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LEAN KAIZEN IMPLEMENTATION AND ORGANISATIONAL SURVIVAL: A MODERATING ROLE OF ORGANSTIONAL STRUCTURE OF MANUFACTURING FIRMS IN PORT HARCOURT

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ABSTRACT

The aim of this study is to identify the relationship between Lean Kaizen Implementation and Survival: A moderating role of organizational structure of Manufacturing firms in Port Harcourt. The purpose will be to identify the extent team work affects effectiveness, the extent to which waste elimination affects productivity, the extent organized workplace affects profitability and extent organizational structure moderates Lean Kaizen Implementation and Survival of Manufacturing Firms in Port Harcourt. Ten research questions guided the study, while ten hypotheses will be tested accordingly. Descriptive survey research design is adopted for this study. Population of study comprised of 1200 staff. A sample of 291 staff was drawn from study population. Simple random sampling technique was adopted in drawing the sample from the population. Data for this study were sought from two sources, primary and secondary sources of data. This study depended solely on researcher's structured questionnaire titled "Lean kaizen Implementation and Organizational Survival Scale (LIOSS)" as the main instrument for data collection. Descriptive statistical tools such as tables, frequencies, percentages, mean scores and standard deviations were used to assess the prevalence of the study variables. Pearson Product Moment Correlation Coefficient and Multiple Regression analysis were also adopted using Statistical Package for Social Sciences (SPSS) version 23.0. Findings showed that teamwork affects effectiveness, Waste elimination affects productivity, organized workplace affects productivity, and organizational t=structure moderates Lean Kaizen Implementation and Survival of Manufacturing Firms in Port Harcourt to a large extent.

Keywords: Lean Kaizen Implementation, Organisational Survival, Effectiveness, Organisational Structure

INTRODUCTION

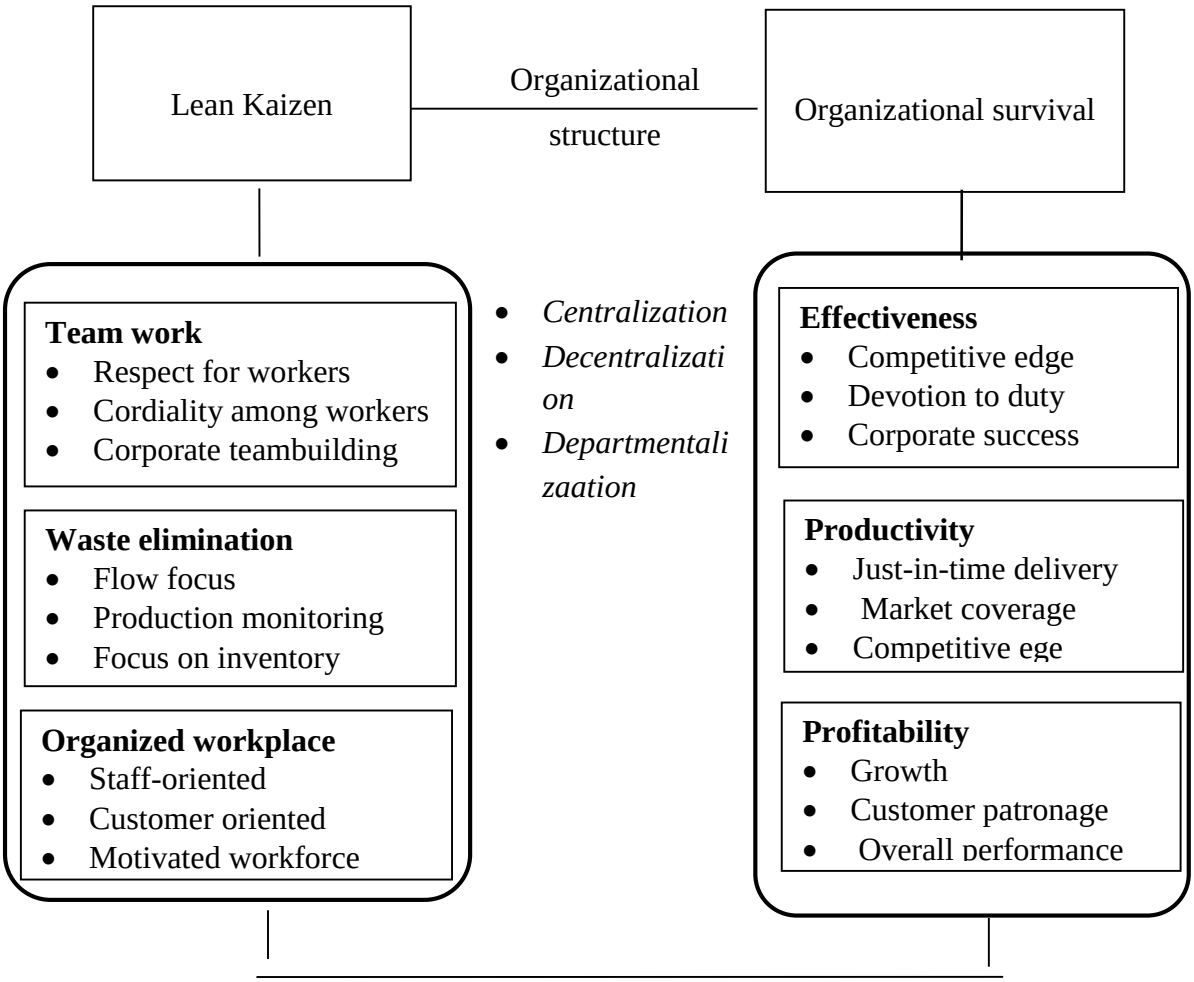
The Lean is a concept that is known to increase effectiveness in manufacturing (Womack & Jones, 2003; Kim, Spahlinger, Kin, & Billi, 2016; Emiliani, Grasso, Stec, & Stodder, 2017). The Lean has also led to the success of most organizations, and inspired others around the world to take the "Lean journey." However, in Nigerian the Lean concept has been argued not to be relevant to organizations as well. The argument is that the Lean concept does not improve organization through waste elimination, value adding for the customer and flow focus (Kim et al., 2016; Kollberg & Dahlgaard, 2017; de Souza, 2009; Joosten, Bongers & Janssen, 2009). There are reports that results of Lean implementation are divided in that most of the Lean implementation efforts are not reaching their goals (Bhasin & Burcher, 2016; Emiliani, 2016). On the other hand, studies argued that the Lean can only be applied to some organizations that deal on manufacturing and not good for others that are in the service industry (de Souza and Pidd, 2011; Mazzocato, Holden, Brommels, Aronsson, Bäckman, Elg, & Thor, 2012).

Another problem is that the emphasis of the Lean has shifted from a technical production system focus to an all-encompassing organizational viewpoint, that are Toolbox Lean and Lean Philosophy, respectively (Langstrand, 2012). Another reason for failure with Lean implementation could be a lack of understanding of the two basic principles in Lean. There is also simple logical arguments that authentic "continuous improvement" is not possible without "respect for people". However, it seems to be common to misunderstand or neglect the importance of the "respect for people" principle,

since this has been highlighted as an obstacle to Lean (Liker & Hoseus, 2008; Osono, Norihiko, & Takeuchi, 2008; Pay, 2008; Ivarsson, Molin, Lishajko, Wiestål, & Johansson, 2013). A third reason for Lean implementation failure could be that managers don't provide the right kind of leadership (Liker & Meier, 2007). This means that the managers' capacity to lead is central in Lean, most managers in Nigeria lack these leadership capabilities.

Finally, research on Lean is still limited and that studies of Lean often lack explicitly stated and appropriate research designs, as well as appropriate statistical tests and outcome measures. They also argue that a predominance of studies report successful Lean interventions but so far little has been reported about failed attempts or barriers to application. Thus there is a need for further research to fill the knowledge gap about Lean as a functional approach in organizational survival (Mazzocato et al., 2012). It is on the foregoing enumerated arguments that the present study is embarked upon to determine the relationship between effective Lean Kaizen implementation and survival of Manufacturing firms in Port Harcourt.

Conceptual Framework



Objective of the Study

1. To identify the extent organizational structure moderates the effective Lean Kaizen implication and survival of manufacturing firms, Port Harcourt.

Research Question

1. To what extent organizational structure moderates the effective Lean Kaizen implication and survival of manufacturing firms, Port Harcourt?

Hypothesis

Ho_1: Organizational structure does not have moderating effect on effective Lean Kaizen implication and survival of manufacturing firms, Port Harcourt.

Lean Kaizen Implementation

The term Kaizen is a Japanese compound word that depicts continuous improvement. Slack et al (2001:611) indicate that Kaizen deals with the adoption of premeditated approaches to improved performance, which assumes more and smaller incremental improvement incorporating the all-inclusive participation and suggestion in an organization. The two key features of kaizen are incremental, but continuous improvement and involvement of the entire workforce in organizational processes. The workforce, therefore, needs to participate in producing small but frequent changes by making suggestions for improvement in both process and product (Ohno *et al*, 2009).

The Kaizen concept is not just a management technique but also a philosophy that teaches how a human should conduct his or her life. It focuses on the way people approach work. It shows how management and workers can change their mindset to improve their productivity (Ohno *et al*, 2009). Kaizen requires patience, openness to change, shared goals between management and employees, trust in others, teamwork, job security and interest in learning and growth (Slack et al, 2001:612).

According to Imai (2016), Kaizen is a continuous improvement (CI) process involving everyone, managers and workers alike. Broadly defined, Kaizen is a strategy to include concepts, systems, and tools within the bigger picture of leadership involving and people culture, all driven by the customer. Suzaki (2017) explains that CI is a philosophy widely practiced in manufacturing and quality circles. As the name implies, it relies on the idea that there is no end to make a process better.

Wickens (2010) describes the contribution of teamwork to make the concept of Kaizen. Teian (2012) describes that Kaizen is more than just a means of improvement because it represent the daily struggles occurring in the workplace and the manner in which these struggles are overcome. Hammer et al. (2013) explain that Kaizen generates process-oriented thinking since processes must be improved before better results are obtained. Womack and Jones (2016) refer to Kaizen as a lean thinking and lay out a systematic approach to help organizations systematically to reduce waste. Imai (2017) describes that the improvement can be divided into Kaizen and innovation. Kaizen signifies small improvements as a result of ongoing efforts. Innovation involves a drastic improvement as a result of large investment of resources in new technology or equipment.

Campbell (2016) states that the objective of Lean organizations is to constantly seek the best economic use of assets, as new waste-less operational paths are pursued, while employees are empowered and involved in organizational processes for optimum productivity. Organizations initiating a world-class productivity need to imbibe aggressively the lean tools in their production processes. Smalley (2015) states that Lean manufacturing encompasses the manufacturing concerns of implementation tools such as just-in-time (JIT), Six Sigma, Economic Value Added (EVA), Total Productive Maintenance, Value Stream Mapping, Toyota Production System and Team-based Problem Solving, among others.

Organizational survival

The term "survival" has many connotations that are subjective and objective. The most objective way to understand survival of organizations is to observe their continuing existence. This is problematic given the nature of mergers and acquisitions. A way of clarifying the matter is to employ a resource dependence approach. According to Shepphard (2015) an organization survives as long as it acquires inputs from suppliers and provides outputs to a given public (customers, clients, patients, etc.). The organization fails when coalitions of resource providers cannot be induced to

supply resources and the firm cannot repay resource providers for past support. Survival of an organization depends on external and internal environments and continuity of its performance.
Therefore, from the perspective of the organization, formulating multidimensional constructs can help shed light on survival for organizations and help them recognize the existence of appropriate planning, adaptability to environmental changes in the organization, develop and sustain the organization. Employing a multidimensional construct, Dargahi et al (2012) assert that multidimensional construct can avail one with an insight on understanding the state of an organization. A construct whose indices are invisible or hidden variables that cannot be measured directly. A dimension is the concept used to describe a distinctive feature of the construct under study. In other words, they are invisible indices of the basic construct. A measure, or an indicator, consists of a small quantity of items through observation, interviews, or other acquisition, which can be quantified in terms of measurement tools several companies due to the lack of adaptation to environmental changes get out of the competition But, Dargahi, et al (2012) noted accordingly, the ability of businesses to identify factors affecting their survival and to respond them as fast as they can requires appropriate measures to ensure their survival. Despite the large number of incorporations entering the industry each year, a considerable number of different incorporations over the stages of the lifecycle (birth, growth, maturity, and etc.) get out of the market competition and experience organizational mortality.

Organizational structure

The structure of an organization depends mostly on its objectives and modes of operation. Organizational structure is the foundation with which the organization determines operating procedures, decision making processes, distribution of responsibilities, and who participates in what level of the decision making process (Robbins & Judge, 2017). For the purpose of achieving organizational goals, certain tasks and responsibilities such as supervision and coordination are allocated to different entities like branch, departments, groups and individuals. Thus Jacobides, (2017) describes organizational structure as the viewing glass or perspective through which individuals see their organization and its environment. This is fundamental because the views of these individuals can shape the actions of the organization. That is why Lim and his colleagues concluded that organizational structure development is very much dependent on the expression of the strategies and behaviour of the management and the workers as constrained by the power distribution between them, and influenced by their environment and the outcome (Lim, et al., 2010). The right structure of an organization will enhance performance, whereas a wrong organizational structure will be counterproductive, negatively affect cooperation among individuals, groups and departments within the organization (Robbins & Judge, 2017).
Organizational structure can be formal or informal. A formal organizational structure has many levels of management, from Top policy management to lower level managers. Decision making takes an organized process, which passes through these levels of management down to the workforce, and this makes the decision making procedure to be rigid, and difficult to change.

Lean Kaizen and Organizational Survival

Various studies have demonstrated the effectiveness of *lean kaizen* implementation in the improvement of organizational survival (Liker, 2004; Ohno, 1988; Womack & Jones, 1996; Womack et al, 1990). This survival management was characterized by four key distinct performance dimensions which included; cost/productivity, time/speed, operations flexibility and quality. Others included creativity, innovation and customer satisfaction (De Toni & Tonchia, 2001). These four distinct classes of survival dimension coincided with the four basic components of cost, quality, speed and flexibility by which the manufacturing strategy of a firm is generally expressed (Ward et alia., 1995). These manufacturing survival dimensions determined the market competition focused on "price", "product" and "place" (Corbett & van, 1993).

Kaizen events attempted to impact business survival as well as human resource outcomes. Reported business performance improvements resulting from *kaizen* events appeared to vary from moderate improvement (25-50 per cent), to significant improvement (75-100 per cent) to orders of magnitude improvement (greater than 100 per cent) (Cuscela, 1998; Sheridan, 1997). *Kaizen* events that generated short term performance improvements had provided impetus that the organizational change literature purported was necessary for creating employee commitment to a given survival improvement strategy (Keating,1999; Kotter,1995).

Some of the purported human resource outcomes of *kaizen* event are increased employee knowledge of the need for improvement in the organization (Butterworth, 2001; Tanner and Roncarti, 1994), increased employee knowledge of the principles, tools and techniques of continuous improvement, development of problemsolving skills (McNichols et al.,1999), promoted teamwork in an organization, proficiency in lean manufacturing tools (Mika, 2002).

Theoretical Framework

This study is hinged on Deming Process of Continuous Improvement (Kaizen) (Rich 1999: cited in Oliver, 2017

The fundamental process of continuous improvement, recognized by Dr. Deming, is hinged on the fact that managers and employees should unequivocally 'PLAN' the improvement of the production process such that main sources of disparity are targeted for control followed by the implementation (DO) of the selected solution. This level is expected to be followed by a phase of monitoring (CHECK) to make certain that the solution has created the desired improvements. The productive ideas are then spread across the business (ACT). Deming believes the spreading of this procedural feat from one business to another allows a second cycle to be achieved for the standardization of factory approaches and performance levels (Olivier, 2007: citing Rich, 1999:42). The Deming model, a representation of the Deming cycle for continuous improvement, is shown in the figure 2.1.

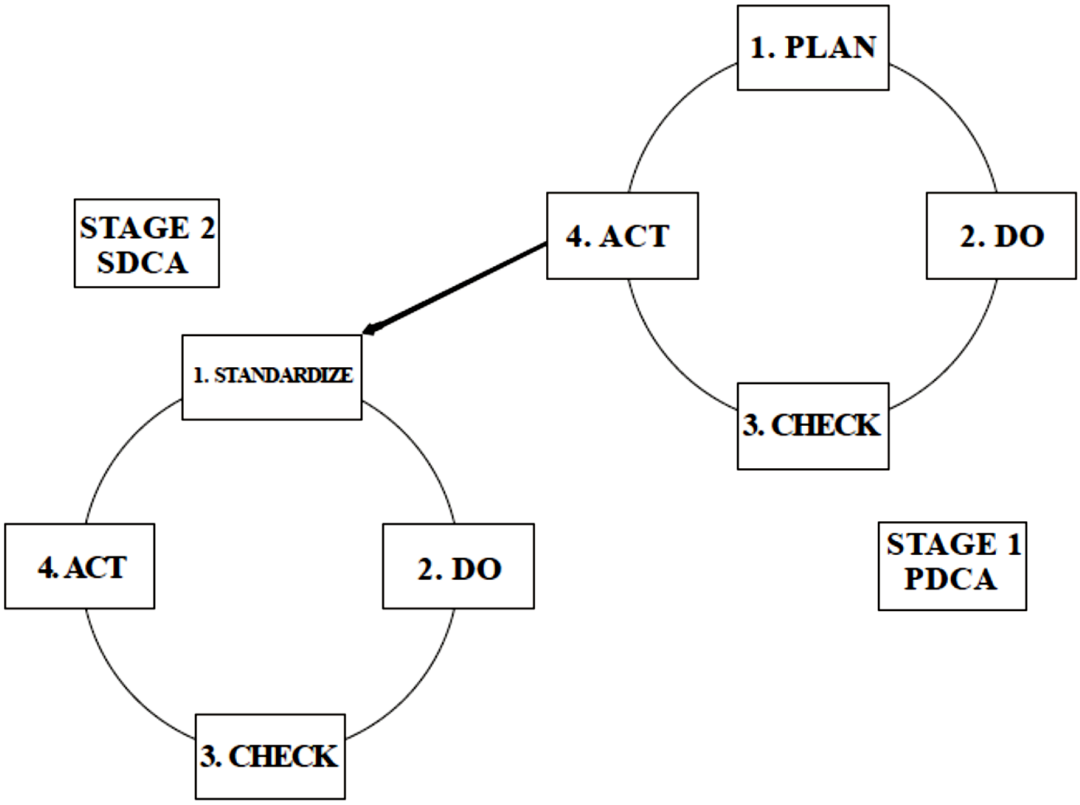


Figure 1. The Deming Cycle

Source: Rich 1999: cited in Oliver, 2007

Implication of Deming Theory to the study

It is important to note that continuous improvement principles are not complete and achievable without a well-crafted employee participation and involvement strategy in the workplace. Employee participation refers to a broad variety of policies, mechanisms, and practices that facilitate employee participation in decision-making, frequently at the level of the enterprise or workplace (Ito, *et al*; 2011; Kawakami, *et al*; 2014).

Koningsveld et al (2015), describe participatory ergonomics as the involvement of people in the planning and controlling of a considerable amount of their own work activities, with adequate knowledge and power to influence both processes and outcomes in order to achieve desirable goals. This definition is equally pertinent to the spread and use of participatory methods in workplace improvement.

Participatory methods are increasingly utilized in improving the ergonomic aspects of work and workplaces. The intrinsic worth of these methods is widely recognized as a means of promoting the initiative of employees and achieving workable solutions and productivity (Zalk, 2011). A notable merit is that participatory concepts contribute to the improvement of the workplace in their diverse conditions (Kawakami et al, 2014; De Jong & Vink, 2012; Koningsveld et al., 2015). De Jong and Vink (2012) indicate employee participation as a function of the continuous improvement (Kaizen) system. Hence, this theory is in consonant with the study under review.

Research Design

Descriptive survey research design is adopted for this study.

Population of the Study,

The target populations for this study have been all the personnel, comprising managers, directors, Accountants of selected companies in manufacturing firms in Rivers State. The population of study consists of the 1,200 registered operators of manufacturing firms in Port-Harcourt city.

Sample and Sampling Techniques

This study adopted the probability technique because it concerns a selection among a population. The sample size for the study was determined using Krejcie and Morgan (1970)

Method of Data Analysis

Pearson Product Moment Correlation Coefficient and Multiple Regression analysis were also adopted using Statistical Package for Social Sciences (SPSS) version 23.0. The Pearson's Product Moment Correlation Statistical Technique was used to test the null hypotheses on the relationship between Lean Kaizen Implementation and Survival of Manufacturing Firms. The regression analysis was also employed to determine the effects of the explanatory variables on the dependent variable.

The Moderation of organizational structure on Effective Lean Kaizen Implementation and Survival of Manufacturing Firms in Port Harcourt

Table 1 below shows the result of correlation matrix obtained for moderation of organizational structure on effective Lean Kaizen implementation and survival of manufacturing firms in Port Harcourt, Rivers State. Also displayed in the table is the statistical test of significance (p - value), which makes us able to answer our research question and generalize our findings to the study population.

Correlation Matrix for Moderation of Organizational Policy on Effective Lean Kaizen Implementation and Survival of Manufacturing Firms in Port Harcourt

			Organizational Structure	Effective Lean Kaizen Implementation	Survival of Manufacturing Firms
Spearman's rho	Organizational Structure	Correlation Coefficient	1.000	.926**	.969**
		Sig. (2-tailed)	.	.000	.000
		N	121	121	121
	Effective Lean Kaizen Implementation	Correlation Coefficient	.926**	1.000	.968**
		Sig. (2-tailed)	.000	.	.000
		N	121	121	121
	Survival of Manufacturing Firms	Correlation Coefficient	.969**	.968**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	121	121	121

**. Correlation is significant at the 0.01 level (2-tailed).

SPSS 21.0 data Output, 2021

Table 1 illustrates the test for the three previously postulated bivariate hypothetical statements. The results show that for hypodissertation one: There is no significant relationship between organizational structure and Effective Lean Kaizen Implementation ($r = 0.926$, $p = 0.000 < 0.01$). Hypodissertation Two: There is no significant relationship between organizational policy and survival of manufacturing firms in Port Harcourt ($r = 0.969$, $p = 0.000 < 0.01$). Hypodissertation three: Organizational structure does not moderates the relationship between effective Lean Kaizen implementation and survival of manufacturing firms ($r = 0.828$, $p = 0.000 < 0.01$).

Therefore, based on the results illustrated, all previous bivariate null hypothetical statements are hereby rejected as the study finds that:

i) There is significant relationship between organizational and effective Lean Kaizen implementation in manufacturing firms in Port Harcourt, Rivers State.

ii) There is significant relationship between Organizational structure and survival of manufacturing firms in Port Harcourt, Rivers State.

iii) Organizational structure moderates the relationship between effective Lean Kaizen implementation and survival of manufacturing firms in Port Harcourt.

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Ozkan and Gumus (2013), they carried out a research "the effects of organizational structure on hotel businesses on the conversion of job values, and reported that the employees who work for longer durations in the workplace have settled job values and organizational structure more than those who work for less durations.

Deal (2015), see organizational structure as the game of change. Harris and Raviv (2012), is one of the scholars that believed this organizational structure as a center of game changer so; she suggested that successful improvement of organization can only occur when the management of the organization apply those strategies that best suited to their own context and particular developmental needs. Also, the need to consider the environment and structure of the system as one of the organizational change process in the improvement, are made by several authorities on system improvement, such as Deal & Peterson (2014), who have demonstrated the pronounced effects of school environment and structure on the institutional change process. Deal and Peterson (2014), also show an illustration on how dysfunctional system structures, such as inward focus, fragmentation, emotional outbursts, and sub-structure values that which override shared assumption of organization, can impede organizational improvement. There is also a high degree of organization performance is relate an organization which has a strong structure with well integrated and effective set of value, believe and characters".

CONCLUSION

From the study it is concluded that the effects of organizational structure on Lean Kaizen on businesses creates conversion of job values, and reported that the employees who work for longer durations in the workplace have settled job values and organizational structure more than those who work for less durations. Therefore, organizational structure changes the game and at as a center of game changer so that successful improvement of organization can only occur when the management of the organization apply those strategies that best suited to their own context and particular developmental needs. Hence, the need to consider the environment and structure of the system as one of the organizational change process in the improvement, are made by several authorities on system improvement. This showed that any dysfunctional system structures, such as inward focus, fragmentation, emotional outbursts, and sub-structure values that which override shared assumption of organization, can impede organizational improvement.

RECOMMENDATIONS

From the foregoing conclusions, the following recommendations are suggested.

1. Organizational attainment of a competitive advantage, in the highly competitive global market, requires substantial attention. Organizations desiring to operate within the ambient of world-class continuous improvement strategy need, therefore, to adopt the lean/Kaizen principles of production and the ideas suggestions systems. The automotive companies are encouraged to pursue an awareness of 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
2. 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
3. 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
4. A flexible organisational structure that encourages a favourable employee/employers relation and organizational citizenship should be put in place within the organizations.
5. A dedicated unit/department, with sole responsibility of bolstering awareness for participation in ideas suggestion, collation of ideas through suggestions' forms, electronic

mails, Multimedia messaging and Short Message services (MMS and SMS), should be prioritized within the automotive companies in the E.C

6. An effective and well-coordinated feedback mechanism should be put in place for workers to be abreast of the evaluation and implementation of suggested ideas
7. Constant training and development of staff on ideas development and submission techniques should be pursued by the firms
8. Within the Nigerian 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.
9. 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
10. 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
11. Every effort should be directed towards encouraging management to show a sincere interest in their employees' well-being.

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