvement: Two different models of innovative processes in the public sector". *Public Money and Management*, Vol. 25 No.1, pp. 43-50.

Nunnally, J.C. (1967), *Psychometric theory*, New York, NY: McGraw-Hill.

Oakland, J. S., and Tanner, S. J. (2007), "A new framework for managing change", *The TQM Magazine*, Vol. 19 No. 6, pp. 572-589.

Okoli, C., and Pawlowski, S. D. (2004), "The Delphi method as a research tool: an example, design considerations and applications", *Information & management*, Vol.42 No.1, pp. 15-29.

Oliver, J. (2009), "Continuous improvement: role of organisational learning mechanisms", *International Journal of Quality & Reliability Management*, Vol. 26 No. 6, pp. 546–563.

Oprime, P. C., de Sousa Mendes, G. H., and Pimenta, M. L. (2012), "Continuous

improvement: critical factors in Brazilian industrial companies", *International Journal of Productivity and Performance Management*, Vol. 61 No. 1, pp. 69-72.

Oreg, S. (2006). "Personality context and resistance to organizational change", *European Journal of Work and Organizational Psychology,* Vol. 15, pp. 73-103.

Pillet, M., and Maire, J. L. (2008), "How to sustain improvement at high level: Application in the field of statistical process control", *The TQM Journal*, Vol. 20 No. 6, pp. 570-587.

Raj, T. and Attri, R. (2010), "Quantifying barriers to implementing Total Quality Management (TQM)", *European Journal of Industrial Engineering*, Vol. 4 No. 3, p. 308.

Rich, N. and Bateman, N. (2003), "Companies' perceptions of inhibitors and enablers for process improvement activities", *International Journal of Operations & Production Management*, Vol. 23 No. 2, pp. 185–199.

Rossini, M., Audino, F., Costa, F., Cifone, F. D., Kundu, K., and Portioli-Staudacher, A. (2019), "Extending lean frontiers: a kaizen case study in an Italian MTO manufacturing company". *The International Journal of Advanced Manufacturing Technology*, Vol. 104 No.5, pp. 1869-1888.

Sabater, J.J.G. and Garcia, J.A.M. (2011), "Can we still talk about continuous improvement? Rethinking enablers and inhibitors for successful implementation", *International Journal of Technology Management*, Vol. 55 No. 1/2, p. 28.

Salgado, M. T. C., Larenas, C. D., Aguilera, A. R., and Martínez-Geijo, P. (2013), "Validación del cuestionario estilos de enseñanza (CEE). Un instrumento para el docente de educación superior", *Journal of Learning Styles*, Vol.6 No.12, pp.1-16.

Sanchez-Ruiz, L., and Blanco Rojo, B. (2016), "How do companies implement process

management?: the case of cantabrian companies". *Business, Management and Economics Research,* Vol. 2, Nº.1, pp. 1-9.

Sanchez-Ruiz, L., Blanco, B. and Diaz, E. (2018), "Difficulty in implementing continuous improvement - Rasch measurement analysis", *Business Process Management Journal*.

Sanchez-Ruiz, L., Blanco, B., and Gomez-Lopez, R. (2019), "Continuous improvement enablers: Defining a new construct", *Journal of Industrial Engineering and Management*, Vol. 12 No.1, pp. 51-69.

Sanchez, L. and Blanco, B. (2014), "Three decades of continuous improvement", *Total Quality Management and Business Excellence*, Vol. 25 No. 9–10, available at:https://doi.org/10.1080/14783363.2013.856547.

Sanchez, L. and Blanco, B. (2016), "Review of professional literature from the Hispanic world on the field of continuous improvement: 1990-2011", *Revista Espanola de Documentacion Cientifica*, Vol. 39 No. 1, available at:https://doi.org/10.3989/redc.2016.1.1264.

Scott, J., and Migliaccio, G. (2009), "Embedding a Culture of Continuous Improvement & Lean Manufacturing Across Pfizer Global Manufacturing". *Biofarm International,* Vol. 22 No 8.

Sreedharan V, R., and Sunder M, V. (2018), "Critical success factors of TQM, Six Sigma, Lean and Lean Six Sigma: a literature review and key findings", *Benchmarking: An International Journal*, Vol. 25 No.9, pp. 3479-3504.

Suárez-Barraza, M.F.; Castillo-Arias, I.; Miguel-Dávila, J.A. (2011), "La aplicación del Kaizen en las organizaciones mexicanas. Un estudio empírico", *Revista Globalización, Competitividad y Gobernabilidad*, Vol. 5 No. 1, pp. 60–74.

Suárez-Barraza, M.F.; Ramis-Pujol, J. (2008), “Aplicación y Evolución de la Mejora Continua de Procesos en la Administración Pública.”, *Revista Globalización, Competitividad y Gobernabilidad*, Vol. 2 No. 1, p. 74.

Tarnoff, K. A. (2009), “Using interdisciplinary teams to develop an assessment system and change organizational culture”. *The International journal of engineering education*, Vol. 25 No. 5, pp. 909-919.

Taylor, R. E., and Meinhardt, D. J. (1985), "Defining computer information needs for small business: A delphi method", *Journal of Small Business Management*, Vol. 23 No.2, pp. 3-9.

Terziovski, M., and Samson, D. (2000), "The effect of company size on the relationship between TQM strategy and organisational performance", *The TQM magazine*, Vol.12 No.2, pp. 144-149.

Tezel, A., Koskela, L., and Tzortzopoulos, P. (2021), “Implementation of continuous improvement cells: a case study from the civil infrastructure sector in the UK”. *Production Planning & Control*, pp. 1-23.

Trkman, P. (2010). “The critical success factors of business process management”, *International Journal fo Information Management,* Vol. 30, pp. 125-134.

Upton, D. (1996), “Mechanisms for building and sustaining operations improvement”, *European Management Journal*, Vol. 14 No. 3, pp. 215–218.

Van Looy, A., De Backer, M., and Poels, G. (2011), “Defining business process maturity. A journey towards excellence”. *Total Quality Management & Business Excellence*, Vol. 22 No. 11, pp. 1119-1137.

Vemer, P., Ramos, I. C., Van Voorn, G. A. K., Al, M. J., and Feenstra, T. L. (2016),

"AdViSHE: a validation-assessment tool of health-economic models for decision makers and model users", *Pharmacoeconomics*, Vol.34 No.4, pp. 349-361.

Warwood, S.J.; Roberts, P.A.B. (2004), "A survey of TQM success factors in the UK", *Total Quality Management*, Vol. 15 No. 8, pp. 1109–1117.

Webber, K., Davies, A. N., Zeppetella, G., and Cowie, M. R. (2014), "Development and validation of the breakthrough pain assessment tool (BAT) in cancer patients", *Journal of pain and symptom management*, Vol. 48 No.4, pp. 619-631.

Wittman, H., Beckie, M., and Hergesheimer, C. (2012), "Linking local food systems and the social economy? Future roles for farmers' markets in Alberta and British Columbia", *Rural Sociology*, Vol. 77 No.1, pp. 36-61.

Wu, C.W.; Chen, C.L. (2006), "An integrated structural model toward successful continuous improvement activity", *Technovation*, Vol. 26 No. 5–6, pp. 697–707.

Yamamoto, Y., & Bellgran, M. (2010), "Fundamental mindset that drives improvements towards lean production". *Assembly Automation*, Vol. 30 No. 2, pp. 124-130.