The problem of using hierarchy for implementing organisational innovation

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Abstract: Neither science nor practice seems to regard the implementation of a continuous improvement (CI) *program* as a problematic organisational innovation. Many organisations do not regard CI implementation as a major change and tend to use their existing hierarchy to organise and manage the process. There is no specific literature on CI program implementation *processes*. This article shows that the implementation of a CI program is a non-trivial and actually problematic process, especially if the program is implemented using the existing hierarchy. Two case studies are presented to illustrate and discuss the problems related to this strategy, showing that the hierarchical approach is not suited for furthering, detailing and implementing the general ideas behind CI. Yet, this is exactly what this design-and-learn type of organisational innovation needs. In our case studies, all the people involved need to learn about the CI program, appreciate its value and develop their role in it. Using the existing hierarchy does not seem to enable this. Rather, CI appears to need what could be called, 'participative embedding'.

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1   Introduction

In the practice and theory of continuous improvement (CI) many indications can be found of problems that arise during the implementation of improvement programs and possible factors that explain these problems. However, no comprehensive theory is available to support companies to manage CI implementation successfully. In practice, many implementations proceed slowly or lead to a complete failure. A Euro-Australian survey with 1048 responding companies made clear that, on average, the 'maturity' of CI activities grows with the number of years that the companies have been engaged in CI activity [1]. However, whilst the responding companies had been engaged in CI for more than four years on average, only 21% had achieved a widespread, sustained CI process, 32% had *initiated* a systematic application, whilst the remaining 47% were only aware of the concept or were in the process of developing some CI activity. At least four of the 135 Dutch companies that took part in the survey reported that they were still in the 'start up' phase, even though their CI-programs had started five or more years previously [2].

Having (had) problems with the implementation of CI, some companies seek external support to evaluate their efforts. The present article describes and analyses two such evaluations that took place in subsidiaries of the same Dutch holding. The two studies took place independently. Although the two companies differed in many respects, they appeared to have very similar problems with the implementation of their improvement programs. With these similarities in mind, the search for causes of this resemblance began. It became clear that both companies used their existing hierarchy, rather than a (possibly temporary) change organisation, to conduct the CI implementation process. This approach appeared to explain much of what happened in both cases.

In this article we will firstly address current theories on the role of hierarchy and CI implementation, respectively. Next, we will present the two case studies. After an

analysis and discussion of the case study findings, the article is concluded with suggestions for further research.

2 Theory on hierarchy and CI implementation

2.1 Theories on hierarchy

Hierarchy is one of the basic characteristics of an organisation [3]. It is a particular – and perhaps even the only – way of structuring and creating order in work systems of large groups of employees [4,5]. Hierarchy is very much a characteristic aspect of bureaucracy [6]. Its main function is to coordinate divided labour. Consequently, organisational hierarchy represents a system of differences in authority, power and status. The principle of hierarchical ordering of offices and authority states that for every person there shall be one higher-ranking person to whom he or she reports and from whom he or she receives direction [5]. This results in several hierarchical levels in an organisation, including, for example, top management, middle management, first line-supervisors and operators.

Besides being an inherent characteristic aspect, hierarchy is also the most heavily criticised aspect of bureaucracy, in particular for its negative effects on individual autonomy, freedom, spontaneity, creativity, dignity and independence, and negative consequences such as rigidity, alienation and low commitment [3,6]. However, there are different types of hierarchy [6]. The 'traditional' hierarchy with the organisation structured in the form of a pyramid and power centralised at the top is not the only possible form. Other, more participative, forms exist which are claimed to counteract the negative consequences of the traditional hierarchy.

According to Perrow [5], hierarchy and bureaucracy themselves are not wrong; abuse and misuse are. Without special attention or with the wrong choices, hierarchy may have many negative consequences. Actually, the problems of hierarchy are widespread and every organisation has its own stories of failure of the hierarchy. However, the point is not whether hierarchy is good or bad. It is an issue the majority of organisations simply have to deal with, including organisations implementing CI. The widespread use of hierarchy does not imply, however, that we know how it works. Actually, there has been little research on the influence of hierarchy on processes of decision making and implementation. This has already been noted in 1975 by Franklin [7] but little has changed since. One of the exceptions is Carter [8], who observed that the need for decision making to pass through many organisational levels affects the outcome of the process. In another study, Shumway *et al.* [9] concluded that the involvement of different organisational levels and units contributes to the diffuse nature of decision-making processes. The aim of this article is to contribute to this small body of knowledge, and to show how hierarchy and problems related to it affect the implementation process of CI.

2.2 Theories on CI implementation

Continuous improvement is "the planned, organised and systematic process of ongoing, incremental and company-wide change of existing practices aimed at improving company performance" [1]. The implementation of CI is an innovation that needs adoption, understanding and exercise by many people in the company in order to be effective. It is almost a cliché to say that the implementation of CI or related initiatives

like Total Quality Management and Total Productive Maintenance is a difficult and complex process. Some authors even claim that it is one of the most complex activities that a company can attempt (e.g. [10]). Failure rates of up to 70% or 80% are mentioned [11]. Obviously this has generated a lot of research into the reasons for failure or success and solutions to overcome problems. Some researchers have identified exogenous, i.e. contingency, factors that influence the implementation process and outcomes [11,12]. Examples include:

- market (competitiveness)

- history of the organisation

- organisation culture

- level of quality development

- attitude to change of top management, middle management, and other employees.

Other researchers have focused on factors that are *endogenous* to the implementation process and explicitly link these factors to success and/or failure. The factors concern the activities constituting, and the organisation of, the implementation process, for example:

- management commitment, mind-set, leadership style

- the organisation of the implementation process

- the implementation plan or strategy

- the use of external consultants.

Overall, however, research into the factors affecting implementation success is rather inconclusive [11]. The lists of factors produced give a fragmented picture of the problems. Furthermore, they do not provide an understanding of the *process* of implementation and the accompanying problems in any detail [13] or coherence.

2.3   Hierarchy and the CI implementation process

There are many ways of organising the introduction of a CI program. It may be initiated and managed by a special task force consisting of different disciplines, a single coordinator, a management team, or perhaps a group of operators. Different actors may participate in the process of change in different phases, and perform different types of activities. The amounts of combinations are endless. Here, we will focus on a particular way of implementing CI, which we will call the hierarchical approach. The hierarchical approach largely relies on the existing hierarchy as the configuration to guide the CI implementation process. The decision-making and implementation activities are distributed over the hierarchical levels much in the same way as the hierarchy is used for making decisions on and coordinating day-to-day operations. Typical of the hierarchical approach is that each hierarchical level is responsible for implementing CI on the level below, thus creating a kind of cascade or flow through the hierarchy.

Having been involved with altogether tens of companies planning to adopt, actually engaged in the process of implementing, or already using CI, it is the present authors' experience that the hierarchical approach is one of the most popular – if not most widely adopted – approach to implementing CI. The reason for this is not entirely clear to us.

One possible hypothesis, that most organisations deliberately choose this approach because they want CI to be a part of 'normal operations', does not seem to hold. All too often we observed that companies simply do not fully consider the implications of CI implementation but rather view it as a trivial, non-problematic activity, rather than an innovation process leading to a radically new way of working.

In spite of its popularity, the hierarchical approach does not seem very suitable for CI and similar initiatives. The most common form of bureaucracy is the so-called *coercive* bureaucracy. However, the use of coercion as a dominant element in the management of change seems to be at odds with the key principles of change, especially if the change concerns the implementation of CI. Continuous improvement requires widespread employee participation in an *enabling* bureaucracy in which "organisational systems [are] refined in a structured process of continuous improvement through ongoing input from the doers" [6, p.42].

The next section presents the findings of two case studies conducted with the purpose of evaluating the implementation of CI programs in two subsidiaries of a Dutch company. Both companies relied on their coercive hierarchy to guide the implementation process.

3 Two case studies of CI implementation processes [14]

3.1 Methodology

The present article is based on two independent evaluation studies of CI implementation projects in two subsidiaries of the same Dutch holding. One subsidiary is situated in The Netherlands, the other in Poland. The companies are active in different branches. The study in The Netherlands lasted one year and was guided by a framework based on literature to evaluate improvement programs [15-23]. The evaluation in Poland took ten weeks and was aimed at helping the company progress with its existing program.

Data concerning both programs was collected by studying company documents and conducting interviews. Another major source of data was (participant) observation. This was achieved by taking part in meetings, engaging in formal and informal discussions, as well as simply being present in the two companies. The observations mainly concerned CI implementation related events although regular operational meetings were also attended.

The presence of an outsider participating in an internal program always influences people in the organisation. However, in both cases the number of people involved was so large and the problems the organisations faced so fundamental and far reaching that the influence of just one or two researchers was very small. Also, although both companies involved us to learn more about their own processes, they provided us with very little space actually to affect the course of the implementation process. The influence of the researchers will therefore not be taken into account.

3.2 CI implementation in the Dutch subsidiary

The part of the organisation this study focused on has about 400 employees out of a total of some 1800 employees. The company's production organisation is based on the concept of mini-companies of about 40 employees and one manager each. A special service group

is present to support the mini-companies. This group does not have an operational task; their main contribution is generating ideas. It is left to the mini-companies to decide what to do with these ideas. Within each mini-company one operator is responsible for certain general tasks, such as planning and scheduling, quality control and training. In addition to planning and scheduling their own mini-company's activities, the planners also communicate with the other mini-companies about planning issues and quality and delivery problems. Each individual employee of a mini-company is also a member of an improvement team. These teams typically consist of five or six persons.

The focal CI program was the third one initiated by the company. The management had not been happy with the results of the previous initiatives and they felt that the effort needed a new stimulus. A decline in quality performance was the immediate reason to start the third improvement program, under the heading of 'process control'. The design of the program was based on general design rules and tools that had been developed by the central corporate staff.

The third improvement program differed from the previous programs mainly in the information given to the improvement teams. The goals set were less abstract and defined better in terms of specific changes on the production floor. The improvement teams were expected to focus more on the operational aspects of the improvement program. Furthermore, the middle management was allowed to follow a course aimed at increasing their coaching skills.

Three main groups were involved in the organisation and implementation of the CI program:

- the people on the production floor, who formed the improvement teams. Most of these teams consisted of five or six persons

- a supporting group/steering team of middle managers, to coach and facilitate the improvement teams

- higher management. This group set the strategy and defined the structure for the realisation of the improvement program.

3.3   CI implementation in the Polish subsidiary

The production organisation in Poland was state-owned before it became part of the Dutch holding ten years ago. The company has about 400 employees. The research focused on a group of 50.

The company's organisation is based on a hierarchical structure in which every group has its own supervisor. The different levels are production line, production group, and the entire shop floor. A group of quality engineers functions as a supportive group that is responsible for solving problems and implementing improvements.

The improvement initiative in Poland was part of a program in which the whole division had to participate. This was basically the same program in which the Dutch division participated. The motives for starting the program were intense competition and developments in the market place that required the company to increase its product assortment, mix and volume flexibility within a very short period of time.

The goals and outline of this program were defined on the strategic division level. All subsidiaries were briefed about the program objectives and structure, and expected to realise the implementation and to report the results achieved to divisional headquarters.

The program in Poland focused on improving logistics and quality. For each of these topics a performance scale was developed and for each scale demands and constraints were formulated. A schedule defining which levels of improvement had to be reached and when, the management tools to be used to implement changes, and the change goals, philosophy and procedures were all determined by divisional headquarters. Furthermore, training programs were developed and a group of specially trained facilitators trained people in the different subsidiaries (training-the-trainer principle). The main philosophy behind this approach was that full attention during a specified timeframe was expected to lead to a breakthrough in results.

Within the subsidiary a steering team was created which consisted of representatives of middle management who were to determine the actions to realise the required results. Each of the team members was responsible for the results on a different topic. On the operational level, teams were initiated under the supervision of a member of the steering team. The operational teams were supposed to initiate and implement actual improvements.

3.4   Differences between the two subsidiaries

A major difference between the two subsidiaries concerned their experiences with improvement programs and modern management tools. Whereas the Dutch subsidiary was familiar with most state-of-the-art management tools, such tools were relatively new to the Polish plant. Similarly, the Dutch plant had previous been engaged in CI programs, whilst this was a novel experience for their Polish sister company. Furthermore, unlike the Polish company, the Dutch company did not have to deal with cultural differences, as they were situated in the same country as divisional headquarters.

On a more operational level the differences were reflected in the ability and skills of people to manage their own operational work – that is, to work without permanent direct supervision. For example, in The Netherlands the teams were responsible for writing work instructions and for registering and visualising (improvement) results. In Poland the teams were expected to give input for these activities but middle management realised them. In spite of these differences, the companies encountered similar problems in the implementation of their CI process.

3.5   Symptoms of problems encountered in both subsidiaries

The *operational level* consisted of improvement teams with mainly operators from the production floor, who were not familiar with the overall strategy and philosophy of the improvement program. Consequently, they did not personally identify with the program and their motivation for improvement activities was generally low.

The improvement activities were not a part of the routine activities in either case. The daily operational tasks were considered more important. Improvement had a low priority and was given little time; as a matter of fact, time limits were set. In The Netherlands people were allowed to spend 45 minutes per fortnight on preparing, organising and implementing improvement actions.

Another common phenomenon was that a lot of ad hoc problem solving took place without proper analysis. Fire fighting, even of structural problems, was the name of the

game and lack of improved and systemic insight the result. Consolidation was not often seen as a part of the improvement itself.

Due to the lack of time, improvements were developed and implemented slowly and the results were seldom (made) visible. The teams did not have enough influence really to implement improvement plans. Decision making took place at multiple levels. Even if a problem was analysed in a proper way and alternatives were generated, the decision concerning priority in implementation took place at management level.

The expectations of upper levels in terms of results, speed and actions to be taken were often unrealistic. The problem-solving and organisational skills of the improvement teams were often insufficient. For example, in The Netherlands, people were expected to make working instructions using a PC and MS Word. To be able to do this a special course was arranged to provide the employees with the required skills. The work instructions in Poland were written in English. Although some employees were learning English, no-one was actually able to understand the instructions.

On *the management and coaching level* low motivation and commitment were also observed. Management became frustrated when their efforts did not lead to results. New and more urgent problems disturbed the program all the time. Time was often used inefficiently. Appreciation of the work done on a coaching and management level was absent. It was difficult to pinpoint exactly what the coaches were doing, or supposed to do. Managers and coaches tended to 'talk the talk' instead of 'walk the walk'.

An atmosphere of resignation dominated both programs and if a task had not been done, this was accepted very easily. Knowledge and experiences obtained through the improvement programs were not consolidated. There was no systematic approach and tools were seldom used.

Communication with the strategic top management was full of window-dressing. Vice versa, top management hardly gave feedback, if that was at all possible, which was not always the case. At steering team meetings the achievements of the different improvement teams were presented, but sometimes the quality of the presentation was considered more important than the actual results achieved. During the meetings deadlines were determined to present results, but how these results could be achieved and which problems might occur, did not form part of the discussion.

4   The role of hierarchy in the two cases

The implementation problems described in the previous section are not uncommon and have received attention in the field of CI. The question is why they occur. Our analysis suggests that it is the characteristics of the two companies' hierarchies, which caused the problems to occur and persist in the first place.

The flow of the implementation process through the hierarchy showed a similar pattern in both organisations. The process started with the parent company imposing the program on the subsidiary. This was backed up by a set of clear, ambitious and non-negotiable goals that had to be reached at predefined dates. There was considerable time pressure, especially because a comprehensive program was envisaged. For the Polish subsidiary the parent company provided a stage model, training program, and improvement tools. The Dutch subsidiary was given more autonomy to elaborate the CI implementation process itself.

As only a general outline had been imposed on them, the subsidiaries first began to design a detailed program and implementation plan. In so doing they followed a distinct approach. The locus of activity was top and middle management, who developed a standard design which applied to the whole organisation and left no room for local adaptation or autonomy in implementation at lower levels. The next phase was the actual implementation of the program. Relatively little effort was put into that phase. There was little support for putting the program into actual use at the level of operators and first-line supervisors. The program was communicated without much attention to the underlying ideas and the need for change. By now the management team was very familiar with the program but they did not seem to realise that it would take the same, if not more, time for people lower in the hierarchy to achieve the same level of understanding. In effect, the management was always a few steps ahead in the adoption of the change and in their pursuit of speedy action, they continued to fail to recognise the delay in adoption by the lower levels. In both companies there was some openness to change, but the approach taken by management elicited passive resistance.

The process of program evaluation was another distinctive characteristic of the implementation approaches. Evaluations were infrequent and rather superficial and took place at the management level only. Lower levels did not provide feedback about the program and management did not inquire. The higher management levels overly evaluated the results of the program but avoided discussing the weaknesses of the plans. The Polish subsidiary was aware of the fact that the results appeared better than they were in reality. In contrast, the Dutch subsidiary had a stronger belief in the program, but the combination of beliefs – not reality – and lack of self-criticism led the organisation, again, not to learn from previous initiatives.

Hierarchy seems to be the predominant factor explaining these phenomena and there are two factors in particular that contribute most: the general nature of hierarchy and more specifically, the type of hierarchy found in both cases, namely the coercive form in which power and authority are centralised.

Starting with the first factor, hierarchy does not seem to work well as an organisational principle to guide an innovation like CI. The hierarchy is mainly designed for the 'normal operations' of the organisation, i.e., the management of manufacturing processes in the two cases presented. Each level roughly possesses the appropriate competencies and knowledge and can operate without much interaction with higher levels. The role of higher management levels is to set the broad direction. Lower levels are not expected to have any problems filling in the details.

CI is an innovation with a considerable social element. Generally speaking, hierarchy-dominated organisations will have fairly little experience with social change processes. The reason is very straightforward: hierarchical systems are built and used for stability, not change. Incremental changes will take place but they will optimise and refine rather than fundamentally change the hierarchy and the way it operates and performs. Furthermore, it is not likely that the limited knowledge of and experience with social change is widely distributed over the hierarchy. Rather, it is more plausible that the top management are the 'experts' in this area [24]. If, then, the lower levels are involved in change activities, they will have difficulties filling in the details and the relative independence between levels only aggravates these problems.

The obvious question is why this issue was not recognised and dealt with by the companies involved. The main explanation seems to be that using the hierarchical

channels has become a routine for actors in the organisation: an acquired – not necessarily imposed – and accepted way of working. Switching over to alternative configurations creates uncertainty or is not even considered.

The second factor concerns the specific *form* of hierarchy. Both case companies had a coercive hierarchy. This form tends to affect individual autonomy, freedom, spontaneity and creativity negatively [3] and to lead to rigidity and low commitment [6]. The term 'tends to' is used here deliberately, as many hierarchically organised companies, even coercive ones, will attempt to avoid these negative aspects. However, the basic nature of the hierarchy usually remains unchanged.

The coercive form of hierarchy creates timidity to upward communication. Once there is alienation between hierarchical levels the gap will widen over time, leading to ever less empathy for the next higher or lower level, eventually becoming a normal aspect of organisational life. In its extreme form it can lead to actors at higher levels of the hierarchy making plans that entirely disregard reality at lower levels. This is alienation in the respect of losing a sense of reality and leads to frustration and cynicism of actors at lower levels. Authority may still work for issues that are rather neutral, verifiable, or undisputedly legitimate, but CI is not that kind of issue. In such a situation the successful implementation of CI seems to be severely hindered by the hierarchy.

5   Discussion

The case companies did not manage to turn their CI implementation efforts into a success. In both cases:

- The shop floor was not familiar with the overall strategy and philosophy of the improvement program. The operators did not personally identify with the program and their motivation for improvement activities was generally low. CI did not become a routine activity. The daily operational tasks were considered more important. A lot of ad hoc problem solving took place without proper analysis. Fire fighting, even of structural problems, was the name of the game. The teams had too little power and time to implement and consolidate improvements properly.

- Middle managers and coaches were not highly motivated and committed to make the CI implementation process a success. Non-CI behaviour was accepted, not 'punished'. Form was more important than content.

In other words, the ideas and intentions of top management, including headquarters, never found their way to the shop floor and only form requirements really got through. Here, the hierarchical approach really showed its intrinsic weakness. That is, all the negative effects the (coercive) hierarchy may have on individual autonomy, freedom, spontaneity, creativity, dignity and independence [3], leading to equally negative consequences such as rigidity, alienation and low commitment [6] are reflected in the two companies' failure to achieve a prospering CI system.

As a consequence of both companies' decision to use the existing hierarchy to guide the CI implementation process, they followed what Beyer and Ashmos [25] called a 'mechanistic approach', and what Marcus [26] referred to as a 'rule-bound approach'. An interesting question is whether such an approach is bound to fail [27]. According to innovation theory the answer is: 'no, that is, not necessarily'. One stream of innovation

management research is concerned with the relationships between organisational factors and the progress and success of innovation processes. Two of the most widely cited factors are centralisation and formalisation. Indeed, it must be noted that hierarchy is related to these factors. Hierarchies work on the basis of formal arrangements and decision-making power is centralised at the top of the hierarchy. What then are the effects of centralisation and formalisation on the flow of information going up and down the hierarchy?

Centralisation reduces information processing capacity [28] and thus the capacity to initiate and manage the early 'experimental' stages of innovation processes [29,30]. In the two case organisations, top management overcame the initiation problem by adopting an initiative proposed by divisional headquarters. However, their capacity subsequently to manage the adaptation of the CI concept to their respective companies appeared to be limited indeed.

As the level of formalisation increases, so does the probability that the innovation process will be initiated only in response to problems or crises appearing in variables that are monitored by the formal system. Formalisation may inhibit the organisation from seeking new sources of information [31]. This reduces the participants' awareness of potential innovations or performance gaps. Hence radical innovation stimuli may not be recognised at all, whilst changes taking place will be incremental [32] and emergent in nature rather than the result of carefully planned and managed activities. Lack of planning and management characterises precisely what happened in the case companies.

According to Boer [29], the same theories (e.g. [30,31]) also predict that centralisation and formalisation are conducive to later stages of the innovation process, in particular the implementation of innovations. Once the innovation is through its creative phase, centralisation facilitates rational behaviour and well thought through integrated decisions, whilst formalisation serves to reduce the ambiguity concerning the participants' tasks.

Underlying these theories is a relationship between centralisation and formalisation on the one hand, and the uncertainty dimension involved in – and evolving during – innovation processes. Initially, uncertainty is high and, if anything, the innovation process will have the character of a learning process. Low centralisation and formalisation are required to allow participants to search for solutions and to learn about their appropriateness through trial and error. Once the 'satisficing' solution [33] has been found and the innovation well developed, the organisation may shift to a much more technocratic approach, and the characteristics conducive to that are high(er) levels of centralisation and formalisation. In other words, using a hierarchical approach for the initial stages of organisational change will not lead to the desired results. Using a learning approach to manage the later stages may be effective, but is likely to be inefficient, i.e. lasting too long, costing too much.

Figure 1   Overall guidelines to the initiation and implementation of CI as derived from innovations theory

	Initiation	Implementation
Learning approach	Low centralisation Low formalisation	Inefficient
Hierarchical approach	Ineffective	High centralisation High formalisation

These theories indicate a problem that companies experience when introducing continuous improvement. The central point is that the 'implementation of an innovation' does not adequately describe the practice in our cases. It was rather the 'development and detailing' of an idea that was proposed in little detail. In other words, the companies adopted a hierarchical approach throughout but allowed the innovation process to develop as if it was a learning process. The outcome was nowhere near the companies' ambitions.

On the basis of innovation theory the companies should have started with a learning mode to develop the CI program and gone back to a more hierarchical one once the innovation was mature enough. However, this strategy has serious weaknesses. Firstly, the type of hierarchy, coercive in both cases, in no way supports learning. Secondly, the end result, implicit in the concept of CI, should be an *enabling* bureaucracy. Trying to achieve that using *coercion* is bound to fail. So, if the dominant, i.e., coercive, form of hierarchy is not suited for furthering, adapting to and implementing in a specific company's situation, the general ideas behind CI, what then would be the more realistic alternative? The key design issues are:

- developing of the CI program to a certain level of detail

- rolling out the program to the rest of the organisation

- gradually transforming the coercive environment to a CI-enabling hierarchy.

The key problems are:

- the possibilities of designing a CI program to the sufficient degree of detail are limited, given the diversity of improvement problems that companies usually need or wish to deal with

- CI implementation requires changes in attitude and behaviour of organisational members, which is an individual experiential learning process rather than something that can be designed in detail.

In order to be able to address the design issues whilst overcoming the problems, we propose to approach the implementation of CI using what could be called, 'participative embedding' throughout. This will require the upper levels of the hierarchical bureaucracy to implement, at least temporarily, an organic, learning approach to manage the initial phase. The key words are design and participation. That is, during this stage a lot of effort

is put into *designing the innovation* as a *joint initiative* involving top and middle management and possibly even levels below that. After that, the innovation is rolled out, requiring that all the people involved learn about the CI program, learn to appreciate its value and develop their role in it. We propose that during this phase, a learning mode is imposed on, and gradually ingrained into, the functioning of the hierarchy. During this necessarily incremental phase, the organisation gradually learns to function in a more participative mode that leads to a working CI program, making the transition from a coercive to an enabling hierarchy along the way. A lot of design effort is required during the early stages, a lot of time (for learning) and patience later on.

6 Further research

Further research is required to shed light on this proposition, which might also hold for other forms of organisational innovation with a similar design-and-learn nature. Furthermore, the present research involved just two case companies that adopted a similar approach to implementing the same concept. They were part of the same parent company but very different, at the same time, in terms of culture and progressiveness. And yet they encountered similar problems. A particular objective would therefore be to compare and contrast different cases. One set of organisations could be firms that rely on hierarchy as a dominant instrument to guide the adoption, development and implementation of continuous improvement. Another group could be companies that follow, at least at a later stage as proposed in the present article, a non-hierarchical implementation strategy.

Having said this, the case studies reported here seem to confirm that institutional behaviour will prevail [34,35] and play a detrimental role if (coercive) hierarchy is too dominant. However, the question is whether companies really have much choice in protracted processes such as CI implementation. Perhaps it is rather the other way around in the sense that it is only through the implementation of CI that companies can *learn* to produce the organisation supportive of improving and learning effectively, facilitated by but not hindered by a suitable form of hierarchy.

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