

Is Implementation of Continuous Improvement Possible? An Evolutionary Model of Enablers and Inhibitors

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Abstract

The purpose of this article is to present an evolutionary model of the enablers and inhibitors affecting the implementation and sustainability of continuous improvement. With this aim, a qualitative study using the grounded theory was carried out. Interviews were conducted with managers responsible for continuous improvement in first-tier suppliers in the automotive sector. As a result, two existing lines of research in the continuous improvement literature are synthesized: on one hand, the literature concerning the enablers and barriers associated with continuous improvement sustainability; and on the other, the literature concerning the evolutionary model. © 2011 Wiley Periodicals, Inc.

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1. INTRODUCTION

One of the principal goals of Western firms in the last few decades has been to improve competitiveness through continual incremental improvements in the areas of product quality and process efficiency (Bessant, Burnell, Harding, & Webb, 1993). Within these spheres, continuous improvement, based on the active participation of a company's entire workforce, has been established as a powerful tool to achieve such competitive advantages (Garcia-Lorenzo & Prado Prado, 2003). This is attributable to the human factor which, due to its intangible characteristics (knowledge, attitudes, and abilities), is difficult to reproduce (Jorgensen & Kofoed, 2004).

There is ample documentation of companies' successful implementation of the tools for continu-

ous improvement (Jorgensen, Boer, & Gertsen, 2003; Terziovski & Sohal, 2000), and of their effect on the improvement of various indicators, both productive and nonproductive (Jung & Wang, 2006; Marin-Garcia, Pardo del Val, & Bonavía Martin, 2008). Spain is no exception: Cases of successful implementations can be found across the industry spectrum, ranging from the automotive (Garcia-Lorenzo & Prado Prado, 2003; Marin-Garcia, Garcia-Sabater, & Bonavia, 2009), to food and furniture (Marin-Garcia et al., 2008; Prado, 2001; Prado Prado, 2000).

Nevertheless, continuous improvement must be furthered in Spain, above all among small and medium-sized enterprises (Albors & Hervás, 2006). Even in the automotive sector, where this program has traditionally maintained a widespread presence, continuous improvement still finds itself in a fledgling state and, in many cases, lacking strategic orientation (Garcia-Lorenzo & Prado Prado, 2003).

This situation is most likely a result of what other authors have already pointed out: One of the most important aspects of continuous improvement is the inherent difficulty in its implementation (Bessant et al., 1993). To address this problem, some authors have

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worked toward identifying all of the barriers impeding the sustainability of continuous improvement, as well as those enablers that lead to successful program implementation (Bateman & Rich, 2003; Jorgensen et al., 2003).

Along another line of research, other authors have set forth an evolutionary model of continuous improvement consisting of various stages, the abilities present within each stage, and the sources of failure in the implementation or sustainability of the program (Bessant, Caffyn, & Gallagher, 2001; Wu & Chen, 2006).

The purpose of this study is to present a model that links the evolutionary process of continuous improvement with the barriers and facilitators found in both the literature and the fieldwork conducted. In this way, the literature's two current lines of research will be married, and a model that is easily identifiable and useful can be offered to companies.

This article is divided into five parts. First, the theoretical framework of continuous improvement is developed, including its definition; the barriers to, and enablers for, continuous improvement sustainability; and the evolutionary model. Then, the methodology of our study is outlined, followed by a presentation of the results of the research. Thereafter, the results are discussed vis-à-vis the literature to date. Finally, we present our conclusions.

2. CONTINUOUS IMPROVEMENT

Continuous improvement can be defined as a planned, organized, and systematic process of continued and incremental change. Based on the Deming Cycle, it consists of 4 phases: 1) assessment of the current situation and acquisition of sufficient data to then proffer suggestions for improvement; 2) adjustment and implementation of the selected proposals; 3) verification that the proposals applied are yielding the expected results; 4) implementation and standardization of the proposals with any necessary modifications (Bond, 1999; Terziovski & Sohal, 2000).

To realize these changes, and to ensure that the improvement effected is indeed continuous, the process should be extended throughout an organization and attained by the broadest possible cross-section of company employees (Jorgensen et al., 2003). These activities should also form part of the day-to-day functions of the company and be of a voluntary nature (de Lange-Ros & Boer, 2001). Finally, the aforementioned process should be sustainable, and it should pinpoint a specific

performance indicator for improvement (Rijnders & Boer, 2004). In other words, the aim of continuous improvement is to arrive at a reduction of costs or an enhancement in quality, flexibility, (Bessant et al., 1993), or productivity (Choi, Rungtusanatham, & Kim, 1997).

A characteristic feature of continuous improvement is its achievement of these aforementioned improvements at little cost (Choi et al., 1997). When compared with other change strategies—for example, process reengineering—continuous improvement requires a much lower financial investment. An initial investment is nevertheless required so that the organization's agents learn to participate in the system (de Lange-Ros & Boer, 2001). Finally, continuous improvement is characterized by incremental or gradual improvements. Thus, it redounds to the company's benefit to formalize the most important advancements and, if possible, to inculcate them throughout the organization as a new work routine (de Lange-Ros & Boer, 2001).

In the literature, we encounter research that tackles the issue of the long-term sustainability of continuous improvement and that attempts to identify the obstacles and facilitators affiliated with achieving this goal. These are addressed in the following section.

2.1. Enablers and Inhibitors

Enablers are factors the presence or absence of which in a company may offer a catalyzing effect, thereby promoting the development of continuous improvement. Conversely, barriers impede or dissipate a firm's continuous improvement. The principal manifestations of these two factors were culled from the literature and are as follows:

- Management involvement and strategy (Bateman & Rich, 2003; Bessant, Caffyn, & Gilbert, 1994; Kaye & Anderson, 1999): Involving management is probably the most important and indispensable enabler (Garcia-Sabater & Marin-Garcia, 2008). Company strategy is cited on occasion as an enabler/barrier within the larger context of management support (Bateman & Rich, 2003). Strategy allows the business to concentrate on those activities linked to improvement (Upton, 1996), thereby avoiding “fire fighting,” so often

found in traditional operations management (Bateman & Rich, 2003).

- Setting objectives and the need for metrics: Moran and Avergun (1997) consider the ability to measure as the key to successful and sustainable change. The correct implementation of a system of metrics, and learning from the results obtained, are also important elements (Bateman & Rich, 2003; Drury, 1997; Kaye & Anderson, 1999). Concurrently, establishing objectives remains intimately related to the need for these metrics (Kaye & Anderson, 1999), and the majority of researchers view setting objectives as an enabler for continuous improvement sustainability (Dale, Boaden, Wilcox, & McQuater, 1997; Upton, 1996). These goals should be established based on reliable measurements, centered on results, and congruent with the aims of other areas of the firm (Kaye & Anderson, 1999). Moreover, it is recommended that these aims be agreed to, or at least taken on, by the team leaders (Lawler, Mohrman, & Ledford, 1992).
- Leadership management—the continuous improvement (lean) manager: This element is different from management involvement, if we understand leadership to be exercised by all of a firm's supervisors and middle managers, not only by the directors. This touches on a frequently cited element about which there is considerable unanimity of criteria among researchers (Bateman & Rich, 2003; Dale, Boaden, Wilcox, & McQuater, 1999; Garcia-Sabater & Marin-Garcia, 2008; Kaye & Anderson, 1999; Upton, 1996). The effective, or poor, exercise of leadership can equate to an enabler of, or a barrier against, continuous improvement (Dale et al., 1997; Upton, 1996). Concomitant with this issue of leadership management, we can discern from the literature the importance of the role of the continuous improvement (lean) managers, who act as change agents (Jorgensen & Kofoed, 2004). Christiansen (2005) argues the advantages of relying on a full-time lean manager for continuous improvement projects. In addition, he compares this figure with the Black Belts or Master Black Belts of Six Sigma.
- Worker involvement: This factor is one of those most habitually commented on (Bateman, 2005; Jorgensen et al., 2003). The operators make up part of the improvement process: They offer ideas, execute the proposals, and, in some cases, implement the improvements (Jorgensen et al., 2003). Researchers differ on this point, and examples of their divergent viewpoints merit mentioning. Tennant, Warwood, and Wu (2001) and Dale and colleagues (1997) hold that process improvement can cause workers to fear for their job security, thereby retarding their involvement. Other researchers contend that the employees trained and involved in continuous improvement are frequently sought after by other firms that value the employees' acquired skills (Bateman, 2005; Bateman & Rich, 2003). Therefore, in lieu of fearing for their jobs, these workers have greater possibilities of finding themselves choosing among various offers.
- Resources: One of the characteristics of continuous improvement is its low cost. Some resources, however, are required for sustained continuous improvement (Albors & Hervás, 2006; Bateman & Rich, 2003; Dabhilkar & Bengtsson, 2007; Dale et al., 1997; Middel, op de Weegh, & Gieskes, 2007). Certain financial resources are needed, among other things, to defray the cost of the time devoted by the employees (workers as well as managers) to the improvement program. For continuous improvement to be maintained over a long duration, the workload of these activities should be considered part of the daily work routine, and not as an activity conducted outside of normal business hours (Garcia-Sabater & Marin-Garcia, 2008).
- Clarification and creation of new structures: Companies typically possess departments such as process, engineering, quality, and production—often with overlapping functions. In these cases, it is expedient to clearly define these functions so as to circumvent conflicts that can stymie a program while still in its early stages. In implementing a continuous improvement program, it is likewise advantageous to establish team structures within the workplace (Lawler, 1996). These teams can be transversal, made up of members from across each of the various departments participating in the improvement project (Berger, 1997),

or they might be semi-autonomous (Lawler, 1996). These structured groups should be supported by a tier of higher-level teams capable of clearing any potential obstacles encountered or monitoring the action plans proposed by these base groups (García-Arca & Prado-Prado, 2008). The leaders or coordinators of the assorted teams should be selected based on their knowledge of the processes involved and of the tools necessary to resolve the problems as a group (Bessant et al., 1994).

- Methods for expanding continuous improvement: Garcia-Sabater and Marin-Garcia (2008) point out that an important enabler for sustainability lies in a firm's creation of its own methodology (e.g., Toyota Production System, Ford Production System, and similar companies) to facilitate the diffusion of its practical improvements throughout the rest of the company. This manual of good practices allows a standardization of these improvements and their application, not only in the other departments, but also in areas of future expansion within the company.
- Selection of continuous improvement projects: It is important that success be achieved in the first improvement projects (Bessant et al., 1994; Dale et al., 1997); sometimes it is advisable that the first action be a focused improvement, where the objectives and projects are set by the company's directors and assigned to different groups of workers. This way, those processes deemed critical to the firm are guaranteed attention (Kaye & Anderson, 1999; Upton, 1996).
- Cultural aspects: a company's culture is a determinant of continuous improvement (Bateman & Rich, 2003; Bonavía Martín, 2006). Continuous improvement will be received favorably in nontraditional cultural settings (Bonavía Martín, 2006), where the people (directors and the workers themselves) manifest less resistance to change (Dale et al., 1997). Also of note, when workers are older or have spent many years with companies with a traditional culture, greater effort is necessary to deploy improvement programs.
- Training and abilities: Some authors designate a lack of training as a barrier (Bateman & Rich, 2003). Furthermore, Dale and colleagues (1997) identify the lack of problem-

solving skills, along with low-quality management practices, as central barriers to continuous improvement sustainability.

2.2. Evolution

It seems clear that the implementation and, above all, the sustainability of continuous improvement cannot be realized in one fell swoop (Bessant et al., 2001; Jorgensen, Boer, & Laugen, 2006; Wu & Chen, 2006). To account for this reality, evolutionary models that consist of various stages of development have been proposed. One of the most referenced is that formulated by Bessant and colleagues (2001), wherein five levels characterize the evolution of continuous improvement programs within companies:

- Level 1 (Pre-continuous improvement): This type of improvement is characterized by some interest in the concept of continuous improvement, but implementation is quite basic and scanty.
- Level 2 (Structured continuous improvement): A formal commitment is in place to build a system that can advance continuous improvement throughout the firm.
- Level 3 (Goal-oriented continuous improvement; focused improvement): A procedure is in place to interlace continuous improvement activities established at the local level, with the company's broader, global strategy.
- Level 4 (Proactive continuous improvement): An effort is made to delegate autonomy and power to personnel, via teams, to select and manage their own improvement projects.
- Level 5 (Full continuous improvement capability): High levels of experimentation exist on the part of all of an organization's employees.

The progression from one level to the next is realized within an organization in accordance with the specific abilities acquired. These abilities are arranged in the following order: "understanding continuous improvement," "getting the continuous improvement habit," "focusing continuous improvement," "leading the way," "aligning continuous improvement," "shared problem-solving," "continuous improvement of continuous improvement," and "the learning organization" (Bessant et al., 2001). Ability acquisition is manifested through characteristic behavior patterns (Bessant et al., 2001).

The evolutionary model has been corroborated by quantitative studies confirming this hierarchy of stages and the growing impact of continuous improvement on business performance indicators, concomitant with the advancement to subsequent stages (Jorgensen et al., 2006).

Nonetheless, this model does possess three limitations (Wu & Chen, 2006): 1) A stable framework is required to sustain an activity, 2) it does not explain how the abilities cited as necessary for achieving this evolution are to be obtained, and 3) it does not take into account that any activity manifests a cycle of introduction, growth, maturity, and decline.

The model defined by Wu and Chen (2006) establishes an evolutionary scale consisting of the same stages as the model by Bessant and colleagues (2001). As the latter is predicated on behavioral acquisition, that of Wu and Chen rests on three elements: promotion, models and tools, and problems. Moreover, these two researchers also analyze some possible causes of failure in each stage.

Although the literature concerning enablers and barriers attempts to provide guides for the implementation and sustaining of continuous improvement, only Bessant and Francis (1999) link these two steps to the levels. Moreover, they articulate some of the key elements in achieving and sustaining Level 3: idea management, reward and recognition systems for these suggestions, resources (employee time dedicated to continuous improvement), knowledge capture and management, top-to-bottom deployment of strategic objectives to even the lowest levels of the company, and the need for measurements. It is worth stressing that these results were derived from one case-analysis of a single company. Therefore, a study is needed that synthesizes the enablers and inhibitors described in the literature with the various stages of the evolutionary model of continuous improvement.

3. AIMS AND METHODOLOGY

The purpose of this article is to further develop the predominant theoretical model that defines the evolutionary progression of companies taking part in continuous improvement. In particular, our aim is to do the following:

- Set forth the principal elements that hamper or expedite the implementation and evolution

of continuous improvement in each one of its stages.

- Identify the basic processes put into play by firms to resolve the problems stemming from their implementation.

To meet these dual aims, our research used “Grounded Theory” (Glaser & Strauss, 1967). The result of Grounded Theory must be the demonstration of the main variables that explain how the group observed and solved their problems (Cutcliffe, 2005). This means that the results identify and form the basic processes that the people use to solve the key problems identified (Cutcliffe, 2005). In this sense, it is not sufficient to describe the phenomena without including conceptual elements. If one wishes to follow the guidelines of Grounded Theory, and not only to analyze qualitative data, it is necessary to take a step further than just a brief description, to arrive at a conclusion, and to explain what happens (Cutcliffe, 2005).

To this end, the following procedure was followed (Charmaz, 2006): collection of data via theoretical sampling, initial codification, oriented codification, lifting the codes to provisional categories using a theoretical codification, and, finally, the recording of the results obtained.

This type of research sample is quite different from the statistical or random samples commonly used in quantitative studies. An essential feature of Grounded Theory research is theoretical sampling, a procedure whereby researchers consciously select additional cases to be studied according to the potential for developing new insights or expanding and refining those already gained (Pace 2004). The sample was chosen based on the following:

- Companies were introduced to the concepts of continuous improvement around the year 1999–2000–2001.
- Companies are first-tier suppliers of the automotive industry.
- Companies have, or at least they believe they have, a continuous improvement program in progress in the company.

In the sample there are multinational companies with a strong presence in the global automobile market and national companies with one or two plants in the province of Valencia. In our case, a total of 14 interviews (in 14 companies) were conducted between February and June 2008. The decision to study companies that

started their continuous improvement actions some years before was made to analyze either the reasons for their success (and how they overcame the problems that arose during the Continuous Improvement evolution) or the reasons for their failure (if this was the case). All interviewees were charged with some responsibility within the continuous improvement context. In four cases, plant managers were canvassed, although the majority of those interviewed were responsible for continuous improvement in their respective operation. Four were dedicated full time to continuous improvement, and six divided this responsibility among other functions.

The interview protocol followed was highly semi-structured. Throughout the interview, a flexible and dynamic style was used to obtain information without conditioning or restricting the responses of persons interviewed (Pace, 2004). The type of questions asked included “What continuous improvement programs exist?” “What are the keys of success/failure?” and “What would you change?”

Interviews were recorded and transcribed. Afterward, codes were developed representing the information contained in the interview (Glaser & Strauss, 1967). In vivo and focalized codifications were used. The former offers the advantage of investing a code with the content of participants’ points of view and actions, which subsequently serves as the starting point for later category development (Charmaz, 2006). Focalized codification allows an extraction of the most frequent or most significant codes from the overall data (Charmaz, 2006). Codification of the transcriptions was done using the program Atlas.ti (version 5.2).

4. RESULTS

This section presents the enablers and the barriers identified from our fieldwork. Both elements are grouped according to the five evolutionary levels described in work by Bessant and colleagues (2001). While the barriers must be eliminated before a firm might advance to the succeeding stage, the role of the enablers is to avoid the failures described in each phase.

To classify an enterprise’s position within this evolutionary model, the characteristic behavior patterns associated with each stage were used. Of the 14 firms visited, two were found to be in the first level, five in the second, four in the third, and three in the fourth.

No firm was found to fulfill the requirements of the fifth level. Nevertheless, it was possible to identify important aspects found absent in the companies in the fourth stage, along with various enablers required to progress to the final stage.

4.1. Level 1: Pre-Continuous Improvement

Some of the people interviewed declared that one of the first tasks to be accomplished was the clarification of hierarchies and functions: “in the end, there are organizations and para-organizations. . . and then, those who have influence aren’t there”; “many times the real organization charts don’t correspond to the official organization charts, and this reveals a problem.” In this phase, clarifying functions is necessary: As important changes will ensue, without a clear structure, conflicts may arise.

Within those companies exhibiting Level 1 characteristics, worker participation is limited to following the orders of a middle manager or consultant. These managers, however, considered it important that these workers be familiar with, and understand, the enablers being introduced: “A more important change. . . was the issue of the measurables, in the plant, a standard graph, so that the workers were able to see the evolution of the company’s productivity, the machines’ productivity, by group, by work shift and so on; [metrics are something] fundamental to seeing if there is improvement, as well as seeing how much improvement.” In addition, the companies commented on the importance of training, not only for persons leading continuous improvement, but for the workers as well: “Controlling the training is also important. . . You can have machinery that is more than sufficient when compared to your competition, but you might not have sufficiently trained employees to get the most out of it”; “with training everything is better.”

One of the most critical barriers observed was a lack of strategy: “we have been very focused on growth, more than on improvement.” Furthermore, the failure of many of the firms to progress to more advanced stages could be ascribed to an insufficient focus on continuous improvement; in this sense, one of the principal problems was committing time to “fighting fires”: “Improvement is the last activity. When you don’t have time, the priority is putting out fires, solving problems, and then, improvement.”

4.2. Level 2: Structured Continuous Improvement

At this stage, employee participation must be encouraged, and, to this end, companies use incentive systems, with the incentives tied to the improvements obtained: “. . . to get people to promote or drive improvement, you have to give something in exchange. And this recognition, monetary or otherwise, needs to be linked to the improvement achieved.” There are not only material incentives, but also recognition on the part of management: “. . . tickets to football games; XSP t-shirts, which is what we call the continuous improvement system; personal recognition; something that acknowledged by management so that the workers see that it's not just my thing.”

All persons interviewed affirmed the necessity, at this stage, of giving feedback for every improvement suggestion and, in some cases, they noted the advisability of implementing almost all of the projects, despite their dubious utility or potential for returns: “at first, our responsibility is to work like mad applying the program to anything and everything. We did projects to improve the lighting. Today that wouldn't be considered a project”; “improvements which have only a minimal impact, sometimes it's worth it to execute them, because it's a way to motivate your personnel, which is itself an important step, and you're motivating them to offer some type of ideas.” The workers are aware that their proposal might be rejected, but each idea should receive a response: “you force yourself to look at it and to respond to it.” This way, the employees accept that their effort has been considered and that management will assign resources to their proposals: “. . . some moves were considered which required investment, others no, but sure, the workers themselves saw that no money was given, not even for small improvements, and then they told you that if the bosses didn't give any tools to do it, they would throw in the towel.”

With regard to the group suggestions programs, many interviewees suggested that those employees selected for the first groups should be, above all, younger, or possess continuous improvement experience: “the peoples' average age can't be too high, to make things easier”; “older people show more wariness, the younger ones participate more. To change, age is the problem.” Thus, certain resistance to change can be avoided, as the more mature workers are generally reluctant to change and can, therefore, cripple or burden the initial programs. The most disinclined workers should

be incorporated gradually into continuous improvement, but only once the program's successes are clearly evinced. What is more, employees need to be convinced that process improvement, including the issues of productivity, will not be followed by worker layoffs: “I want my people to understand that the goal of all of this is not to be able to let one guy go, which is one of the worst things that could happen.”

Moreover, to raise the awareness of the entire workforce—and that of some members of management—it is important that the start-up processes be well managed. To get the workers on board, the project should be simple and derive improvements that benefit them directly: “explaining to people in what ways they themselves are going to benefit.” Concurrently, the project should attain visible management objectives (i.e., quality improvements, productivity, or flexibility) so as to garner greater management involvement in case they are skeptical of the “new” work philosophy: “it doesn't need to be an act of faith”; “bring a return, a real return, so that the guy will say, Wow!”; “the most important thing is for management to see that this is an investment.” Also, the start-up should not be exceedingly ambitious; in these initial stages one cannot afford to fail: “another mistake is to diversify. Forget everything else and focus every resource on one area, the smallest one possible; success is imperative.”

It is recommended that the system be assigned to a lean manager, one who can organize and train the personnel in the incipient continuous improvement program. This leader is usually affiliated with the processes or production department: “first, there needs to be a driving force, one who takes the idea and follows it through. . . sometimes it's a person from within a department—engineering or quality—who truly believes in this and pulls it along and then, if they have management support, it can be done quickly.” Although this person does not need to be committed full time to continuous improvement, he or she should believe in it: “this figure is necessary; this lean leader is usually young, shows initiative, is knowledgeable about the product and the factory, and must want to learn”; “someone is needed who can manage, can put things into motion, but this doesn't mean he should do everything himself.” In this stage, many times the lean managers are people from outside the company who facilitate the implementation and monitoring of the methods: “they are the advisers, the ones who go to the meeting and enforce the continuous improvement criteria in whatever's being done”; “we are there to help,

for example, a shop has a need and they come tell us what needs help. . . we help people, the shop team, to carry out that task.”

4.3. Level 3: Goal-Oriented Continuous Improvement

One of the enablers found at this stage is that of the full-time lean manager. In contrast with the previous level, now this manager works full time on continuous improvement tasks: “it’s very clear to me: you need a person devoted to this, not a department, . . . but you need one person who’s always devoted to improvement”; “the key is to have one designated person”; “you need a team assigned exclusively, with no excuses, and which should devote itself to improvement”; “essential to everything, at every step; and even though, in theory, this figure will disappear, the reality is they won’t.”

Moreover, persons interviewed stated that the aforementioned lean leader should report only to management and not to other departments: “they should have a hierarchical position, at the minimum, at the same level as the directors of the other departments.” If they report to other departments, problems could arise from conflicts of interest: “and having to report to the production department, they can’t get into other things, they butt heads with the guy from production and they have to back off.”

This stage is characterized by firms beginning to interlace their strategic objectives with the aims of continuous improvement: “normally [the targets] come from management, from the department heads. Depending on their strategy, their annual policy deployment, there are certain activities which must be implemented that year. . . , there are activities which the committee wants to launch and. . . an annual workshop program was set up, and this program is still continuing”; “diagnostics are done, let’s say, by management, I don’t mean the managing director, but rather all of the managers, looking at the things that need improvement during the current year.”

One observes that a structure of continuous improvement begins to emerge within enterprises: Teams become permanent, with firmly established lines of communication between them and the lean manager or a certain department head. These groups begin to attain stability, as their working members remain unchanged. Cross-departmental groups become increasingly common: “. . . because people don’t like change, once we integrated the human production team, the

implementation problem became much more manageable”; “it was successful because heterogeneous groups were created, with each one of these minicompanies indirectly introducing other personnel into the mix”; “they need to work steadily with members from across all departments, which is not to say that everyone needs to attend every meeting”; “if the team has, in the same team, one person who can solve problems, everyone becomes more involved.”

Also related to this issue of involvement, differences begin to emerge in this stage, versus previous stages. Economic incentives now cease to be as important, and personal and public recognition take precedence: “we used to have monetary incentives for suggestions and we stopped them, and the programs continued working, in fact, we’ve expanded them”; “management thought that, at the time, the incentives would become intangible. Now the incentives consist of congratulating the employees when they deserve it; in other words, they are no longer material incentives but rather management recognition”; “at the beginning we argued a lot about this and we thought that it would not work in Spain, . . . but it has, indeed, taken root.”

4.4. Stage 4: Proactive Continuous Improvement

All those companies that had progressed to this level possessed a sound structure that allowed them to develop the full potential of continuous improvement: “that’s why I’m telling you that the key is structure and then building the structure, a sequence of meetings”; “human organization and a plant hierarchy.” Among those enterprises participating in this study, this organizational structure was composed of at least two levels, always contingent on the enterprise’s size. Three-tiered structures were observed in some companies. The first tier consisted of a team tasked with various functions related to continuous improvement: directing, supporting, and checking that everything was proceeding in accordance with the plan. This team should be composed of members of upper management alongside either persons tasked with continuous improvement or department heads: “You have to leave one or two lean managers linked to the head committee—perhaps two or three people, but no more—at the same reporting levels as the chief of the production department”; “the lean champion is a representative of this group, the group with the manager, the head of quality, myself, etc.”

Below this group are found the actual work groups, composed primarily of workers: “we have the plant divided into work groups, into GAPs [English: Autonomous Production Groups]”; “GAP is the base of the human organization.” Other companies use the term “natural work teams” or other terms of a similar nature. There is the possibility of inserting another tier of teams between these two group levels. These units can facilitate the communication of the strategic decisions, and they can be tasked with eliminating barriers and overcoming obstacles on the path to realizing the action plans: “they are the ones who have to eliminate any obstacle that comes along.”

The constituent members of these teams tend to be employees from different departments, along with members of the base teams: “each minifactory has a group we’ll call UAP [English: Autonomous Production Unit], the head of the UAP is at the same level as the department heads”; “each continuous improvement team has representatives from the work teams, a supervisor, a facilitator, manufacturing engineers, and additional personnel depending on their needs”; “75% of the workforce is integrated into each UAP”; “in these groups there are personnel of all types: office people, production people, the idea is that they are homogeneous [sic], that there are people from different areas, but there are more people from production, maintenance or quality.”

Every team making up the continuous improvement structure should meet periodically to track certain metrics and assess the progress of their respective projects, part of the pursuit of their objectives: “GAPs... meet for five minutes every day”; “It came up in a UAP meeting, which lasts 60 minutes and takes place every week, in which the metrics are reviewed with the coordinators”; “they meet every 15 days, the others every 30 days, and each minifactory meets monthly with their teams.” Of course, workshops and longer meetings (or meetings that do not adhere to this schedule) are conducted when necessary.

This structure is used in the deployment of the objectives throughout the organization. In contrast with the previous stage, in the fourth stage, the group goals should be selected by the teams, but always aligned with the company’s strategy: “We set goals, discuss budgets, analyze the plant and you analyze where you’re strong and where you’re weak... this way goals are set and I accept them, and if I don’t accept them I discuss them and from there we lay out the coming year, and that’s how we get our goal”; “what we do is free up three or

four workers, plus the GAP leader and the supervisor, plus ourselves, and we analyze the issues, you look at the budget and we see what can be done”; “the plant needs to present some goals, then those goals need to be transmitted to each unit and each unit needs to do a break-down of the goal, . . . and with these goals you need to do a deployment and take them to the continuous improvement teams, to see how they can help you achieve them.” Nevertheless, it should be made clear that this process remains quite intricate: “each manager should communicate these goals to each continuous improvement team so they can help him achieve them, and this part is complicated, very complicated.”

All the firms that had progressed to this stage were equipped with a Production System: “the methodology is what leads to sustainability”; “what’s important is following the methodology.” These methodologies do not simply reveal the typical combination of the classic tools of adjusted production, but rather they integrate the tools and the form in which solutions are arrived at so that everyone achieves them in the same way. “The good thing about the program is that it helps you to define the procedure and you have to follow it, and without it, well, you go about tweaking things and then it doesn’t turn out as well”; “the program forces you to pursue some solutions and not others, to identify who you will assign, and then, who will push through this solution, how you ensure that the solution has been implemented, and how the workers are following it.”

4.5. Level 5: Full Continuous Improvement Capability

None of the companies visited was found to have advanced to Level 5. From these interviews, however, concepts emerged that allowed the discernment of some possible enablers to sustain continuous improvement at this level.

Some of the interviewees spoke of extending the best practices throughout the firm, above all if there is more than one manufacturing plant. They doubted the viability of this action, however, as the diffusion of these best practices is not always easy between companies, even when they are part of the same group. They did hold that this could be a worthwhile exercise to see that the culture is the same across all of the plants and not only manifestations of the whims of those in charge: “after all this, we sent a report to the company, we arranged videoconference presentations of the best projects. The aim of all this, in theory, is to share our

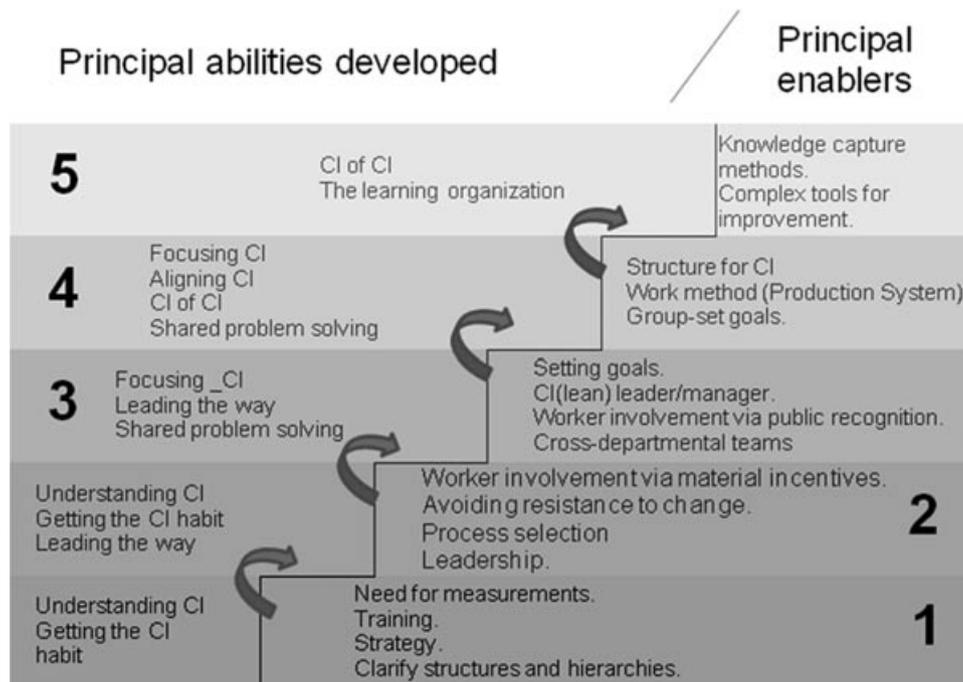


Figure 1 Enablers and abilities introduced at each level.

best practices. In my view, it doesn't work this way: things are done differently. But, it is useful because they see that it's true what they say that everyone talks about the same thing."

Others also spoke of extending the most advanced tools to the workers, to study the problems in greater depth: "the group presses me to use SixSigma, but I wouldn't have employed it until all 400 workers participated in the improvement program; that really offers added value, a much more valuable work culture."

Figure 1 offers a summary of the enablers identified at each stage alongside the principal abilities developed in each of the stages. Although not shown in the figure, those behaviors and abilities developed by companies in a previous stage remain present as the business continues to evolve.

5. DISCUSSION

The continuous improvement enablers develop the behaviors associated with each one of the abilities (Bessant et al., 2001) and reduce the possibilities for failure that can be found at each of the stages (Wu & Chen, 2006).

At Level 1, which is a preliminary step to beginning the implementation process of continuous improvement, indicator measurements need to be taken. Without these metrics, success is impossible (Drury,

1997; Moran & Avergun, 1997). This enabler has already been identified as key by other authors (Kaye & Anderson, 1999). Without metrics, one cannot discern whether improvement is occurring. Our sample deviated somewhat from the ideas of Bessant and Francis (1999), who set this need for metrics as an enabler for Level 3.

This level is also associated with training (Bateman & Rich, 2003; Dale et al., 1997), both for workers and for those technicians responsible for problem solving. Wu and Chen (2006) cite inadequate problem-solving skills as one of the sources of failure. Training, therefore, is indispensable. These researchers also attribute failure to a lack of initiative, adding that people tend to be too distracted by other issues. For this reason, the organization's strategy must be necessarily oriented toward improvement (Bateman & Rich, 2003; Upton, 1996; Wu & Chen, 2006).

All of the facilitators commented on in this stage center on the behaviors associated with the abilities "understanding continuous improvement" or "getting the continuous improvement habit" (Bessant et al., 2001).

In Level 2, one of the factors impeding success is negligible workforce participation (Wu & Chen, 2006). To overcome lagging employee involvement, incentive programs may be offered (economic, cash payment or otherwise). These incentive systems also facilitate

transformation of the workplace culture and help mitigate the overall resistance to change (Dale et al., 1997). This resistance can likewise be weakened by beginning with the less reluctant workers.

Some firms also implement certain acts of public recognition to exhibit the most interesting or ambitious projects. As a result, employees become more involved (Upton, 1996), and the company culture begins to evolve (Bessant et al., 1994; Kaye & Anderson, 1999).

Another important aspect is the selection of projects focused on critical processes (Bessant et al., 1994; Dale et al., 1997; Kaye & Anderson, 1999). Overly complex projects in the initial stages can lead to workers—as well as managers—abandoning the program (Bateman & Rich, 2003; Bessant et al., 1994; Garcia-Sabater & Marin-Garcia, 2008; Kaye & Anderson, 1999).

The figure of the lean manager begins to take on importance (Garcia-Sabater & Marin-Garcia, 2008). As continuous improvement becomes inculcated, there should be increasingly more projects and more people involved; consequently, a person responsible for overseeing these activities is needed. Selecting a person to fill this position should be done with care: His or her ability to motivate employees and his or her own belief in the system are fundamental to success (Upton, 1996). Ineffective leadership can be seriously inhibitive to the evolution of continuous improvement (Dale et al., 1997).

At this level, behaviors related to “understanding continuous improvement” and “getting the continuous improvement habit” should also be fostered, as continuous improvement has not yet achieved broad extension throughout the company (Bessant et al., 2001).

As Bessant and colleagues (2001) show, Level 3 is characterized by a structured development of strategic aims, and the direction of continuous improvement initiatives are evaluated vis-à-vis these objectives. At this level, failure is still possible if only the symptoms of problems are tackled, leaving their underlying causes untouched (Wu & Chen, 2006). This can be attributed to the tendency of teams to meet to take care of immediate problems, but not their origins. Thus, setting objectives becomes necessary (Dale et al., 1997; Upton, 1996). Strategy, likewise, allows greater consistency of action and reduces the risk of devoting time to “fighting fires” (Bateman & Rich, 2003).

Management and the department heads should set objectives jointly. To accomplish this task, a structure should begin forming that allows this to progress

fluidly (Garcia-Sabater & Marin-Garcia, 2008) as the first cross-departmental teams begin to appear (Garcia-Sabater & Marin-Garcia, 2008). At this point, the lean manager is frequently employed full time (Christiansen, 2005), and his or her work is considered essential.

With regard to offering compensation for the best suggestions, another discrepancy arises vis-à-vis the ideas of Bessant and Francis (1999). At this stage along the evolutionary path, all firms have eliminated material compensation and only retain public recognition as an incentive.

At the third level, those behaviors related to “focusing on continuous improvement,” “leading the way,” and “shared problem solving” are cultivated (Bessant et al., 2001).

The fourth level is characterized by providing autonomy to the established working groups in a manner that makes them more proactive (Bessant et al., 2001). At this level, the development of a structure that supports this effort can be considered worthwhile (Garcia-Sabater & Marin-Garcia, 2008). As an example of this new structure we might consider a team composed of heads of department, with the power to eliminate hurdles; to analyze the most ambitious projects quickly and respond promptly to the base teams; and to direct the continuous improvement activities, thereby ensuring that they remain in line with the strategic objectives (Bessant et al., 2001).

An additional pitfall at this level lies in the inadequacy of methods to arrive at and resolve the root causes of problems. This weakness is overcome through training and practice (Dale et al., 1997; de Jager et al., 2004). Although it might not have been cited explicitly by the persons interviewed, this training should not cease at any stage.

Enterprises at this level were equipped with a methodology that allowed them to standardize and capture the knowledge acquired by each one of the teams (Bessant & Francis, 1999; Garcia-Sabater & Marin-Garcia, 2008). In contrast to the findings of Bessant and Francis (1999), however, this was not found to be associated with the third level, but rather the fourth.

At the fourth level, behaviors linked with “aligning continuous improvement,” “focusing continuous improvement,” and “shared problem solving” were cultivated. Moreover, the methodology also made “continuous improvement of continuous improvement” possible.

The fifth stage is defined by learning which encompasses the entire organization and which seeks to spread the best practices to workers, directors, or staff in departments such as marketing, research and development (R&D), or finance—in addition to the production, quality, and logistics departments (Wu & Chen, 2006). It was observed that firms at Level 4 incorporated people from all areas to track results. Perhaps focusing more on those aspects related to improvement could have better used these resources.

The methodology should allow the capture of knowledge and then its diffusion to other areas within an organization (Garcia-Sabater & Marin-Garcia, 2008). Moreover, some of the persons interviewed suggested the introduction at this stage of more complex problem-solving tools to the workers as an interesting improvement mechanism.

The fact that no company had reached Level 5 could be attributed, in our opinion, to multiple factors, one of which was the prevalent view within these organizations that there was no need to move forward to the final stage. The system worked and it could not be improved: “the system is good, it could be polished a bit, but we believe that it works well now”; “The aim of all this, in theory, is to share our best practices. In my view, it doesn’t work this way: things are done differently.”

The abilities found to be most honed at this level were the “continuous improvement of continuous improvement,” in which the methods for expanding the continuous improvement from the preceding level play an important role; and “the learning organization.”

Management support (Bessant et al., 1994; Kaye & Anderson, 1999) was not found to be associated with any one level because every person interviewed in the study, regardless of the company or its evolutionary stage, identified this factor as key: “the support of management, which is the fundamental thing”; “management needs to be the primary impetus.”

Another facilitator not confined to a single level was the importance of resources (Albors & Hervás, 2006; Dabhilkar & Bengtsson, 2007; Dale et al., 1997). Be they economic or human, the value of these resources was noted at every level: “the worker needs to see that money is being spent on things that didn’t get any money before”; “Money and the workers’ time are the resources we need.”

The gradual incorporation of facilitators into the system assists in avoiding the problems raised by Wu and Chen (2006). These authors observe that new “regenerative inputs” must be introduced at the appropriate

moment to initiate a new process of growth—when an activity begins to reach a period of decline, following its growth and maturity. When implementing any enablers, it is also apropos to keep this process in mind. Although behaviors might be achieved relatively swiftly, it is advisable to let them mature before making the leap to the next stage. Likewise, just as failure must be avoided in group improvement projects (Bessant et al., 1994; Dale et al., 1997), so too should failure be avoided in attempting to progress prematurely to the successive evolutionary stage of continuous improvement.

6. CONCLUSIONS

Following many years of academic research and experience in applying continuous improvement to different industry sectors, there is now a greater understanding of the program’s enablers and inhibitors. In addition, the evolutionary stages, along with their associated abilities, have likewise been defined, thereby allowing a firm to ascertain at which level it finds itself.

With this article, this understanding is furthered by the following contributions:

- The principal enablers and inhibitors already identified throughout the literature are summarized. Moreover, those companies interviewed perceived these elements as important, thereby corroborating the proposals put forth by others.
- A relationship is established between enablers, inhibitors, and the different stages of the model proposed by Bessant and colleagues (2001). Consequently, a sequential order of enablers is derived to allow implementation of continuous improvement.
- It is shown how putting these enablers into effect can contribute to the development of behaviors associated with different abilities.

At a practical level, this study offers firms an implementation sequence that can allow them to progress through the various levels of continuous improvement and, furthermore, maintain its sustainability. Until now, the academic literature had only offered lists of enablers and inhibitors, more or less broken down, minimally integrated, and with different clarifications by each author. This article merges the enablers with the evolutionary process. Therefore, executives and directors are able to diagnose at which level their firm is

situated and then proceed to effectively deploy continuous improvement by activating the appropriate enablers to thereafter achieve the competencies that will permit the firm to progress to the following stage.

The principal limitation of this study is that every company interviewed was a primary supplier to the automotive industry, and all were located in the same region. We think that the results can be, up to a certain point, broadened, however; the sampling included diverse types of companies—multinational and national, multi- and single-plant—with a variety of production processes (some automated, others manual). Nevertheless, this study should be conducted at the international level to enable its results to be broadened across the entire automotive sector while, simultaneously, offering the possibility of obtaining data from companies in other sectors. All of this could be realized in future research projects where, moreover, conducting a quantitative study would serve to substantiate this proposed model and examine its applicability to other sectors as well as other countries.

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