Assessment of the Reasons for Failure and Critical Success Factors Implementing CI Projects: Case Study Results from the South African Apparel and Manufacturing Industry.

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Abstract - **Utilizing case studies the paper investigates the reasons for the failure of Continuous Improvement (CI) projects in the South African Apparel and Manufacturing industries. There is an ever-increasing disquiet about implementation malfunctions in industry and the reason for the failures. During the 20th century, a plethora of quick fix CI methodologies were introduced. Management of organizations implements improvements without understanding the underlying principles of the improvement methodologies they attempted to implement. It occurred due to a lack of effective implementation guidelines that management could utilize. Management expects processes to miraculously transform through implementation of a particular methodology or set of methodologies. Management erroneously believed that CI projects would succeed without their active participation. Notwithstanding the failure of CI projects, a need for improvement of processes still exists in the 21st century. There are various reasons why the improvements methodologies might fail. The authors identified the most common reason for the failure of CI projects in the South African context. As a result the authors endeavored to identify the critical success factors that would assist in a successful implementation of CI projects in South Africa.**

Keywords - **clothing industry, improvement strategies, South Africa, case study, productivity growth, failure.**

I. INTRODUCTION

The paper investigates and identifies possible reasons for the failure of improvement methodologies and the critical success factor required for successful implementation. Various cases in different sectors of the manufacturing industry were compared where organisations professed that they have attempted Continuous Improvements and their efforts were unsuccessful.

The context is the South African apparel manufacturing industry and hardware manufacturing. The investigation was undertaken in two diverse provinces in South Africa namely Kwa-Zulu Natal and Gauteng provinces. In both instances the researched organisations had to improve or face closure. Management of the organisations expressed the desire to become lean manufacturers ensuring they remain competitive in their market segments.

The research methodology employed in this paper is exploratory and comparative in nature making use of case studies and applicable literature. The full details of the methodology can be found in doctoral thesis of [1-2].

During the last decades of the twentieth century a plethora of quick fix management were propagated [3]. The leadership of large and small organisations employed a large number of consultants to assist them in achieving lean status, implementing Just in Time or become six sigma organisations. There are various other Continuous Improvement methodologies that was also utilised. The Japanese methodologies were seen as the magic bullet that would fix every ill in the organisation and as a result the organisation will become competitive almost overnight.

The leadership of organisations adopted the popular vernacular of CI and were claiming that these methodologies would cause a paradigm shift in the manner the organisation would conduct business in future. Management believed that there had to be a champion that would be the driving force behind the organisations CI endeavours. As a result they believe that the enthusiasm of the champion(s) would infest the employees with a similar enthusiasm. The truth was in most instances far removed from the hopes that management had for the success of the methodologies. The irony of it were that the very people that had an almost religious believe in the methodologies were the very same people that was trained engineers that should have believed in logic and science.

As a result of their training and experience, engineers are developers and exploiters of problem solving tools [4-5]. Therefore engineers would like to be seen as modernizers or trendsetters. Success in this type of endeavour does not come easily. The trendsetter must be able to realise that it is sometimes necessary to stand back and ensure that the procedures entailed in the advancement, diffusion and exploitation of the methodologies must be thoroughly understood [4-6].

II. LITERATURE REVIEW

A. The need for implementing CI methodologies

The argument that has been raised in the previous paragraph does not exclude the need for rapid Continuous Improvement endeavours. In the 21st century the business world as it was understood in decades past is constantly changing. New markets are identified, technology modernization has taken place and the changing of old social orders makes it imperative to change [7]. Today there is an even bigger need for rapid improvements in the business environment due to the economic downturn. Another reason is that organisations are constantly attempting to increase profit margins and minimization

their costs [8-10]. The methodologies of CI are ideally suited to assist organisations in achieving the goals of higher profits and cost minimization. The CI methodologies have the central tenant that to be successful, waste must be removed from processes [11-13]. It holds true in even the direst economic circumstances. The reason for this is that through CI methodologies, organisations improve competitiveness and the reduction of waste [14]. Without support systems the success of CI endeavours is doomed to failure [3 and15]. Previous studies made it abundantly clear that there will be as many successes as failures. To comprehend this phenomenon there are many variables that must be heeded [3]. Organisations that implement CI methodologies must realise from the onset that they would have to tolerate extreme transformation exertions. From the moment that improvements are implemented, nothing will be the same as before. Evolution's major characteristics are uncertainty and apprehension of staff members in the organisation. It is one of the foremost causes for the failure of CI implementations and is known as inadequate conviction and acquired dedication to the implementation effort [16-18]. The human in the organisation is the critical success factor that would determine success or failure of CI [19-22].

B. Execution criterion

Continuous improvement methodologies are utilized to augment process performance and would result in higher labels of client fulfilment [8]. The most often utilized methodologies during continuous improvement projects were investigated (lean, six-sigma, lean six sigma, and theory of constraint and just in time). Through the utilization of these methodologies, the critical success factors for a successful implementation would be developed. The end result would be a set of interrelated steps that could be utilized during the implementation phase of improvement projects. Simultaneously, the most common reasons for failures would be identified and incorporated in the strategy [15, 11, 15, and 23]. Critical success factors are highly dependent on the prevailing organisational culture. A culture of negativity towards improvements is a contributing factor to failures of continuous improvement projects [11, 14, 19 and 23]. Another critical factor that is often overlooked is that the issue of the benefits that could be derived from continuous improvement projects. The implementation of continuous improvement projects could become easier if the possible benefits could be quantified. The research literature demonstrated the fact that continues improvement methodologies are not confined to a small area but has been embraced transversely in a multitude of industries [6, 7, 10, 16 and 17]. As a result, the plan that is proposed in this paper would not be industry specific.

An important factor that must be taken into account during the implementation of continuous improvement programs is that problems could manifest itself in many divergent manners. As a result, the continuous improvement project team must adopt an approach that would analyze problems in a top down and top up manner. The envisaged results of this paper is the creation of an integrated system that could be utilized for every continuous improvement project undertaken [4, 7 and 8].

III. METHODOLOGY

A. Case Study

The qualitative research methodology utilising a case study design was utilised. Quantitative research was exploited to a lesser extent. The reason for exploiting both techniques is to facilitate the maximisation of the benefits for the organisations. The qualitative research methodology has the added benefit that it allows the researchers closer involvement in the problems that are researched. Considering the research design and scope of qualitative research, the following methodologies could be adopted if primary data is utilised [24]:

Surveys.
Experiments.
Case studies.
Programme evaluation.
Ethnographic studies.

The researchers have decided to utilise the case study methodology for the studies that was undertaken. Case studies would aid the researchers in the evaluation of current methodologies and their benefits to organisations [25-27]. The methodology of case research has been a dependable and authoritative research methodology in the field of operations management and industrial engineering. To fully grasp the extent of case research the methodology needs to be defined in more detail.

Case research utilises direct observations, methodical dialogue and the study of the relevant theory [25-27]. The unit of measure for case research can be a single case or a number of cases. The choice of the unit will be dependent on what is to be researched. The multiple case methodologies were preferred for this research study. The reason is that it allowed the researchers to study a multiple number of problems utilising multiple cases. Questionnaires and modelling has an unyielding set of limitations, which is not present in case research.

As a result the interpretation of the theory and results are made easier. A two-pronged approach will be utilised in the study:

A thorough theoretical study had been conducted of available literature on improvement methodologies. Organisations were researched that experienced problems with dysfunctional systems and processes. Recommendations were made to aid the organisation to institute corrective action.

A number of the methodologies utilised currently in operations management and industrial engineering had their origin in case research. The methodologies include lean production, manufacturing strategy and other breakthrough strategies. Case studies have three authoritative strong points [26]. They are:

The problem area could be studied in the natural environment in which it occurs. As a result evocative and germane theory can be the result.

The methodology is ideally suited to investigate and find solutions to the questions "why", "what" and "how". Addressing the three questions t a complete understanding of the observable facts can be obtained.

Where the variables to be researched are uncertain, case studies are the ideal methodology to *B*. acquire a better understanding of the problem.

An advantage of the case study methodology is the investigation of real and existing problems. The fact was accentuated in the first bullet. In the case of the research undertaken at the various organisations, existing problems that needed urgent solutions were researched. The outcomes of the research would benefit all parties.

B.Causes for the failure of Continuous Improvement projects

The cases where the authors implemented CI projects had a history of failed CI projects [1-2]. Personal interviews were conducted with staff members at all levels to determine their experience during the implementation of the various CI projects in their respective organisations. Negativity towards CI projects was found and needless to say that most of the previous efforts resulted in failure. The authors had to determine the reasons for the failure before the new CI projects could commence.

The environment in which CI projects are undertaken is exceedingly uncertain and volatile. It is for exactly this reason that organisations would undertake CI projects. Organisations want to have a competitive edge over their competitors. Numerous and multifaceted causes could be advanced why CI projects fail in the majority of organisations [7, 11]. The causes discussed in this paper were found to be present in the case studied undertaken*C*. [1-2]. From the literature that was reviewed, the authors could glean the following causes for the failure of CI projects in the case studies undertaken.

C.Inability recognizing and prioritizing CI projects

It is suggested that the inability to recognize and prioritize CI projects is commonplace at all levels of the organisation [3, 4, 7, 8, 9, 28, 29, 30 and 31]. At management level managers are unable to bring into line the need for improvements with the overall goals of the CI project. Certain managers would concentrate their CI focus on cost reduction while others would concentrate on revenue generation. In instances as described staff members would be unable to determine what the major focus area should be for the CI project they are currently undertaking. As a result the goals of any CI project could not be oversimplified. Oversimplification would result in failure of the CI project undertaken. Another area where management and staff fail is aligning project outcomes to organisational objectives. The areas where management and staff fail most often is defining the project span, measures and objectives. Unqualified and unsuited staff would be delegated to the project team with dire consequences. Another reason for failure is that the duration of the CI project is too long. As a result the

impetus of the project is lost. Unclear and poorly defined project goals would result in project staff members operating in silos. That means each group in the CI project would concentrate on their goals to the detriment of the overall goals of the project. Therefore, setting of clear goals for the CI project would improve overall performance of team members. Due to the improvement of performance, efficiency would improve too.

Ignoring the human element of CI projects

It is suggested that ignoring the human element of CI projects are commonplace at all levels of the organisation [3, 4, 5, 17, 21, 32 33 and 34]. The biggest impact of the CI project would be on the people that undertake the work in the organisation. Another identified reason is before the CI project was implemented; staff members were used to carry out their work in a certain manner. It became their comfort zone. In a short time span, they have to learn new processes and procedures. Resistance to change is a natural response to that change and resistance would be more severe the less staff members understand what is occurring. Staff members reach the conclusion that the sole purpose of the exercise is to downsize the workforce. The perception exist that CI projects are pro organisation and anti labour. Labour is of the opinion that the projects is another way of management of not accepting their responsibility for the failure of processes. Management lays the blame at the door of staff members. It is not uncommon that anxiety would result due to the changes that occur during CI projects. Uncertainty would cause a sharp drop in staff morale. Staff members do not know what to expect and tend to lose focus. Parallel to low morale is the loss of ingenuity and originality of staff members in regard to possible improvements.

Insufficient commitment of management and staff members

It is suggested that insufficient commitment by staff members and management to CI projects are commonplace at all levels of the organisation [3, 7, 8, 10, 14 and 29]. CI projects could not commence without the commitment of all levels of management. This is also true for all levels of staff members. Unions have to commit to the improvements too. In the majority of instances, management demonstrate an inclination of over commitment to the CI project. The reason is that management see it as their pet project. When staff members demonstrate negativity to the project, management seems to be incapable of formulating a new course of action. If the parties, management or staff members, do not commit to the CI project the probability of failure is high. The longer the duration of non commitment is, the higher the probability is that the CI project would fail. Even when it is clear that the project is failing, management is reluctant to abandon it due to the monetary investment made. The course of action would cause confusion in the workplace as staff members would not understand why the project is not cancelled. Another reason of non commitment is where management is unwilling to delegate decision making power to the CI

project team. The result would be that the improvements would be identified but not implemented. The situation would lead to staff members becoming dispirited and it would become increasingly more difficult to initiate new CI projects.

D. Unfamiliarity with CI projects and training

It is suggested that unfamiliarity and lack of training when implementing CI projects are commonplace at all levels of the organisation [8, 9, 11, 29 and 30]. Management does not understand what CI entails because an in depth study were not undertaken. They have read about it or attended a conference where the subject was discussed. They do not possess the required knowledge to fully grasp the significance of the requirement for a successful CI project. Due to the lack of training of staff members, they are at a loss what to expect when the new processes and tools are introduces at workstation level. The situation would be a factor to indecision and flux in the workplace. As a result staff members would revert to the so called tried and trusted methods of old. The perception of management that more training would guarantee success is not true. Too much training would dilute the purpose of the CI project. Staff members would concentrate on the learning and very little on implementing. Therefore, a balance must be struck between learning and implementation. Improvement of processes should never become secondary to training. A balanced approach would guarantee that the objectives of the CI project are attained.

E. Sophistication of CI projects

It is suggested that due to the intricacy of CI projects, the failure rate is high [11, 29, 35, 36 and 37]. It refers to the degree of difficulty of the CI project being undertaken. The more multifaceted the tasks are, the higher the probability that the CI project would fail. As a result there are a relationship between the degree of difficulty and failure rate of CI projects. Management and staff members grasp the fact that the difficulty of tasks to be carried out in a process, the diversity of tasks to be carried out in the process, the diversity of the relationships with other processes and the relationship complexity would determine the success or failure of the CI project. The complexity of a CI project would influence the cost for implementing the project. If the cost of implementation is higher than the possible benefits that could be derived, management would willingly terminate the CI project. The complexity of the CI project might contribute to an intensification of the insecurity and volatility of the process being improved.

F. Poor and inadequate communication

It is suggested that poor communication before, during and after CI projects are commonplace at all levels of the organisation [8, 14, 16, 17, 19 and 33]. The most often occurrence of poor communication is between management and staff members. The goals of the CI project are not communicated in an unambiguous manner. The result is poor understanding of the goals and benefits of the CI project. During the CI project poor communication results in uncertainty which improvement

methodologies are best suited for the specific project. Poor communication would impact on the progress achieved with the CI project. In instances as described, the project would lack direction and all concerned lose interest in the CI project. Recrimination would follow who should accept the blame and the CI project would be terminated. Management should establish clear communication channels at the start of each CI project. The communication of the reasons for undertaking the CI project cannot be overemphasised. None or poor communications in this regard would impact negatively on the morale of staff members. The broad purpose and intent of the CI project should be the first message communicated by management. Management should communicate the required corrective actions to be taken to staff members. A lack of or poor communication would result in the sabotage of CI projects by staff members. The successful achievement of the broad purpose and intent of the CI project must be communicated to staff members. It could be used as a motivational tool for the next CI project.

Critical success factors implementing CI projects

There are a number of critical success factors that has to be taken into account when implementing CI projects. These factors are critical because of the scarce resources that are invested in the project. The importance of the critical success factors has been demonstrated by the projects the authors have been involved with and the researched literature. The following critical success factors have being identified by the authors from experience and the research literature:

Management association with CI projects must be tangible

The case studies undertaken by the authors demonstrated the importance of tangible management association with CI projects [1-2]. The researched literature identified it as important too [7, 8, 10, 14, 16, 17, 23, 29, 38 and 39]. Without the association of management and their dynamic contribution the CI project would in all probability fail soon after commencement. Management's association must be much deeper than infrequent motivational talks, e-mails and attending project meetings irregularly. Management must instil an awareness of urgency in staff members. Through management association staff members must realize the importance of their labours in the CI project. Instead of being an obstacle, management should facilitate the removal of obstacles that could cause CI projects to be unsuccessful. Management should allocate sufficient funds and human resources that would guarantee the success of the CI project. Management should be an integral part of the review panel measuring CI project progress and needs. Recognition should be given where it is deserved for the successful completion of tasks.

Cultivate official apparatus to promote and facilitate self-sufficiency

The case studies undertaken by the authors demonstrated the importance of official apparatus that would allow CI project teams to operate as independent units [1-2]. The researched literature identified it as

important too [8, 10, and 40]. Due to the importance of CI projects it is impossible to undertake it as ad hoc projects. As a result, approved structures must be in place that would sustain the implementation of the CI project. Four major requisite structures and could be identified:

Structured approach in solving problems. There are numerous methodologies available to assist in this endeavour. Each of the methodologies must be investigated to identify those most suitable to the present situation.

Utilization of the correct diagnostic procedure. To be successful action should utilize qualitative and quantitative problem solving tools. The most appropriate for the present project should be utilized.

Capability requirements for staff members. A leader should be identified at the inception of the project. The leader would inspire staff members to achieve the goals of the CI project. This person would form part of each CI project the organization undertake.

Management systems: The systems implemented must be such that it could be utilized for all improvements undertaken in CI projects. It becomes the blueprint for success. It does not imply new systems should be developed but rather that existing processes must be approved upon. The measurement system is the system ignored most often during the CI project. Without this system it becomes difficult to determine the success achieved with the CI project.

G.Long term CI project sustainability

The case studies undertaken by the authors demonstrated the importance of long term sustainability of CI projects [1-2]. The researched literature identified it as important too [3, 7, 8, 10, 15, 19, and 41]. Organizations tend to be more interested in the improvements that were achieved than the sustainability of the improvements in the long term. The sustainability of the improvements must be the first priority. If the returns that were achieved could not be sustained in the long-term, the effort of undertaking the CI project is wasted. Unsustainable CI project improvements could result in staff members regressing to the bad ways of the past. New wasteful operations would result. Self managed teams could be the answer to guarantee that staff members do not regress. The teams would evaluate their performance on a regular basis and take corrective action if it is deemed necessary. A CI project champion could be utilized to ensure staff members are aware of the importance of the project and to generate enthusiasm for the CI project. An organisation could implement work cells or U Shaped cells to sustain improvements over time. Team members within the cell would monitor each other and ensure improvements remain on track.

H.Convey CI project advantages from inception

The case studies undertaken by the authors demonstrated the importance of conveying the benefits of CI projects to staff members from the inception of the project [1-2]. The researched literature identified it as important too [7, 10, 14, 29, 38 and 41]. The publication of the successes that has been achieved through the CI project is vital. More support would be garnered for the CI project in this manner. Staff members would realise that something had been achieved and they would more willingly participate. As a result the demonstrated support could convince management that the CI project should not be terminated. Another method to achieve an advantage is by instituting a pilot project. The team members of the pilot project could demonstrate the advantages that could be derived from a successful CI project. Staff members in other area where improvements are required would participate more readily. It would contribute to a better understanding of the advantage of being a lean organisation throughout the organisation.

G. Human factors

The case studies undertaken by the authors demonstrated the importance of the human in the success of CI projects [1-2]. The researched literature identified it as important too [3, 7, 8, 9, 15-17, 19, 23 and 38]. The success of the CI project depends on the skills of the CI project team members that would undertake the endeavour. Only the best and brightest staff members should be involved. Due to the level of difficulty in achieving the goals, staff members without the capabilities to contribute to the success of the CI project should be avoided. In doing so, management would demonstrate the importance of the CI project to all concerned. It is imperative not to utilize staff members that are seen as unessential on other CI projects. The staff members might disrupt the CI project that they are transferred to. The importance of actively engaging staff members of an affected process in the CI project is important. They would garner experience of the processes involved and understand what is required to succeed in implementing improvements. The uncertainty and anxiety would be negated to a great extend. Staff members would not fear a loss of employment.

Accurate prioritizing of CI projects

The case studies undertaken by the authors demonstrated the importance of accurate prioritizing of CI projects [1-2]. The researched literature identified it as important too [3, 8, 15-17, 38 and 41]. It is one of the most critical decision making areas of CI projects. The selection process has to single out the correct methodology for the improvements to be achieved. A wide variety of criterions of methodologies exist from which a choice could be made best suited for the current CI project. The result should be that the CI project should produce the best possible result compared to the objectives of the CI project. A determination must be made at inception how the CI project would impact profit margins. The top-down approach to the project is utilized to generate improvement projects and a bottom up approach detects gaps that exist in current process performance.

Staff member training

The case studies undertaken by the authors demonstrated the importance of staff member training to guarantee successful CI projects [1-2]. The researched literature identified it as important too [3, 6, 8, 15-17, 29

and 40]. Organizations are intimidated by CI projects because they do not want to embark on large training programs for staff members. The interval between the completion of training and the manifestation of benefit of the CI projects are relatively lengthy. A solution to this conundrum is to combine training with a real-time CI project. A danger that should be avoided is that the CI project should not become an academic exercise without benefits for the organisation. Combining training with a real-time project has some benefits. They are:

The savings that could be achieved by the CI project would pay for the cost of training.

Staff members realise that the training is valuable because they experience the changes taking place and benefits first hand.

Training linked to project goals translates into concrete improvements that are lasting.

Training is important for other reasons too. Staff members would have to implement continuous improvement long after the CI project has been terminated. Without the necessary training in the methodologies they would be unable to continue with the improvement effort. The cost to reintroduce a new CI project is prohibitively high and would negate any benefits derived from the original CI project.

IV.   CONCLUSION

The rationale for the research was to uncover the reasons why CI project fail. Through the research it has become clear that more research is required by academics in close cooperation with industry to develop a model that could ensure a seamless implementation of CI projects. The reasons for failure discussed in this paper were from real time problems that were experienced by the researched organisations in South Africa during the implementation of CI projects. It was therefore necessary for the researchers to determine what could be done to prevent failures before new improvements were undertaken at the research organisations. The seven critical success factors advanced in this paper ensured effective and efficient implementation at the South African organisations. The relevancy of CI projects cannot be doubted because the competitive environment in business makes it imperative to improve existing processes. Waste must be reduced if not removed in its totality from processes and systems. That would ensure that the expectations of customers are met or in some cases exceeded. There is constant pressure on organisations to find new and innovative ways in cost cutting to improve competitiveness. More research is required in this area to contribute to the body of knowledge why CI project fail and to find innovative ways that would ensure successful implementation of the CI projects.

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