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MAINTENANCE CULTURE AS AN ORGANIZATIONAL PERFORMANCE DETERMINING FACTOR IN SELECTED AUTOMOBILE FIRMS IN ANAMBRA STATE

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Abstract: *The high cost of modern production machines as well as the need to reduce high maintenance cost and the seeming corrective maintenance culture in most firms necessitated this study to ascertain the maintenance culture in the studied firms and how it affects their performance as a broad objective. The work was anchored on Transaction Cost Theory. The research design that was adopted in the study was the survey design. The population of consisted of 1644 staff of both Innosson motors and NASENI. The sample size of 316 was determined using the Borg and Gall formula. Likert structured questionnaire was used to collect data from the respondents. A combination of descriptive and inferential statistics were used for data analysis, and the hypothesis was tested at 5% level of significance. The result showed that financial provision for maintenance has a statistically significant positive relationship with on–time deliveries in the selected automobile firms in Anambra State (r =.977; p-value <05). It was, therefore, concluded that maintenance culture affects the performance of organizations positively if taken serious and negatively if it is not given the pride of place in the organizational dealings. Following this, the study recommended that the organizations studied need to allocate more funds to maintenance practices as it will increase the chances of the firms to meet with the demand of customers on time.*

Keywords: maintenance culture, performance, financial provision, on–time deliveries and Nigeria

INTRODUCTION

The market environment of today places a high value on product diversity, effectiveness, and quality. Manufacturers are required to use sophisticated and complex machines in order to achieve these standards. The trend in manufacturing has changed through time to one of high levels of automation as a result of the pressing need to fulfil and enhance the requirements. (Chiekezie, Nzewi&Odekina, 2017). The objective behind automation is to achieve higher productivity and profit in order to effectively stay competitive in business. High levels of automation require that the machines deployed operate without trouble and this requirement has changed the technology and operating philosophy of manufacturing industry around the world (Mishra & Pathak, 2016). Despite the successes recorded in automation of processes, one key factor that necessitates consideration is cost of maintenance. Manufacturing companies are being forced to pay attention to the culture that encourages maintenance by developments like the high and rising costs of contemporary production machinery as well as the necessity to reduce high maintenance costs.

Maintenance with its various activities, resources, measurement and management, has become crucial to manufacturing organizations such as Innoson Motors and National Agency for Science and Engineering Infrastructure (NASENI), which seek to gain competitive advantage with respect to cost, quality, service and on–time deliveries. In this regard, maintenance has come to play an important role in helping organizations to reach their goals of productivity, profitability and competitiveness and making sure that their equipment operates effectively and efficiently (Muyengwa and Marowa, 2015).

The basic role of maintenance has traditionally been shallowly perceived as "to fix broken items". Taking such a narrow view, maintenance activities have been confined to the reactive tasks of repair actions or item replacement. Thus, this approach is identified as reactive maintenance, breakdown maintenance, or corrective maintenance (Fallahian-Najafabadi, Mahbod&Karimi, 2014). However, Gits (2018) opines that it is all the activities aimed at keeping an item in, or restoring it to the physical state considered necessary for the fulfillment of its production function. This definition brings to the for proactive tasks such as the regular servicing and periodic inspection, preventive replacement, and condition monitoring to the dynamics of maintenance. This aspect of being proactive and preventive in nature seem not to be what is operational in the studied firms, hence, the need to carry out this study to ascertain the maintenance culture in the studied firms and how it affects their performance. The specific objective of this study is to:

i. Ascertain the nature of relationship between financial provision for maintenance and on–time deliveries of selected automobile firms in Anambra State.

REVIEW OF RELATED LITERATURE

Maintenance Culture

It will be more productive to look at the concept of culture before delving into the realms of maintenance culture. Culture is difficult to define because it has multitude concepts, each with sight variation depending on the focus of study. It is a way life which consist of language, arts ant and thought, spiritually, social activity and interaction. Generally, culture is acknowledged as encompassing inherited ideas, beliefs, values and knowledge that contribute the shared bases of social actions (Mark, Ogaji, &Probert, 2006). It is the key that influences behavior of getting things done the right way without which would hinder the goals from being achieved

(Brendan, 2006). It is shaped by the interaction between individual and groups shared the value, perception and goal they have learned from previous generation and continues from generation to generation. The context of culture has been use in organization when culture is created in the organization of social relationship among members through way of thinking, behavior and belief, value, attitude, practices, and all humans' works and ideas that influences each member in the organization. Maintenance culture in this context, however, has to do with the design and implementation of a technical procedure that supports the prevention or correction of premature failure of engineering systems with least cost and time without compromising the system performance and safety parameters (Hill, 2005).

A human resources organisational structure is necessary for the development of effective maintenance culture in enterprises. While the human element's functionality depends on elements like qualification, motivation, interpersonal relationships, training, and retraining, the strategies will be based on clear corporate emphasis and objectives. It has been discovered that an efficient maintenance system typically supports a good production system, so assessing maintenance culture is a component of the endeavour to increase productivity in the manufacturing industries (Kelly, 2006).

Financial Provision

Maintenance of equipment in organizations require lots of funding. The approaches that might offer efficient funding are mostly determined by size, industry, and ownership structure. Additionally, other unrelated elements influence how the businesses intend to use the funding. When it comes to funding a capital investment and packaging a product for export, unique funding solutions are unquestionably necessary. The solutions for takeoff funding won't be suitable for an enterprise's operating capital requirements. Expectations for the future are a factor in all decisions about growth, recruiting, purchasing new equipment, and adding to inventories. Modern economic theory makes the assumption that businesses (and their owners) are rational beings who take the future into account when making decisions today.

The company won't spend money on equipment that is anticipated to pay for itself, just as they won't hire employees who aren't anticipated to "earn their pay" by providing more value to the company. The simple ability to identify different financing options is insufficient. The right approach must be used in order to obtain the necessary funding for upkeep. Most businesses in Nigeria are unable to access the many sources of funding because they are unaware of the steps involved in getting the money needed to advance their business ideas.

Performance

The concept of performance is one that has caught the attention of many in the industrial, academic, political, management and social realm. It means different things to different people, and some people or experts have come to measure it using different indicators. Some prefer to look at it from a qualitative standpoint, while others best see it from a quantitative standpoint. However, performance could be seen as an end point or a means to an endpoint; a determinant factor or the factor being determined. Some tend to look at performance in an organization as what the organization has achieved, while others look at it as what helps the organization to achieve result. In the context of this study, performance is looked at as what helps an organization to achieve wonderful result, vis-à-vis maintenance culture.

Since maintenance is seen as one of the primary catalysts for the ongoing existence of all types of resources in the universe, it plays a significant role in the growth of both human and non-human resources. This is also true for businesses and organisations, as they risk failing in the face of fierce competition if they don't achieve the intended goals (Uma, 2009). One of the key factors influencing performance in manufacturing companies is maintenance activity. According to Sodiki (2001), a good production system is typically supported by a successful maintenance system. As a result, assessing maintenance culture is a crucial component of the endeavour to improve performance and profitability in manufacturing organisations. Therefore, any firm that wants to maintain its increased performance must treat the responsibility of maintaining its machinery and equipment with the utmost seriousness.

On–Time Deliveries

Manufacturing firms have certain unique performance indicators, one of which is on-time delivery. This could be the point of difference between a manufacturing firm that has survived for a long time and those that have died off. This is because, when customers place targets and orders, and the firms do not meet these orders and targets, it could lead the customers to look for alternatives where competition is rife, hence, could lead to the demise of manufacturing firms.

On-time delivery is the ability of firms to meet the targets and order placed on them by customers on time. That is, not disappointing the customers by not meeting up to the expectation of goods supply as scheduled. One of the factor that determines the extent to which firms can meet their supply obligation to customers is the state of manufacturing equipment, which is contingent on the level of maintenance activity put in place. Maintenance is a critical factor in determining how effective and efficient firms could be in delivering products on time. Parida and Kumar (2006) opine that maintenance provides critical support for heavy and capital-intensive industry by keeping machinery and equipment in a safe operating condition so as to meet delivery targets which could affect the performance of the organization.

Theoretical Framework

The Transaction Cost Theory is the foundation of this study. Ronald Coase developed the Transaction Cost Approach to the Theory of the Firm (1937). Transaction costs, contracting costs, coordination costs, and search costs are all included in the transaction cost theory, which takes into account the actual cost of outsourcing the production of goods or services. When deciding, all costs are taken into account in addition to market prices. This idea essentially shows how businesses decide whether to create or buy something. The theory addresses the actual costs of resource allocation in a complex environment of misconceptions, conflicting objectives, and uncertainty. Since management consultants deal with this particular problem, it's possible that the theory can help to explain why the field even exists. The costs incurred by an organisation can be divided into two groups: production costs and transaction costs. The most common costs are those associated with production. They are all expenses related to direct production, such as manufacturing, logistics, and product development (Masten 2012). On the other hand, transaction costs are those expenses related to managing economic activity. they change according to organisational form (Masten 2012). Or, to put it another way, according to Arrow (2009), "The distinction between transaction costs and production costs is that the former can be varied by a change in the mode of resource allocation, whereas the latter depend on the technology and tastes, and would be the same in all economic systems. According to estimates, transaction costs contribute at least 45% of the gross national product in developing countries. Transaction cost theory was pertinent to the study since it suggests that in order for a corporation to be successful in the target market, manufacturing costs must be decreased. Any company operates most effectively or advantageously when long-term contracts, especially those including employee difficulties, are negotiated. According to this idea, when it comes to maintenance management, the price of a good or service, the cost of negotiating and creating a contract, the cost of flawless information, and the cost of inaccurate information are the four most significant market transaction costs. The administrative cost of choosing what, when, and how to create, the cost of resource misallocation, and the cost of demonization are the three most significant internal transaction costs.

Empirical Review

Radzuan, Mansor and Zainuddin (2021) in Malaysia examined Maintenance Performance Characteristics (MPCs) for National Religious Secondary Schools. The research included 300 sets of web-based self-administrative questionnaires that were collected online using Survey-Monkey. Only 134 sets, however, were responded and finished. Following data collection, SPSS Statistics - Version 21 was used to analyse the data. From the viewpoint of the school administrator, the features were carefully measured in this study. The findings suggested six characteristics—behavior, service delivery, complaints handling, safety, Islamic work ethic, and leadership—as independent variables.

Ibekwe, Ibekwe and Atueyi (2021) examined the effect of maintenance culture on firm performance in Anambra state. The study was anchored on structural empowerment theory. The population of the study comprised of all the bottled water companies in Nnewi. A sample size of 552 employees was drawn from the population using purposive sampling of which 530 copies of questionnaires were duly completed and returned showing 95% response rate. Research hypotheses were tested using Analysis of variance (ANOVA) which was carried out with the aid of Statistical Package for Social Science (SPSS) version 23. Findings from the study revealed that maintenance culture has positive significant effect on firm performance of rice mill in Anambra state and thatfinance has positive significant effect on firm performance of rice mill in Anambra state.

Tulcanaza-Prieto, Iliana and Carlos (2021) examined how company performance is affected by organisational culture in Ecuador's service industry. Using a self-designed online questionnaire, the study used four organisational culture aspects and twelve corporate performance ideas. Postgraduate students from academic programmes at Universidad de Las Americas (UDLA) in Quito, Ecuador, completed the questionnaire. The Denison model was used in the formulation of the operational items for the questionnaire to assess organisational culture and business performance. The results showed that organisational culture and firm performance had a statistically significant beneficial association. Additionally, the non-financial success of the Ecuadorian service sector is impacted by involvement, adaptability, consistency, and mission.

Alseiari and Farrell (2020) examined the impact of organization culture on the participation of autonomous maintenance within power plants using a structural equation modeling approach. Using a mail questionnaire, data was gathered from 250 experts working in the Abu Dhabi electricity sector. The hypothesised model was tested using structural equation modelling and partial least squares route analysis (SmartPLS software version 3.0). Three key questionnaires were given to research participants to complete: the questionnaire on Hofstede's cultural dimensions, the questionnaire on structural employee empowerment, and the questionnaire on participation in autonomous maintenance. The results showed that the variables of masculinity and femininity and power distance had a direct, negative, and significant impact on employee empowerment. Employee empowerment, on the other hand, was directly influenced favourably by collectivism. Additionally, structural empowerment directly benefited the power industry's engagement in autonomous maintenance.

Karim and Qamruzzaman (2020) analyzed the effects of just-in-time (JIT) implementation on just-in-time (JIT) relationships, corporate culture, management commitment, and human resource management, as well as how those factors interact to affect operational success. The research questions were examined via a survey with questionnaires. Structural Equation Modeling (SEM) was used to examine data from a sample of 410 industrial facilities. Results of the study showed that operational performance is directly impacted by company culture, management commitment, human resources management, and just-in-time (JIT). Findings revealed that there is partial mediation accessible in the estimation when taking into account the indirect effect, or the mediating role of JIT. On the other side, there are positive and statistically significant direct effects of company culture, managerial commitment, and HRM on JIT.

Enemuo, Ejikeme, and Edward (2019) investigated the importance of maintenance culture and customer satisfaction in ensuring the longevity of hotels in Umuahia North and South LGAs. Six objectives and six research questions served as the study's direction. A survey research design was used for the study. Mean and simple frequency % were used to analyse the data. According to the survey, the following factors were found to have a good impact on customer satisfaction, high-quality service, etc. The respondents recognised lack of staff training as having a negative impact. On the basis of the study's findings, recommendations were made.

Ajibola, Mukulu & Orwa (2019) ascertained the influence of human resource maintenance training practices on employee engagement in manufacturing firms in Nigeria. The research design used in the study was descriptive. For the study, a sample of 395 employees from Nigerian manufacturing companies were chosen using stratified, simple random, and purposeful sampling procedures. Data were gathered by questionnaire and analysed using the Statistical Package for Social Sciences (SPSS) version 21's descriptive and inferential statistics. A 63 percent response rate (n=248) was attained. Products from Pearson The linear regression model with moment correlation analysis was utilised to ascertain the significant impact of independent variables on employee engagement. According to the report, there is a very poor correlation between employee engagement and training.
Nzewi, Chiekezie and Arachie (2016) determined the link between the performance of a few selected aluminium firms in Anambra State and total productivity maintenance. The research design used in the study was correlational. The Theory of Structural Empowerment served as its foundation. The data was analysed using Pearson's Product Moment Correlation Coefficient. The results showed a strong positive link between Maintenance Autonomy and Employee Commitment.

METHODS

The research design that was adopted in this study is the survey design. Anambra state is the area of the study. The population of consist of 1644 junior, senior and management cadre staff of both Innosson (987) motors and NASENI (657). The sample size of 316 was determined using the Borg & Gall formula of (1973). The primary source of data was used in this study because of the variables that were used. Likert structured questionnaire was used to collect data from the respondents. The study adopted content validity test and Cronbach Alpha method for reliability. The coefficient of reliability was found to be high (0.794). A total of 316 copies of questionnaire were distributed, 290 were retuned and 280 were used for the analysis representing 89% of the total distributed copies, this is because, 10 out of the 290 copies returned were not usable, either because of incomplete response or mutilation. A combination of descriptive (frequency and mean) and inferential (correlation analysis) were used for data analysis, and the hypotheses was tested at 5% level of significance and 95% confidence level.

Research Question

What is the effect of financial provision for maintenance on on–time deliveries of selected automobile firms in Anambra State?

Table 1: Distribution of responses for financial provision for maintenance and on on–time deliveries

S/N	Questionnaire Items	SA (5)	A (4)	UD (3)	D (2)	SD (1)	Mean
	Independent Variables (Maintenance Culture)						
	Financial Provision						
1	My organization provides money for maintenance of equipment regularly.	35	55	10	100	80	2.52
2	We do not delay in repairing our equipment because money is provided.	79	43	19	99	40	3.08
3	My firm does not provide adequate fund for taking care of our equipments.	90	85	16	40	49	3.45
4	Money is not the problem when it comes to maintenance in my firm.	40	68	35	50	87	2.73

	Dependent Variables (Employee Engagement) On–Time Deliveries						
5	My firm delivers products on time to customers.	40	99	8	66	67	2.92
6	The customers of my organization are always satisfied with the way we meet their order.	78	79	35	48	40	3.38
7	Our machine breakdown regularly and make us not to meet our customer demands.	56	74	12	68	70	2.92
8	Delivering goods and products on time is important to my firm.	103	145	9	22	-	4.14

Source: Field Survey, 2022

Table 1 above shows the distribution of responses for financial provision for maintenance and on on–time deliveries in selected automobile firms in Anambra State. The analysis is based on descriptive statistics (mean) with a threshold of acceptance of 3. That is, any questionnaire item with a mean of 3 and above should be accepted while those with a mean of less than 3 should be rejected. From the analysis, it is seen that questionnaire items 1, 4, 5 and 7 all have mean statistics less than 3, meaning that the organization do not practice or they are not entrenched in the firms. While questionnaire 2, 3, 6 and 8 are accepted, signifying the entrenchment of those things in the studied firms.

Test of Hypothesis

Hypotheses One

Ha_1: Financial provision for maintenance has a statistically significant relationship with on–time deliveries of selected automobile firms in Anambra State.

Table 2: Correlation Result for hypothesis one

Correlations			
		FINPRO	OTD
FINPRO	Pearson Correlation	1	.977**
	Sig. (2-tailed)		.000
	N	280	280
OTD	Pearson Correlation	.977**	1
	Sig. (2-tailed)	.000	
	N	280	280

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

Source: Field Survey, 2022

Table 2 shows the correlation analysis carried out to test the first hypothesis which states that financial provision for maintenance has a statistically significant effect on on–time deliveries of selected automobile firms in Anambra State. From the analysis carried out, it shows that the correlation coefficient (r) is .977 while the probability value (p-value) as represented by sig in Table 2 is .000. Going by the decision rule which states that we should accept the alternate hypothesis if the p-value is lesser than the level of significance used (0.05), the alternate hypothesis is, therefore, accepted and it is stated that financial provision for maintenance has a statistically significant positive relationship with on–time deliveries of selected automobile firms in Anambra State.

Discussion of Findings

The hypothesis for the study states that financial provision for maintenance has a statistically significant relationship with on–time deliveries of selected automobile firms in Anambra State. The result revealed that indeed, provision of finance significantly relates to on-time delivery in a positive way. That is, the more finance is made available to take care of various maintenance need of the various machines, the lesser the possibility of break downs and stoppage of work will tantamount to being able to meet delivery demands of customers. When equipments are always functioning optimally as a result of appropriately taking care of them because adequate financial provision is made available, there will be lesser machine breakdown, and as such on-time delivery will be assured. This finding relates with the finding of Ibekwe, Ibekwe and Atueyi (2021) that examined the effect of maintenance culture on firm performance in Anambra state and showed that maintenance culture has positive significant effect on firm performance in Anambra state and that finance has positive significant effect on firm performance. This goes to show that maintenance culture influences performance of firms which could be measured through on-time delivery and by extension lead to better performance.

Conclusions

Different forms of organization get their competitive strength through different means, generally, manufacturing and assembling plant depend heavily on their machine availability, performance and efficiency. One of the top factors that affect machine performance and availability is maintenance. A properly maintained machine last longer than those that are not maintained or not properly maintained. The maintenance activities of firm is subject to the maintenance culture enshrined in such an organization, as firms with good maintenance culture perform better than firm with bad culture of maintenance as shown from the findings of this study. The study, therefore, conclude that maintenance culture affects the performance of organization positively if taken serious and negatively if it is not given the pride of place in the organizational dealings.

Recommendations

Following the finding of the study, it is recommended that:

a) The studied organizations need to allocate more funding to maintenance practices as it will increase the chances of the firms to meet with the demand of customers on time.

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