

Adopting the Kaizen Suggestion System in South African Lean Automotive Components Companies

Adedeji Adeyemi Charles(PhD)¹, Okolie Kevin Chucks(PhD)²

¹ Department of Industrial Engineering

Nelson Mandela Metropolitan University Port Elizabeth South Africa

²Department of Building

Nnamdi Azikiwe University Awka Anambra State Nigeria

Accepted 8th June, 2012

Abstract

Purpose of the paper: The purpose of this paper is to evaluate the extent to which functional and organizational measures influence employees' participation in suggestion of ideas for continuous improvement (Kaizen) in the South African automotive components industry.

Methodology: The methodology employed in the study included a thorough review of the relevant literature and a questionnaire. A questionnaire relating to the diverse contents of suggestion constructs was developed and administered to both the management and employees of the thirty three automotive components suppliers in Eastern Cape. The target companies constituted the units of analyses and therefore provided the opportunity for a detailed investigation of the links between management and employees as well as a submission of ideas for operational and organizational processes as established in the literature review. Data generated from the questionnaire were analysed using Excel spreadsheet and statistical; Version 9.0 **Findings:** The study reveals that majority of the respondents opined a lack of systematic mechanism for the practice and administration of the Kaizen suggestion tools in most Eastern Cape automotive companies. This demerit is found to have negatively affected maximum employee participation and involvement in organizational decision making within the automotive components companies in the Province.

Conclusion: The study has established a basic level of awareness and understanding among employees/employers relations that the Kaizen suggestion scheme is a vital tool for delivering strategic objectives in the management of decision making and organizational growth. The study strongly advocates the inclusion of employee suggestion systems as part of the organizational process, as well as the need for employees to acquire skills on critical aspects of Kaizen suggestion tools.

Research limitations/implications: The organizational scope of this research is limited to automotive components manufacturing companies employing in excess of 50 workers in the Eastern Cape Province of South Africa. Findings will help to determine the extent and performance of employees in the Kaizen suggestion scheme in the companies. It identifies the employees' engagement/empowerment phenomenon in automotive industry and so forms the starting point for further studies in this area.

Originality/Value: This study can assist automotive components industry in demonstrating the value of engaged and empowered employee for organizational improvement and competitive advantage.

Keywords: Lean, Kaizen, Suggestion Scheme, Competitive advantage, Functional performance, Paradigm shift, Performance evaluation.

Introduction

The principle of Lean Manufacturing was pioneered by the Japanese industrial revolution and the TOYOTA Production System. This principle is seen to have redefined the work of functions, departments and organizations so that a positive value is created through continuous employee participation and engagement. The application of the Toyota concepts depends on the widespread and intense use of performance

measurement in the learning process at the operational level, by helping the employees to see how they are performing, rather than simply providing feedback for the central control function (Maskell & Baggaley, 2004: 14). This industrial paradigm is considered a key business strategy for the success of any business that needs to be competitive and survive in a continuously evolving world.

In a bid to achieve continuous improvement and competitive advantage, many South African automotive component manufacturers invest huge resources in the acquisition of machinery, innovations and maintenance, with minimal pursuance of qualitative strategies for employee suggestion/involvement in decision making, engagement and empowerment (Slack et al, 2001: 611). In Japan and many developing countries, lean production forms the balance of rapidly developing world-class manufacturing processes. The Japanese concept of Kaizen depicts "continuous improvement" and is a predictor of quality assurance. Slack et al (2001:611) opine that the Kaizen strategy calls for a never-ending effort in improvement that involves a company-wide, top-down, yet bottom-up approach. In this concept, management works continuously towards revising their process standards, with a resultant higher employee satisfaction and involvement in decision making, more oriented corporate cultures, better employee empowerment and communication without massive capital investment (Liker & Hoseus, 2008: 23).

The Japanese strategic concept of Kaizen encourages employee suggestion and contributions in industrial decision making and production processes. This is a functional strategy for innovation and creativity. According to Womack et al (2007), "Kaizen Teian is a Japanese term for a suggestion system in which employees are motivated to come up with small ideas and implement the ideas themselves rather than presenting ideas for someone else to analyse and execute". This concept activates more productive business needs, improvement of employee creativity/efficiencies, and greater workers' contribution. Reinertsen and Shaeffer (2005) postulate that an organizational paradigm change, with bias towards the adoption and application of Kaizen tools in a suggestion scheme, is unavoidable because the lean alternative helps to redefine the organizational work functions, departments and organizational structures so that a positive contribution to value creation is achieved, while the need for employee

empowerment and involvement in idea suggestion at every point along the value stream is enhanced.

At Toyota, each year, the 67,000 employees submit approximately 700,000 cost-saving improvement ideas (10 ideas per employee per year), with over 99% of the ideas implemented (Miller, 2003). This strategy has placed Toyota on an enviable platform of productivity. Neagoe and Klein (2009) believe that continuous improvement through employees' suggestions is a lean tool for radical organizational change.

Chen and Tjosvold (2006) believe that the long and short term effects of adopting and implementing the Japanese Suggestion System are customer satisfaction, an improved productivity index, the attainment of world-class standards, employees' citizenship, job satisfaction and improved corporate revenue. This paradigm change is in sharp contrast to the traditional view which regards employees as a cost to the organization (Renwick, 2003, Poisat, 2005, Womack et al, 2007:260). It is important to note that employees' citizenship and empowerment give rise to a positive attitude and dedication in the workplace. The idea of motivating and treating employees in a similar capacity as organizational assets is one of the critical factors in a lean organization (Sharma, 2005). The practice of this concept is completely absent in most automotive organizations in South Africa.

The above discussion provides the premise for why employees in organizations should be involved/engaged in all facets of the managerial nitty-gritty, with adequate motivating incentives. The result of this is that indispensable success and competitive advantage will be attained in a structured organization whose employees are fully motivated to contribute creative ideas and be involved in the organizational processes. The above discussions provide the platforms for the investigation of the main problems of this study.

1.2 Purpose/objectives of study

The purpose of this paper is to raise the awareness and understanding of the need for strategic participation of employees in the planning, development and submission of constructive ideas for organizational continuous improvement in the automotive components industry. In this regard, the specific objectives of this study include:

- To provide a greater understanding of key issues/indicators of Kaizen suggestion suggestions system for organizational continuous improvement;
- To assess the current practice and levels of submission of employee suggestions in South African automotive component industry in the Eastern Cape.
- To determine the suitability of the suggestions systems in practice and establish the extent to which they enhance both employees' operational effectiveness and organizational advancement;
- To identify the performance and functionality of the Kaizen suggestion tools within the automotive components industry in the Eastern Cape.

2.0 Towards a paradigm shift to Kaizen suggestion system

The lean production system has been very successful worldwide because it is a self-organizing and dynamic system. It is noted for its flexible, creative and adaptive structure (Liker & Hoseus, 2008: 11-13). The concept of Lean production involves many tools that could be applied in any organization which is trying to become lean. These tools are production and service philosophies that unite every aspect of the production process with an attendant success across the whole value chain. This production system(the Japanese lean production systems) is seen as an organizational process that is able to strike an effective balance between the element of standardization and the innovative forces represented by innovation and continuous improvement-Kaizen (Neagoe& Klein, 2009).

Liker & Hoseus (2008: 23) concur with Hiam (2003: 7) that organizations need to implement new strategies in reaction to the changing economic environment which does take account of employees in the nitty-gritty of organizational processes. This business and technological paradigm therefore necessitate a vibrant and efficient organizational strategy that is entrenched within a useful and resourceful, flattened structure that has shifted from the bureaucratic and hierarchical traditional system, to a participative, innovative, learning, decentralized and organic system (Swanepoelet al, 2008: 397).

Hiam (2003:7) cautions that an organization that acquires a mediocre culture will always tread a strategic path where there is a lack of understanding between the upper echelons of the management and employees at the lower level regarding the need to respond to an all-inclusive decision making and suggestion of constructive ideas.

Many organizations have attempted to implement suggestion systems but they often fall short of achieving their potential. Fairbank et al (2003) think that, in many instances, firms have simply mounted wooden boxes on the walls, in a common area without a structured management technique for its handling. On the other hand, some firms have failed to motivate employees to participate because of the absence of compensation or reward of any type for participants, lack of proper education of the employee on the processes of the scheme and long delays in getting the suggestions processed (Robinson & Schroeder, 2004:107-111; Fairbank et al, 2003). However, organizations with a quest for competitive advantage need to have a paradigm shift from the traditional suggestion box to idea management strategy.

Idea management is the process of collecting business ideas, developing the ideas into implement able concepts, evaluating and selecting the top concepts and measuring performance. Web-based or e-mail systems are integral ways of idea generation and evaluation in idea management. The web-based tools help in facilitating decision making. The concept of idea management, founded on the platform of employee suggestion system (ESS), is a derivative of the Japanese system called Kaizen Teian. The word 'Teian' means proposal or suggestion; hence Kaizen Teian conceptualizes a continuous improvement of the standard way of work through the submission of creative and

problem solving ideas by the employees (Miller, 2003). It is a bottom-up activity and a company wide system for implementing continuous improvement proposals from employees (Neagoe & Klein, 2009).

Swanepoel et al (2008:515) state that the ESS is an incentive scheme under which employees receive rewards for useful ideas that lead to cost reduction, improved safety or safety and increased organizational effectiveness. The system motivates employees to submit creative ideas through the suggestion system, thereby providing an interactive networked forum within which employees and interested stakeholders can openly debate their merits (Miller, 2003; Fairbank, et al; 2003; Swanepoel et al, 2008). It is a critical mechanism for transforming the content of individual level of knowledge and contribution into organizational change (Arthur & Aiman-Smith, 2001).

Robinson & Schroeder (2004:37) concur with Arthur & Aiman-Smith (2001) on the 1985 survey of the national association of suggestion systems which revealed that plant employees made a total 495 suggestions during the four-year period of the study, giving rise to an average of approximately 10 suggestions per 100 employees per year. In that same year, the average Japanese worker gave in more than 30 ideas per person. At Toyota, each year the 67,000 employees submit approximately 700,000 cost-saving improvement ideas (10 ideas per employee per year) with over 99% of the ideas implemented (Miller, 2003)

3.0 Methodology

A questionnaire was developed from both primary and secondary data and administered to thirty three companies in the Eastern Cape of South Africa. The case organizations investigated are Original Equipment Manufacturer (OEM) of automotive components and suppliers of allied components to companies such as Toyota, BMW, Volkswagen, General motors, and NISSAN among others. The questionnaire was designed to obtain representative views of the respondents on the Kaizen suggestion scheme in the organizations scales were provided on a rating continuum (1-5) to measure the varying degrees of respondents' opinions about the relative worth of the attributes in the subsets. However, the questions were structured to explore the respondents' reactions to the level of adoption, implementation and performance of suggestion system in their organizations.

Out of 33 questionnaires distributed to the respondents, 27 were completed and returned which corresponds to a response rate of about 82 percent. Data obtained from the questionnaires were analyzed using Excel Spreadsheet and statistical (version 9.0) in the form of frequencies and measures of central tendency. The results and interpretations shown in tables and charts are presented as findings in section 4.0. Based on the response rate and findings of the study, the conclusion drawn may be deemed indicative of the level of functional performance and employee participation in Kaizen suggestion scheme in the study context.

4.0. Findings

Table 1 reveals that the majority of the respondents, (59%), were operations managers while thirty-seven (37%) were Supervisors/Group leaders. This indicates an adequate capture of the core participators/implementers of the scheme in the study context.

Figure 1 reveals that a significant proportion of the respondents (96%) were in management position with adequate involvement in the implementation of company policies and organizational processes. Their responses are believed by the researcher to be credible and useful.

Table 2 indicates the ratings of the duration of the adoption of lean principles in production processes. From the table, a significant proportion of the respondents (76%) submitted that their organizations had been in the lean practice for more than two years (36% respondents claimed 2-5 years, while 40% asserted adoption of more than 5 years). It is clear from this result that majority of the automotive components companies in the Eastern Cape are not first timers in the implementation of lean/Kaizen production. In **Table 3**, the ranking of the dependent variables that are considered in the questions relating to the implementation and adoption of lean principles in the organizations are analysed. Given the analysis presented in table 3, the following deductions can be made:

- The first deduction is that 93 per cent (74%+19%=93%) of the respondents strongly agreed or agreed that there was an adoption of a teamwork policy in their organization. This statement ranked first in agreement with a mean rating of 4.6 and a high standard deviation of 0.9; while about 4 per cent of the respondents strongly disagreed to the adoption of a teamwork policy. A comparison of the mean score of 4.6 with the aggregate mean of 3.7 and the small standard deviation (0.9) indicates a reliable consistency and high congruency among the respondents' submission on the adoption of teamwork as a conceptual feature in the target organizations.
- " Again, 93 per cent (30%+63%=93%) of the respondents strongly agreed or agreed that worksheets are displayed conspicuously for the team and operators. This statement ranked second with a mean of 4.5 (standard deviation of 0.9). The ratings on the workers' autonomy to make changes and improvement suggestions on the worksheets, as well as, the statement indicating that the worksheets are clear and displayed at every work station was widely endorsed by the respondents (strongly agreed or agreed 96% respectively) and received third and fourth place with a mean of 4.4 respectively. A comparison of the mean scores of the lean conceptual features' with the aggregate mean of 3.7 reveals markedly higher scores of 0.8, 0.7 and 0.7 respectively. This comparison shows that there is strong evidence from the respondents to support the conspicuous display of worksheets at every

work station while the workers are allowed autonomy to effect improvement changes to them. These results concur with the hypothetical statement which stated that most South African automotive industries did restructuring exercises and adopted lean manufacturing techniques in order to improve manufacturing efficiencies and overall organizational performance through a better use of organizational resources.

- Another deduction is that ninety seven per cent (56% + 41%=97%) and eighty nine per cent (70% + 19%=89%) of the respondents, respectively, strongly agreed or agreed that their organizational staff understand and appreciate lean benefits and that there is potential problems identification, correction and communication during lean production activities. These factors are ranked fifth and sixth with mean scores of 4.3 and 4.0 respectively. Only a trivial proportion of respondents, 3.7% respectively, disagreed with the statement.
- Most respondents, (22%+59%=81%), strongly agreed or agreed that team leaders are able to motivate, assist and handle the organization of work at the work place. The act of solving production problems through teamwork was rated strongly agreed or agreed by a large proportion of the respondents, (48%+30%=78%). These features are rated eighth and ninth respectively with a mean score of 3.9 each. These mean scores are greater than the aggregate mean of 3.7 with a higher score of 0.2 each. Statistically, it can, therefore, be concluded that significant evidence exists in support of the statements.

Issues such as operators' training in problems solving (44%+19%=63%; mean score=3.5); dedicated staff to handle lean change ((48+11=59%; mean score=3.3); emphasis on the Kaizen suggestions scheme in lean implementation (41%+15%=56%; mean score=3.3); team leaders' ability to interpret and coordinate drawn value stream mapping for production processes (44%+4%=48%; mean score=3.2); availability of dedicated staff or unit to promote lean principles (30%+22%=52%; mean score=3.1); periodic training of staff in lean/Kaizen tools (30%+15%=44%; mean score=3.1); operators understanding of the seven waste tools of lean (44%; mean score=3.1) were compared with the aggregate mean of 3.7. They were all found to be less in value to the aggregate mean; hence it can be concluded that these factors did not have a strong correlation with the significant familiarity of the lean conceptual features in organizational processes.

The rating of the extent of the implementation of lean principles at the workplace was rated least by the respondents (22%+4%=26%) with a mean score of 2.7. The comparison of this mean with the aggregate mean showed a large deviation of 1.0. This result is a pointer to an acceptable indication that the automotive components companies are experiencing a poor implementation of the lean/Kaizen concepts. The opinion of the respondents was that the mode of implementation was lacklustre even though

the majority of the automotive components manufacturing companies did adopt the lean/Kaizen systems of production. It is important to note that every world-class organization is expected to absorb and score high on the analysed features that are considered in this section. Leibowitz (2003) concurs with Neagoe and Marascu Klein (2009) that world-class manufacturing should hinge on the adoption and pursuance of continuous improvement strategies that strike an effective balance between the element of standardization and the innovative forces of the Japanese production systems. The opinion of the respondents was that the mode of implementation was lacklustre, even though the majority of the automotive components manufacturing companies did adopt the lean/Kaizen systems of production.

From **Table 4**, it is seen that the variable 'Organizational familiarity with the lean/Kaizen conceptual features' obtained mean scores of 3.54 and 3.99 from organizations employing between 0-200 employees and those with above 200 employees respectively. Although, this difference is not statistically significant ($p > 0.05$), the effect size measure (Cohen's $d = 0.63$) indicates that the difference is still of practical significance since the ranking is a medium Cohen's d . The p -value of 0.1264 showed that there is a strong congruence with the variable by the respondents from small and large organizations. There is no statistically significant difference at $p < 0.05$. It can be deduced therefore that the respondents from the small and large companies concurred that their companies are familiar with the lean/Kaizen conceptual features in manufacturing processes.

Another deduction from table 4 is that the variable 'Organizational hierarchical awareness of the Kaizen suggestion scheme' achieved high mean scores (3.77), as rated by the respondents from organizations employing more than 200 employees and a score mean of (3.14) from respondents from companies employing between 0-200 employees. It can be seen that this difference is not statistically significant ($p > 0.05$), the effect size measure (Cohen's $d = 0.65$) indicates that the difference portrays practical significance since the ranking still falls within a medium Cohen's d . The p -value (0.1132) and the medium rating for the effect size indicate no statistically significant difference, at $p < 0.05$, between the respondents from small and large companies respectively. Therefore, it may be inferred that respondents from both small and large companies concurred that there is hierarchical awareness of the Kaizen suggestions scheme in their automotive components manufacturing companies in the Eastern Cape.

The high means scores (3.93 and 4.20) for both small and large organizations showed a large difference. Even though, this difference is not statistically significant ($p > 0.05$), the effect size measure (Cohen's $d = 0.36$) indicates that the difference is still practically significant. The Cohen's d is ranked small with a relatively high congruence and relationship strength. It can be concluded that the respondents from both small and large companies concurred with the existence of an organizational policy for employee participation in idea submission processes in their organizations. The evidence here is that there is no

statistically significant difference, ($p = 0.3772$), with regards to the variable.

Furthermore, the table shows that the variable 'Implementation of the Kaizen suggestion scheme' obtained mean scores of 2.96 and 3.71 from organizations employing between 0-200 employees and those with above 200 employees respectively. The difference in the means is significantly large though the effect size measure for the Cohen's d is 0.47 apiece; however, the p -value of 0.0121 indicates a statistical significance at the 5% level. This shows that there is an inconsistency in the submissions of the respondents from both types of organizations (small and large) and there is a statistically significant difference at $p < 0.05$. It can be deduced therefore that the respondents from the small and large companies do not concur that their companies have a proper implementation of the Kaizen suggestion scheme.

The analysis of the variable 'Intrinsic rewards for employee participation in the Kaizen suggestion scheme' shows a strong agreement, with the scored means of 3.94 and 3.90, amongst the respondents from organizations employing between 0-200 employees and those with above 200 employees respectively. This difference in means is relatively small with a statistically significant difference (0.04). The small effect size of the strength of the relationships (Cohen's $d = 0.06$) in the analysis, coupled with a p -value of 0.8766, indicates no statistically significant difference at $p < 0.05$. It can be inferred therefore that the respondents from the small and large firms agreed that the automotive companies adopt an intrinsic reward system in motivating the suggestion scheme in their organizations.

A further comparison with respect to the extrinsic rewards showed that the respondents from the small and large companies contrasted greatly (means = 2.74; standard deviation = 1.30 for small companies and mean = 4.15; standard deviation = 1.25 for large companies). This difference is statistically large and not significant. Although they obtained a Cohen's d coefficient of 0.86 apiece, the t -test with a p -value of 0.0104 (rated large) at the significant level $p > 0.05$ proved that there is a statistically significant difference at the 5% level. This indicates a high disparity amongst the respondents with regard to the practice of an extrinsic reward system in motivating the suggestion scheme in the organization.

5.0 Summary and discussion

This study was undertaken because organizations are continuously exploring ways to improve their competitive advantage in order to ensure their survival in the global market. Many authors have stressed the pivotal roles that empowered and engaged employees play in securing a competitive edge for organizations. The research findings of Brewster et al. (2003), Kiger (2002) and Poisat (2005) confirmed that improved business performance hinges not only on improved processes, technology and products but also equally on the involvement and participations of employees in constructive ideas suggestions. Slack et al (2001:612) and Poisat (2005:3) believe that many South African automotive component industries performed

restructuring exercises and adopted lean manufacturing techniques in order to improve their manufacturing efficiencies and overall organizational performance through the better use of their organization's resources.

The implementation of these principles and techniques, however, are devoid of world-class continuous improvement, employee empowerment and involvement in the submission of creative ideas. This understanding prompted a study into of the roles of employee involvement in the Kaizen suggestion scheme in South African automotive components companies, within the South African context. This study captures the opinions, feelings and experiences of the respondents about the organizational performance of functionality of Kaizen Suggestion Scheme in the South African automotive components companies under investigation.

6.0 Conclusion and Recommendations

There is decisive evidence of the significant contribution that participating and engaged employees make, through the suggestion of constructive ideas towards an organizations' competitive advantage. The literature scan in the study has revealed key functional and operational issues that must be considered for the effective performance of Kaizen suggestion scheme in organizational nitty-gritty. These include favorable organizational context, an all-inclusive suggestion policy, training, evaluation and motivation/rewards. However, it is concluded, through this study, that South African automotive organizations have not realized this fact, and need to be more proactive in implementing employee participation in suggestion systems and strategies. It is therefore recommended that;

- The automotive companies require to pursue an awareness of Kaizen Suggestion Scheme and the up-to-date adoption of lean tools by enlightening the organizational echelon (from top management to the shop-floor staff) of the importance of the lean production system and its role in supporting the core business of the organization
- The automotive components organizations should establish clear Kaizen suggestion objectives and communicate these to the workers and various departments or parties involved in production and service delivery. The objectives are necessary as a benchmark for all organizational activities
- Well qualified and experienced Kaizen suggestion assessors/evaluators should be appointed to prepare evaluation plans, feedback/relay of assessments and administration of rewards for the organizations. The performance evaluation professionals should also help in drawing a sound performance evaluation policy and ensuring that funds are available for evaluation and reward exercises
- A flexible organizational structure that encourages a favorable employee/employers relation and organizational citizenship should be put in place within the organizations
- Constant training and development of staff on ideas development and submission techniques should be pursued by the firms

- Within the South African context, organizations should pay as much as they can afford even if it is more than what other companies pay for similar work. This form of extrinsic reward can motivate more commitment and
- participation in organizational profitability
- Organizations should offer as many benefits as they can afford,, even if it is more than what other companies

- offer for similar work. This intrinsic reward can also motivate job satisfaction and organizational citizenship
- Companies should insist that employees, at all levels, share in the achievement of the business. Business results and how individuals contribute to achievement should be shared with all cadre of employees
- Every effort should be directed towards encouraging management to show a sincere interest in their employees' well-being.

7.0 Tables and Figures

Table 1: Responses according to position in Company

| POSITIONS | RESPONSE FREQUENCY | PERCENTAGE |
|-------------------------|--------------------|------------|
| Casual Worker | 0 | 0% |
| Line Staff | 1 | 3.7% |
| Supervisor/Group Leader | 10 | 37.0% |
| Operations Manager | 16 | 59.3% |
| Total | 27 | 100% |

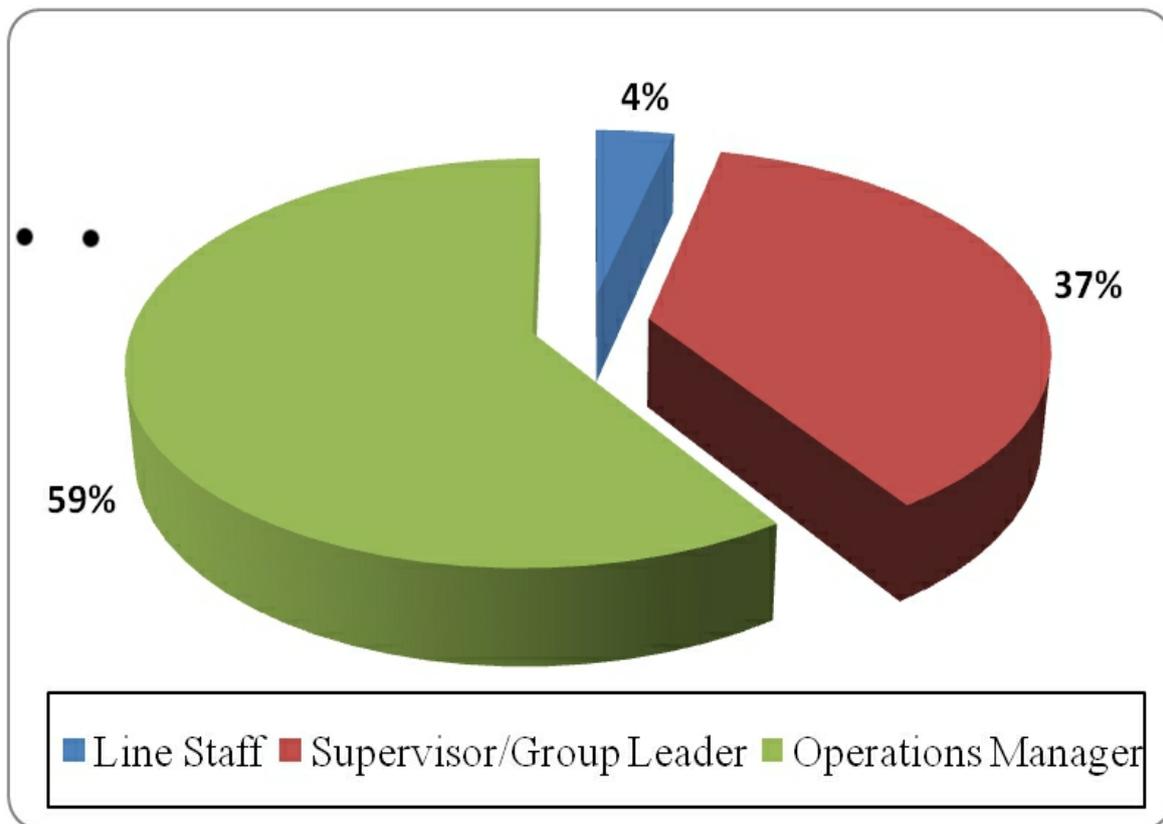


Figure 1: Responses according to position in Company

Table 2: Responses according to Organizations that has started the adoption of lean principles

| LEAN (KAIZEN) ADOPTION | RESPONSE FREQUENCY | PERCENTAGE |
|------------------------|--------------------|------------|
| Yes | 25 | 93% |
| No | 2 | 3% |
| Total | 27 | 100% |

Table 3: Mean and Standard deviation for the level of familiarity with the lean\Kaizen conceptual features (n=27).

| Statements | SDSA | | | | | M | Sd | R a n k |
|--|-----------------------|------|------|------|------|-------|-----|------------------|
| | 1 | 2 | 3 | 4 | 5 | Value | | |
| | Ranking(in per cent) | | | | | | | |
| The organization has dedicated staff to handle the lean change | 7.4 | 29.6 | 3.7 | 48.1 | 11.1 | 3.3 | 1.2 | 11 |
| Management motivated lean understanding and benefits | 3.7 | 14.8 | 3.7 | 51.9 | 25.9 | 3.8 | 1.1 | 9 |
| Staff understanding and appreciation of lean benefits | 3.7 | - | - | 55.6 | 40.7 | 4.3 | 0.8 | 5 |
| Dedicated staff member or unit to promote lean principles | 22.2 | 18.5 | 7.4 | 29.6 | 22.2 | 3.1 | 1.5 | 14 |
| Adoption of teamwork policy in the organization | 3.7 | - | - | 18.5 | 74.1 | 4.6 | 0.9 | 1 |
| Teams' leaders motivate, assist and are capable of handling the organization of work | 7.4 | 3.7 | 11.1 | 59.3 | 22.2 | 3.9 | 0.9 | 7 |

| | | | | | | | | |
|---|-----|------|------|-------|------|-----|-----|----|
| Teams' leaders are able to interpret and coordinate drawn value stream mapping for production processes | 7.4 | 14.8 | 29.6 | 44.4 | 3.7 | 3.2 | 1.0 | 13 |
| Potential problems are identified, corrected and communicated during lean production activities | 3.7 | 3.7 | 3.7 | 70.4 | 18.5 | 4.0 | 0.9 | 6 |
| Availability of clear worksheets that describe jobs at every workstation. | 3.7 | - | - | 48.1 | 48.1 | 4.4 | 0.8 | 4 |
| Worksheets are displayed conspicuously | 3.7 | - | 3.7 | 29.6 | 63.0 | 4.5 | 0.9 | 2 |
| Operators can do suggested changes and improvements to worksheets. | 3.7 | - | - | 44.44 | 51.9 | 4.4 | 0.8 | 3 |

| | | | | | | | | |
|---|------|------|------|------|------|-----|-----|----|
| Operators are trained in problem solving methods. | 11.1 | 11.1 | 14.8 | 44.4 | 18.5 | 3.5 | 1.3 | 10 |
| Solving production problems involves teamwork | 11.1 | - | 11.1 | 48.1 | 29.6 | 3.9 | 1.2 | 8 |
| Operators understand the seven wastes of the lean system. | 7.4 | 22.2 | 25.9 | - | 44.4 | 3.1 | 1.0 | 16 |
| There is emphasis on the Kaizen suggestion scheme in the lean implementation processes | 7.4 | 22.2 | 14.8 | 40.7 | 14.8 | 3.3 | 1.2 | 12 |
| Excellent implementation of lean principles at workplace | 11.1 | 33.3 | 29.6 | 22.2 | 3.7 | 2.7 | 1.1 | 17 |
| Availability of periodic training in lean (Kaizen tools) within the organization | 7.4 | 33.3 | 14.8 | 29.6 | 14.8 | 3.1 | 1.3 | 15 |
| SD = Strongly Disagree; 2 = Disagree; 3 = Uncertain; 4 = Agree; SA = Strongly Agree; | | | | | | | | |
| M = Mean; Sd= Standard Deviation | | | | | | | | |

Table 4: Comparison between the independent variables and company size: Comparing means

| Variable | 0-200 Employees (Small) | | | >200 Employees (Large) | | | t-test p-value 2 (tailed) | Cohen's d | Ranking of Cohen's d |
|----------|-------------------------------|------|-----------------------|------------------------------|------|-----------------------|------------------------------------|--------------|-------------------------------|
| | N | Mean | Standard Deviation | N | Mean | Standard Deviation | | | |
| L1 | 17 | 3.54 | 0.81 | 10 | 3.99 | 0.48 | 0.1268 | 0.63 | M |
| L2 | 17 | 3.14 | 1.03 | 10 | 3.77 | 0.83 | 0.1132 | 0.65 | M |
| L3 | 17 | 3.93 | 0.87 | 10 | 4.20 | 0.51 | 0.3772 | 0.36 | S |
| L4 | 17 | 2.96 | 0.76 | 10 | 3.71 | 0.59 | 0.0121* | 1.08 | L |
| L5 | 17 | 3.94 | 0.68 | 10 | 3.90 | 0.61 | 0.8766 | 0.06 | S |
| L6 | 17 | 2.74 | 1.3 | 10 | 4.15 | 1.25 | 0.0104* | 1.10 | L |

• L1-Organizational familiarity with lean/Kaizen conceptual features;
 • L2-Organizational Hierarchical awareness of the Kaizen suggestion scheme;
 • L3-Organizational policy for employee participation in idea submission processes;
 • L4-Implementation of the Kaizen suggestion scheme;
 • L5-Intrinsic rewards for employee participation in the Kaizen suggestion scheme; and
 • L6-Extrinsic rewards for employee participation in the Kaizen suggestion scheme.

*Statistically significant at 5% level ($p < 0.05$)
 L = Large; M = Medium; S = Small

References

- Arthur, J. B. and Aiman-Smith, L., 2001. Gainsharing and organizational learning: An analysis of employee suggestions over time: *Academy of Management Journal*, 44 (4), pp.737-754.
- Brewer, J. and Hunter, A., 2006. *Foundation of Multi-Method Research: Synthesizing styles*, London: Sage Publications Inc.
- Chen, F. and Tjosvold, F., 2006. Participative Leadership by American and Chinese managers in China: The role of leadership. *Journal of management studies*, 43(8), pp 1725 - 1752.
- Fairbank, J.F., Spangler, W.E. and Williams, S.D., 2003. Motivating creativity through a computer-mediated employee suggestion management system: *Behaviour & Information Technology*, 22(5), pp 305-314.
- Hiam, A., 2003. *Motivational Management: Inspiring your people for maximum performance*. AMACOM. American Management Association; New York. Pp.7.
- Kiger, P.J., 2002. Why Customers Satisfaction starts with HR. *Workforce Management*, Pp. 26-32. Available at: <<http://.workforce.com/archive/feature/23/21/94index.php>> [Accessed 20 February 2009].
- Liker, J.K. and Hoseus, M., 2008. *Toyota Culture: The heart and Soul of the Toyota way*. McGraw-Hill.
- Marskell, B.H. and Baggaley, B., 2004. *Practical Lean Accounting: A proven system for measuring and managing the lean enterprise*; New York: Productivity Press, 2004.
- Miller J., 2003. The suggestion system is no system. *Gemba Research LLC*, November 2003, 3rd Ed. Pp. 1-11.
- Neagoe, L.N. and Klein M.V., 2009. Employee suggestions system (Kaizen Teian) the bottom-up approach for productivity improvement. *International Conference on Economic Engineering and Manufacturing Systems*. 10; 3 (27); Pp. 361-366.
- Poisat P., 2005. Report on Developing World Class People Survey Conducted at Volkswagen of South Africa. Unpublished Document. 2005. pp.2-5.
- Reinersten, D. and Shaeffer, L., 2005: *The Logic of Lean*. *Research Technology Management*, 48(4), pp.2, [online] Available: <http://search.ebscohost.com/login.aspx?direct=true&db=bnh&AN=17440219&site=ehost-live>. [Accessed 8 March 2009].
- Renwick, D., 2003. HR Managers. *Guardians of Employee Wellbeing? Personnel Review*, Vol.32, No.3; Pp. 341-359.
- Robinson, A. G. and Schroeder, D. M., 2004. *Ideas are free: How the idea revolution is liberating people and transforming organizations*. Berrett-Koehler Publishers, Inc. USA.
- Sharma, A., 2005. *The World class Manufacturing Report 2005*, [online] Available at: <<http://www.uwc.ac.za/research/pdfiles/econ.pdf>> [Accessed 10 March 2009].
- Slack, N., Chamber, S. and Johnson, R., 2001. *Operations management*. Harlow, England: Prentice Hall. 3rd Edition.
- Swanepoel, B.J., Erasmus, B.J. and Schenk, H.W., 2008. *South African Human Resource Management. Theory and practice*; 4th Edition. Juta & Co. Ltd, Cape Town.
- Womack, J., Jones, D. and Roos, D., 2007. *The Machine that Changed the World* Published by Simon & Schuster; New York.