Research Paper

Work Process Analysis: Tool for Sustainability of Manufacturing Firms in Rivers State, Nigeria

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ABSTRACT: *This study examined the relationship between work process analysis tools and organizational sustainability in the manufacturing sector in Rivers state, Nigeria. The study adopted the descriptive research technique through the adoption of cross sectional survey design as the study seeks to investigate the correlations between the study variables. A sample size of forty five (45) managerial staff forms the study population and the entire population was studied using census as sampling technique for the study sample size. Data collection was gathered through structured closed ended questionnaire and analysed using the Pearson Product Moment Correlation Coefficient Statistics and presented with the aid of SPSS version 20.0 for interpretations. The results of analysed data showed that, the dimensions of work process analysis tools which include value stream mapping, GAP analysis and force field analysis significantly correlated positively with the measures of organizational sustainability being product quality and profitability. The findings also showed a high moderating effect of leadership on work process analysis tools and organizational sustainability in plastic manufacturing companies in Rivers state, Nigeria. Relying on the empirical findings, the study concluded that work process analysis has positive significant relationship with organizational sustainability. It is therefore recommended that the dimensions of work process analysis tools: value stream mapping, GAP analysis and force field analysis identified in this study should be utilized as it enhances organizational sustainability measures of product quality and profitability.*
KEYWORDS*: Workprocess, Value Stream Mapping, GAP Analysis, ForceField Analysis, Organisational Sustainability*

I.   INTRODUCTION

An organization's ability to survive and prosper depends on its ability to provide the best possible products and/or services at the lowest possible cost. This organizational sustainability, in turn, depends on the efficiency of its work processes. Work Process Analysis is carefully tailored to the client's specific requirements, expectations, and needs. Work process is a powerful tool which can be combined with other tools in order to accomplish a specific objective. It can be understood as a systematic investigation of a work role requirement and the broader context within which work roles are enacted. Or as a series of steps completed to accomplish the tasks that result in some output. To improve the effectiveness of your work processes, you must first understand them. According to [1], Work process analysis is a research methodology that analyzes; the context of an organization's business activities, what business activities an organization conducts; what records are created by an organization's business activities; and how records created by an organization's business activities relate to the business activities that created them. It is a process used to understand what the important tasks of the job are, how they are performed, and what human attributes are necessary to carry them out successfully. Work analysis is an attempt to develop a theory of human behavior about the job in question to support management decisions. Manufacturing companies in their operations have continuously been characterized and crippled, which is major concern for organizational sustainability as the sector continued to witness a lot of competition. There have been several problems which as a result affected the decision making process in the workplace that also in a way affects better productivity and increase work ambiguity. Another issue that has consistently plagued organizational sustainability is the gap in performance of employees, where

employees are not fit to a position rather they are fixed which in turn affects performance of employees not actualizing their targets and expectation of the organization. Investigation also revealed that absence of work process analysis tools has resulted in employees not been committed to their jobs or tasks as a results, it affects the sustainability of organizations and brings about low profitability and stunt growth to the organizations. It therefore implies that for an effective and efficient organization, work process analysis tools should be put in place, which will ultimately ensure sustainability and bring about improve product quality and increased profitability. Work analysis is seen as process and as a result, it involves attempt to develop a theory of human behaviour in a given work. "This theory will include performance expectations (properties of the work in the context of the organization's expectations) as well as the required abilities, knowledge, experience, skill, and personal characteristics necessary to meet those expectations. There are many methods for the analysis of work and the choice of the most adequate one depends on the goals for which the analysis is conducted. [2]. When it comes to the realization of work analysis, the first decision to be made is the goal. The information of work analysis is used, for example, to plan a system of selection, or to identify the needs of training and development. [3] pointed out that different goals require the use of different methods. For example, if work analysis is carried out in order to support selection processes, the relevant information is a detailed description of the candidate's knowledge and abilities, which enables the candidate to perform the tasks of the job. On the other hand, when the essence of work analysis is to foster identification of training and development needs, it is expected to capture a detailed description of what the worker is supposed to do in a given position. As an emerging field, it investigates and help distinguish between the job role of one from another, making workers fit for the role rather than fixing them in order to bring about organizational sustainability. It must be emphasized here that work analysis is the precedent step to people management in organizations, and that modelling of competences must be carried out based on previous knowledge about how the job is actually done, and the necessary human attributes to its realization in a specific context.

II. LITERATURE REVIEW

The character of a given job determined the workforce assigned to deliver on its performance. Job characteristics theory describes the relationship between job characteristics and individual responses to work. The theory specifies the task condition in which individuals are predicted to prosper in their work. There are five job dimensions prompting three psychological states that lead to some beneficial personal and work outcomes. The theory also includes individual difference variables as moderator of the relationship between the characteristics and the outcome variables. The job characteristics theory was developed to redesign the job. When employee's productivity and personal out-comes are low or tend to decline, it can be used to shape the work content. The theory emphasizes that importance of perceived task characteristics and the objective change of job dimensions will lead to change of perceived redesigning of the job. This theory predicts that the job itself should be crafted in such a way that it comprises essential characteristics required to generate high level of work motivation, fulfillment and performance. The characteristics of a job comprises of all the factors of the job and are directly associated with employee attitudes and behaviors at work. It indicates that jobs with more challenges inspired employees thus improving their job skills and attitudes. This created a link between job characteristics and employee performance. Job Characteristics theory influence performance (outcomes) through, motivational processes in the form of critical psychological states. The JCT is seen as the way jobs are perceived in terms of the five core job characteristics (Autonomy, task significance, task identity, skill variety and feedback from job) impact three particular psychological reactions to the job. These reactions, referred to as critical psychological states include; experienced meaningfulness of work -the extent that the work is seen as making a difference to others, felt responsibility- the extent that the worker assumes responsibility for his/her work, and knowledge of results - the extent to which the worker is aware of the quality of his/her work[4]. The characteristics of a job affect one's attitude and contribute to engagement with the job when it is considered to have a good impact. In this way, employees feel gratified, interested and happy to perform various tasks. Scheduled work and planned tasks which are given to workers should match their capabilities and character. According to [5] the nature of work as agreed by many researchers is looked at as the most important factor by staff and relatively not so important by the supervisors.

Work Process Analysis Tools

Occupational analysis was originally denominated "job analysis" and it was renamed to work analysis in 1990s [6]. The fact that job analysis was unable to cover the dynamic and mutable nature of work in contemporaneity influenced the change in label. It is considered, therefore, that work analysis is a label that best reflects the boundaryless nature of the evolving roles that individuals play within organizations. [7]]. Work analysis is used to support decision in people management, to train and develop, and to organize work. Work process analysis is thus a prerequisite activity for the effective management of human resources. However, many important assumptions that underlie such fundamental uses of work analysis in management are becoming

questionable in today's business environment. Job analysis is focused on the collection of work-related information for the job as it currently exists and/or has existed in the past. Further, the procedures are related more to the situation of a one person-one job situation. Yet, as competition and technological innovations increase and product life cycles get shorter, jobs are becoming not only less static, but also less individually-based. When a decision about the work or the worker is made, it is necessary to demonstrate that the information used to make this decision is effectively related to the work being done both for legal and procedural reasons. Work process analysis is related to job analysis but is wider in scope. Job analysis involves looking at an individual job to identify the individual tasks involved. It involves looking at several or, indeed, many jobs at the same time. Like job analysis, work analysis is both detailed and systematic. The outcome, however, is different. Job analysis identifies tasks and duties, whereas work analysis identifies potential new jobs and a need to reorganize and restructure. It is therefore expedient to explore tools of critical value in workprocss analysis. These include: Value Stream mapping, Gap Analysis and Force Field analysis.

Value Stream Mapping

Value Stream Mapping (VSM) is a standardized way of documenting (mapping) processes and information/material flows as they are, and applying a systematic way to analyze these processes in order to identify various waste and target specific areas for improvement [8]. This visual representation facilitates the process of lean implementation by identifying value-adding steps in a value stream and eliminating non-value-adding steps or waste [9]. VSM was originally developed to focus on the analysis and improvement of disconnected flow lines in manufacturing environments [11], but it has emerged as the preferred way to support and implement the lean approach for all industries. VSM enables a company to see the entire process in both its current and desired future (lean) state, and identify and eliminate waste, thereby streamlining work processes, cutting lead times, reducing costs and increasing quality [12]. The first step to implement VSM is to draw a current state map. The value stream map of current process is created and identifies different kinds of value-added as well as non-value-added activities in this stage. Value-Stream mapping (VSM) is a helpful tool to identify waste and improvement areas. VSM is a standardized way of documenting the process steps and flow of work items, and then applying a systematic way to analyze these processes in order to develop an improvement plan [13]. The visualization and quantification of the process flow makes it easier to identify waste and other constraints on value chain. It captures a holistic view of the material and information flows in entire systems [14], and helps to identify wastes within the system by separating the lead time into value-added activities and non-value-added activities to find the wastes as a function of time which will be advantageous for this study. Value stream mapping is usually used in manufacturing processes but can also be applied for administration and services. Even if there are no physical transformations for many service or business operations, it is possible to modify this methodology by making information flow diagram [15]. The important objective of It is viewed as the main event for creating a current state map according to [16]. The ideal way to perform this stage is to observe the people performing the identified process steps and measure the time it takes to complete the process while also asking necessary questions in order to identify wastes. Though this method is optimal, it is not always possible as the task can take too long time to perform which makes it impossible to observe such a process during a walkthrough mapping event. The actual walkthrough can be done before or after the mapping event. During the event itself, questions about the scope of the process, how long it usually takes and difficulties within it can be asked to the person who usually performs the task without having to actually perform it in real-time. To summarize, the flows are loosely structured and the lack of clarity to identify them makes it harder to perform a map of the current state. This also means that a VSM for an office and service process is more valuable in order to get a clear picture over the process and more structured flows. Previous studies (e.g. [17]; [18] have investigated the effect of variability in value stream analysis. Nevertheless, there is still a lack of studies that systematically integrate the variability's related to uncertainty sources comprised in a value stream, regardless of the context of analysis. Most studies narrowly approach the stochasticity of value streams, either because they aim at a specific set of uncertainty sources or due to the fact that they do not provide user-friendly solutions for such integration [19]. In fact, over the past decades, several academicians (e.g [20]; [21] and institutions e.g. LEI and Prosche, have differently approached this topic and its practical and theoretical intricacies. Despite such differences, most of them agree that value stream analysis is a key activity to better comprehend the business and to provide a common and shared vision for improvement opportunities. Some literature reviews were also performed on the subject, such as [22]; [23], among others, which emphasized the benefits and challenges related to value stream analysis in different sectors, contexts and processes. However, the stochasticity nature of value streams has been poorly discussed in those literature reviews. Such gap entails the need for a literature consolidation on value stream analysis and the stochastic methods used to verify the impact of uncertainty sources on flow performance. VSM that is more focused on flow within the organizational boundaries are more likely to be affected by either internal or supply chain uncertainties.

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GAP Analysis

This is the process companies use to compare their current performance with their desired, expected performance. This analysis is used to determine whether a company is meeting expectations and using its resources effectively. It is the means by which a company can recognize its current state, a state by measuring time, money, and labor and compare it to its target state. By defining and analyzing these gaps, the management team can create action plan to move the organization forward and fill in the performance gaps [24]. There are four steps in Gap analysis: Construction of organizational goals, benchmarking the current state, analyzing the gap data, and compiling a gap report. The first step is to accurately outline and define the organizational goals or targets, all of which need to be specific, measurable, attainable, realistic, and timely. In the second step, historical data is used to measure the current performance of the organization as it relates to its outlined goals. The third step is to analyze collected data that seeks to understand why the measured performance is below the desired levels. The fourth and final step is to compile a report based on the quantitative data collected and the qualitative reasons why the data is below the benchmark. The action items that are needed to achieve the organization's goals are identified in the report. According to [26], Gap analysis is either a tool or a process to identify where gaps are and what differences exist between an organization's current situation and "what ought to be" in place. Through gap analysis, the organization seeks to modify its current situation to reach a desired situation. The results of gap analysis indicate the critical areas where managers should take action to narrow the gaps and offer an objective and detailed glimpse at the direction and size of gaps among involved constituents. Gap analysis contributes to devising the organization's implementation plan and to improving its organizational Sustainability in many different areas of organization. These can include a management system such as human resources or resource planning, market projection, information technology, and so forth. Gap analysis consists of four steps: identifying an organization's key needs of the present situation, determining the ideal future or desired situation of organization, highlighting the gaps that exist and need to be filled, and modifying and implementing organizational plans to fill the gaps. It visualizes the difference between reality and target for your organization, making it easy to show employees where there is still room to grow. It is a great way to visual data and show where your organization is struggling and thriving thus, it is seen as an examination of your current performance for the purpose of identifying the differences between your current state of business and where you'd like to be. While conducting a gap analysis can help you improve your business efficiency, your product, and your profitability by allowing you to pinpoint "gaps" present in your company. [27]. A set of techniques to examine and describe the gap between current performance and desired future goals. Gap Analysis is the comparison of actual performance with potential or desired performance; that is the current state and the desired future state. It is therefore a business management technique that requires an evaluation of the difference between a business endeavours' best possible outcome and the actual outcome.

Force Field Analysis

Force field analysis was developed by the noted sociologist, Kurt Lewin, in the 1940s. According to Lewin, organizations and individuals operate within a psychological and social environment. The "life space" of this environment is called a "field." The relationship between various "forces" in a field can halt or encourage change. Organizations and groups are better equipped to handle and plan for change when they increase their understanding of force relationships. Force Field Analysis is a technique to visually identify and analyze forces affecting a problem situation so as to plan a positive change. It has been used in diverse fields ranging from organizational change to self-development. Its visual character, simplicity, suitability for group work and applicability in planning for change makes it a potential tool with wide application. Kurt Lewin is credited with the development of Force Field Analysis (FFA)[28]. According to Lewin, any situation or performance can be viewed as a state of temporary equilibrium. This equilibrium is caused by two sets of opposing forces; those which try to bring change: driving, facilitating or positive forces; and those which try to maintain the status quo: Restraining, resisting or negative forces. Lewin assumes that, in any situation, there are both driving and restraining forces that influence any change that may occur. Driving Forces: Driving forces are those forces affecting a situation and that are pushing in a particular direction; they tend to initiate a change and keep the change going [29]. In terms of improving productivity in a work group, pressure from a supervisor, incentive earnings, and competition may be examples of driving forces. Restraining Forces: Restraining forces are forces acting to restrain or decrease the driving forces. Apathy, hostility, and poor maintenance of plant and equipment may be examples of restraining forces against increased production. Equilibrium: Equilibrium is reached when the sum of the driving forces equals the sum of the restraining forces. The equilibrium can be raised or lowered by changes in the relationship between the driving and the restraining forces. This is a crucial phase as it ensures that business activities go back to normal after the change was introduced. This phase needs to ensure that the organization is more effective and more competitive than it was before the change. The forces of different elements/actors may vary in intensity and direction. The 'force field' is thus the relative 'distribution of forces' of the concerned elements/actors which determine a situation at any given point. Lewin's force field is therefore

dynamic, vulnerable to change with any shift in the distribution of forces. His field theory does the groundwork for building an understanding of his three-step model of planned change [30]. The utility of field theory for change agents is in explaining the role of all the concerned elements/actors and their forces in determining a situation. The force field analysis informed by a systems approach is different from the usual situational analysis techniques. It does not indicate which forces to consider or which actors to look at for the analysis; a system may have dependency on any kind of forces or actors. Instead, the force field analysis helps anticipate the behaviour of the identified forces in response to any action of any of them. The technique gives such an overview of a system that explains the mutual relationships and positions of the different actors involved. While other situational analysis techniques perceive the situations from one particular viewpoint which could be of an actor, group, or organization, force field analysis allows an understanding of the situation which is neutral, or in other words, which considers the viewpoints of all the actors involved. The technique uncovers the complex interdependencies and interrelations of different actors/forces, which helps tremendously with strategizing future action [31]. The principle of contemporaneity of the field theory becomes more important with this understanding of desired change in the behaviour at present, irrespective of intentionality. Force field analysis helps understand the present distribution of forces in the field under study. By mapping all the different forces, it can help understand which forces to address or employ to move the situation from the present condition to the desired condition, as theorized by Lewin's three-step change model. This mapping exercise needs to be detailed and nuanced enough not to oversimplify the understanding of the system under study. Organizational sustainability has been gaining its rightful recognition and importance as it offers competitive advantage and creates value for organizations, their stakeholders, and society. However, sustainability has not been fully integrated at the strategic and operational level. Some researchers believe that the main hurdle in operationalization of sustainability in organizations is the lack of maintainable value creation throughout the value chain, because parts of these activities are beyond the control of organizations, such as supply chain. Others argue that it is the lack of practicable frameworks and models which holds back the organizational actors from (holistically) considering sustainability in business decisions. The latter is particularly important because existing sustainability management models and frameworks are based on conceptual and theoretical designs. The essence of organizational sustainability is the principle of strengthening the environmental, societal and economic systems within business operations. Due to this awareness, for any model of business/work processes today, organizational sustainability is a key component. Additionally, the missing component of spirituality will exert pressure on business owners and management to make decisions which not only include profit as a consideration but which will be valuable to the environment and society as well. Arguably, an added bonus to any company is the generation of a competitive advantage [32]. The future of organizations presents several challenges, risks, and opportunities that requires the development of abilities and capacities to cope with these concerns to make decisions on planning organizational change and improvement for sustainable organizational growth and development. Achieving the sustainable development goals requires that organizations be able to measure the sustainability of their current behavior as well as the direction in which they are moving, before identifying the size of changes required to meet the sustainability goals [33]. [34] also looked at the ethical aspect of sustainability specifically relating to education. The author believes that employing effective global sustainable strategies helps in increasing profitability through operational efficiencies, enhancements in people and community commitments while minimizing the need to rely on scarce natural resources. The author stated that a sustainable supply chain reflects the firm's ability to plan for, mitigate, detect, respond to, and recover from potential global risks. This view was shared by [35] who stated that sustainability must be looked at from a broad context of a firm's overall strategic and financial objectives.

III. METHODS

The study used descriptive research study through the adoption of cross sectional survey design. The targeted organizations for the study population comprised of nine (9) manufacturing companies in Rivers state, Nigeria. A total of 45 human resources personnel, Administrative staff and Operational personnel respectively of the target study organizations comprised the study population. Due to the finite nature of the study population, this research work study the entire study population using census as sampling technique. The content validity of our study instrument was achieved using supervisor's vetting and approval of other expert in the field of Human Resources Management, admin staff and Operational personnel while the reliability instrument was achieved using the Cronbach's Alpha coefficient with all the items being above 0.72. Collected data was analysed and results presented. First the study investigated the demographic information of the study respondents' ranges from age of the respondents', sex (gender) of the respondents, marital status and educational qualification of the respondents and presented with descriptive statistics showing frequency, mean and standard deviation of the study variables. Secondly, a bivariate analysis of our individual variable was done to see their strength base on the adopted 4point Likert scale questionnaire. Thirdly, the inferential statistics was used to test our research hypotheses and results was further presented using the Pearson Product Moment

Correlation Coefficient formula and presented with the aid of the Statistical Package for Social Sciences (SPSS) version 20.0. The structured closed-ended questions allowed for easy interpretation of data and designed in the four points Likert scale format in the order of SA = Strongly Agreed; A = Agreed; DA = Disagree and SD = Strongly Disagreed and was validated for content and face validity. Content and face validity were done to ensure the instrument is structured to attract the necessary data for the subject being investigated. The reliability test of the structured questionnaires was ascertained through Test-re-test in which a pilot administration of the questionnaire was made on a portion of the chosen sample and administered after two months and relationship between the two results determined. The Cronbach Alpha reliability coefficient was determined at 0.7

Table 1. Internal Reliability Coefficients of variables

S/No	Variables	Number of items	Number of cases	Cronbach's Alpha
1	Value stream mapping	3	40	0.996
2	GAP analysis	3	40	0.896
3	Force Field Analysis	3	40	0.798
4	Profitability	3	40	0.995
5	Product quality	3	40	0.976
6	Leadership	3	40	0.876

Source: SPSS Output, 2022

A total of 45 copies of questionnaires were distributed across 9 Manufacturing companies in Rivers State of which 40 copies of the distributed questionnaires was responded to properly, representing 90% of the questionnaires. 5 copies of the distributed questionnaire were left unfilled sequel to tide schedule of work activities as against the duration of this research; representing 10% of the questionnaires, which amounted to 100% in accordance with the 45 copies of the distributed questionnaires.

Method of Data Analysis

Descriptive statistical tools such as frequencies, simple percentage and mean score was used in the analysis of respondents' biodata, age, cadre, sex and years of work. Bivariate analysis as well as the multi-variate analysis were done using the Pearson's product moment correlation co-efficient as it is observe to be way reaching for inferential relationship analysis. Below is the Pearson's product moment Correlation formula.

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{\left(n\sum x^2 - \sum x^2\right)\left(n\sum y^2 - \left(\sum y\right)^2\right)}}$$

Where:

r = Pearson product moment correlation coefficient,

X and Y = individual observations of the two variables,

$\overline{X} and \overline{Y}$ = arithmetic means of the two sets of observations.

n = number of bivariate observations

Data Analysis

The data analysis is categorized into three phases, demographic, primary and secondary data analysis. Bivariate Analysis. When there exists association or correlation between two variables, correlation technique should be used and when there exists cause and effect relationship between two variables in the case of bivariate population or between one variable on one side and two or more variable on the other side in case of multivariate population, partial correlation technique is appropriate. This was the basis for our choice of the Pearson Moment Correlation Coefficient to test our hypothesized relationship in our study stated in chapter one. In a bid to determine the existence and trend of this relationship, we plotted a scatter diagram as presented in the figure below Work Process Analysis Tool as a predictor variable is plotted on the X axis whereas organizational sustainability as the criterion variable is on the Y axis.
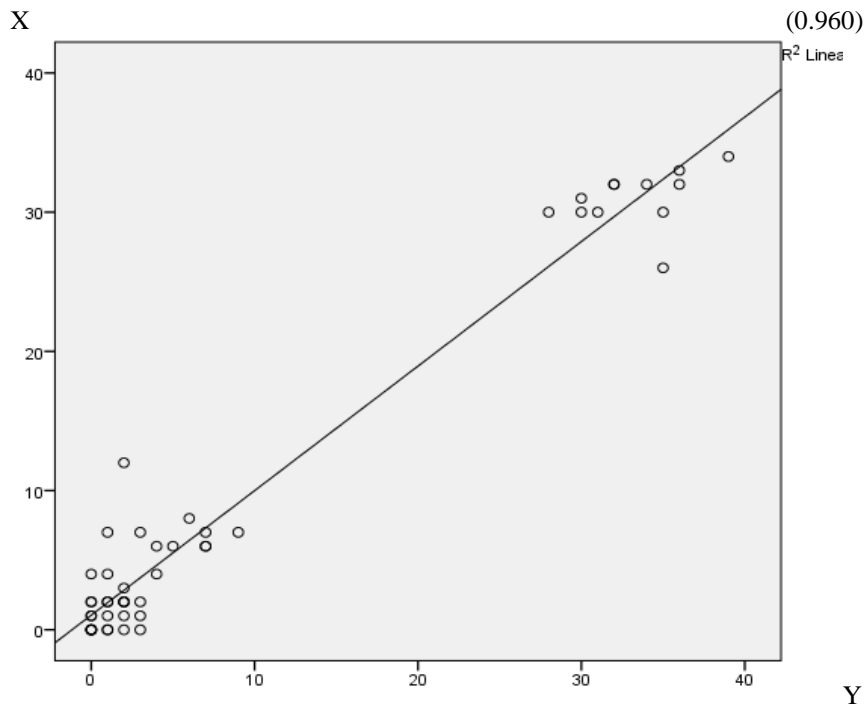
X   (0.960)

Figure 4.7 Scatter plot showing influence of work process analysis tools on organizational sustainability

The figure 1 above shows a strong significant positive relationship between work process analysis tools (independent variable) and organizational sustainability (dependent variable). The scatter plot graph shows at R^2 linear value of (0.960) depicting a strong viable and positive relationship between the two constructs. The implication is that an increase in work process analysis tools simultaneously brings about an increase in the level of organizational sustainability.

Presentation of Results on the Test of Hypotheses

         The Pearson Moment Correlation Coefficient statistics was calculated using the SPSS version 20 to establish the relationship among the empirical referents of the predictor variable and the measures of the criterion variable. Correlation coefficients can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while +1.00 represents a perfect positive correlation. A value 0.00 represents a lack of correlation. In testing hypothesis 1 – 10, the following rules were upheld in accepting or rejecting the null hypotheses. All the coefficient values that indicate levels of significance (* or **) as calculated using SPSS were accepted and therefore, our null hypotheses rejected; when no significance is indicated in the coefficient (r) value, we accept our null hypotheses. Our confidence interval was set at the 0.01 (two tailed) level of significance to test the statistical significance of the data in this study.

Table 2. Correlation Matrix for value stream mapping and organizational sustainability

		Value Stream mapping	Product Quality	Profitability
Value stream mapping	Pearson Correlation	1	.991**	.987**
	Sig. (2-tailed)		.000	.000
	N	40	40	40
Product Quality	Pearson Correlation	.991**	1	.983**
	Sig. (2-tailed)	.000		.000
	N	40	40	40
Profitability	Pearson Correlation	.987**	.983**	1
	Sig. (2-tailed)	.000	.000	

		N	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).
Source: SPSS Data Output, 2022

The table 2 shows the correlation of hypotheses one and two; the hypothesis one show a significant correlation at r = .991** where P-value = .000 (P<0.001). This implies a strong and significant relationship between both variables at 95% level of confidence. We therefore reject the null hypothesis (Ho:$_1$), and upheld the alternate and restated, thus, there is a significance positive relationship between value stream mapping and product quality in manufacturing companies in Rivers state, Nigeria. The hypothesis two show a significant correlation at r = .987** where P-value = .000 (P<0.001). This implies a strong and significant relationship between both variables at 95% level of confidence. We therefore reject the null hypothesis (Ho:$_2$), and upheld the alternate and restated, thus, there is a significance positive relationship between value stream mapping and profitability in manufacturing companies in Rivers state, Nigeria.

Table 3: Correlation Matrix for GAP analysis and organizational sustainability

		GAP analysis	Product quality	Profitability
GAP analysis	Pearson Correlation	1	.983**	.954**
	Sig. (2-tailed)		.000	.000
	N	40	40	40
Product quality	Pearson Correlation	.983**	1	.983**
	Sig. (2-tailed)	.000		.000
	N	40	40	40
Profitability	Pearson Correlation	.954**	.983**	1
	Sig. (2-tailed)	.000	.000	
	N	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).
Source: SPSS Data Output, 2022

The table 3 shows the correlation of hypotheses four, five and six; the hypothesis three show a significant correlation at r = .983** where P-value = .000 (P<0.001). This implies a strong and significant relationship between both variables at 95% level of confidence. We therefore reject the null hypothesis (Ho:$_3$), and upheld the alternate and restated, thus, there is a significance positive relationship between GAP analysis and product quality in manufacturing companies in Rivers state, Nigeria. The hypothesis four show a significant correlation at r = .954** where P-value = .000 (P<0.001). This implies a strong and significant relationship between both variables at 95% level of confidence. We therefore reject the null hypothesis (Ho:$_4$), and upheld the alternate and restated, thus, there is a significance positive relationship between GAP Analysis and profitability in manufacturing companies in Rivers state, Nigeria.

Table 4: Correlation Matrix for force field analysis and Sustainability

		Force field analysis	Product quality	Profitability
Force field Analysis	Pearson Correlation	1	.986**	.974**
	Sig. (2-tailed)		.000	.000
	N	40	40	40
Product quality	Pearson Correlation	.986**	1	.983**
	Sig. (2-tailed)	.000		.000
	N	40	40	40
Profitability	Pearson Correlation	.974**	.983**	1
	Sig. (2-tailed)	.000	.000	
	N	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).
Source: SPSS Data Output, 2022

The table 4 shows the correlation of hypotheses five and six; the hypothesis five show a significant correlation at r = .986[**] where P-value = .000 (P<0.001). This implies a strong and significant relationship between both variables at 95% level of confidence. We therefore reject the null hypothesis (Ho$_5$.), and upheld the alternate and restated, thus, there is a significance positive relationship between force field analysis and product quality in manufacturing companies in Rivers State, Nigeria. The hypothesis six show a significant correlation at r = .974[**] where P-value = .000 (P<0.001). This implies a strong and significant relationship between both variables at 95% level of confidence. We therefore reject the null hypothesis (Ho$_6$.), and upheld the alternate and restated, thus, there is a significance positive relationship force field analysis and profitability in manufacturing companies in Rivers State, Nigeria. In this research study, the multivariate analysis tested the moderating effect of leadership on workprocess analysis and sustainability of the manufacturing firms in Rivers State.

Table 5 Showing Partial Correlation of the moderating effect of Leadership between work process analysis tools and organizational sustainability

-none-[a]	Work process analysis Tools	Correlation	1.000	.991	.997
		Significance (2-tailed)	.	.000	.000
		Df	0	38	38
	Organizational sustainability	Correlation	.991	1.000	.992
		Significance (2-tailed)	.000	.	.000
		Df	38	0	38
	Leadership	Correlation	.997	.992	1.000
		Significance (2-tailed)	.000	.000	.
		Df	38	38	0
Leadership	Work process analysis Tools	Correlation	1.000	.279	
		Significance (2-tailed)	.	.313	
		Df	0	37	
	Organizational sustainability	Correlation	.279	1.000	
		Significance (2-tailed)	.313	.	
		Df	37	0	

a. Cells contain zero-order (Pearson) correlations.
Source: SPSS Data Output, 2022

In table 5 above, the zero-order partial correlation between Work Process analysis tools and organizational Sustainability shows the correlation coefficient where leadership is moderating the relationship; and this is, indeed, both very high (0.997) and statistically significant (p-value (=0.000) < 0.05). The partial correlation controlling for leadership however is (0.313) and statistically significant (p-value (= 0.000) < 0.05.).The observed positive "relationship" between Work Process analysis tools and organizational Sustainability is due to underlying relationships between each of those variables and leadership. Looking at the zero correlation, we find that both Work Process analysis tools and organizational Sustainability are highly positively correlated with leadership, the control variable. Removing the effect of this control variable reduces the correlation between the other two variables to be 0.313 and it is significant at α = 0.05, therefore we reject the null hypothesis and conclude that: leadership significantly moderates the relationship between Work Process analysis tools and organizational Sustainability in manufacturing companies in Rivers State, Nigeria.

IV. DISCUSSION OF FINDINGS
This study uses cross sectional survey design and descriptive statistic in investigating the demographic characteristics of the study respondents. While inferential statistical methods was used in the studied variables, and Pearson Product Moment Correlation Coefficient was used in testing the relationship between the predictor variable (work process analysis tools) and the criterion variable (organizational sustainability) and presented for easy interpretation with the Statistical Package for Social Sciences (SPSS version 20.0). The empirical findings revealed a positive and significant relationship between work process analysis tools and organizational sustainability at 95% confidence interval, through Statistical Package for Social Science (SPSS) version 20.0. The findings suggest that firms without sustainable mechanisms, and without work process analysis tools for that matter, tend to under-perform relative to industry financial averages, while those with work process analysis tool practices tend to perform at or above industry averages.

The first and second hypotheses showed that, there is a strong positive significant relationship between value stream mapping and measure of organizational sustainability; product quality, profitability of which the significant is based on r=0.991; p= 0.000 <0.05., r=0.987; p= 0.000 <0.05., and r=0.991; p= 0.000 <0.05., both at 95% confidence interval leading to the rejection of the null hypothesis (H$_{0:1}$) and (H$_{0:2}$) stated in the chapter one, and upheld the alternate and restated thus; there is a significant positive relationship between value stream mapping and product quality and profitability. This study findings support the empirical findings of [35], they conducted research on concepts to offices in the buying and suppliers' payment processes, which involves both the construction site and financial department of a construction company in the city of Fortaleza (Brazil) using value stream mapping as variable with employees of financial department as sample size. In order to studying the flow of payments process was due to the identification of flaws such as: lack of standardization, failure to meet deadlines and excessive rework, which resulted in waste of resources. They concluded that, organizational sustainability and value stream mapping are positively related with each other. This study also shows that value stream mapping can be a powerful tool to enhance sustainable organizations and eliminate waste in order to identify value of work in organizations.

The third and fourth, hypotheses showed that, there is a strong positive significant relationship between recruitment and measure of organizational performance - productivity, profitability and market share of which the significant is based on r=0.991; p= 0.000 <0.05, r=0.983; p= 0.000 <0.05., r=0.954; p= 0.000 <0.05., and r=0.967; p= 0.000 <0.05., both at 95% confidence interval leading to the rejection of the null hypothesis (H$_{0:3}$)and (H$_{0:4}$) stated in the chapter one, and upheld the alternate and restated thus; there is a significant positive relationship between recruitment and productivity, profitability and market share. The fifth and sixth, hypotheses showed that, there is a strong positive significant relationship between training and measure of organizational performance - productivity, profitability and market share of which the significant is based on r=0.954; p= 0.000 <0.05., and r=0.967; p= 0.000 <0.05., both at 95% confidence interval leading to the rejection of the null hypothesis (H$_{05:}$) and (H$_{06:}$) stated in the chapter one, and upheld the alternate and restated thus; there is a significant positive relationship between recruitment and productivity, profitability and market share.

The hypothesis ninth show that, there is a strong positive moderating effect between work process analysis and organizational sustainability of which the significant is based on, r=0.992; p= 0.000 <0.05., at 95% confidence interval. Looking at the zero order correlation, we find that both work process analysis and organizational sustainability are highly positively correlated with organizational policy, the control variable. Removing the effect of this control variable reduces the correlation between the other two variables to be 0.313 and it is significant at $\alpha = 0.05$, therefore we reject the null hypothesis. The study empirical findings showed that, there is a strong positive significant relationship between work process analysis tools and organizational sustainability with all the dimensions and measures showing positive correlation. The analysis further showed that, leadership moderates the effects between work process analysis tools and organizational sustainability in manufacturing companies in Rivers state, Nigeria.

V. CONCLUSION

Base on the findings of this study, we therefore conclude that without effective work process analysis tools; it would be difficult to know the processes of work, the links between them as to avoid role poaching. The need for effective work process analysis tools cannot be over emphasized as it helps to identify role poaching, further eliminate duplication of efforts in order to optimize the work process which gives room for better productivity as to reduce work ambiguity and enhance productive efficiency. In this study, the relationships between work process analysis and organizational sustainability using value stream mapping, GAP analysis and Force field analysis - product quality and profitability have been investigated. A survey seeking for the relationships has been conducted on a sample of 45 human resources staff/admin/operational personnel in plastic manufacturing companies in Rivers State, Nigeria. The study results showed significant positive relationship between the variables hypothesized in the study conceptual framework. Accordingly, the study methodology was designed in a way that points towards the achievement of the study objectives. The study concluded that Work process analysis tools through the use of value stream mapping, GAP analysis and Force field analysis significantly influences organizational sustainability of product quality and profitability. To strengthen this finding, a scattered plot diagram was also plot to see the relationship between the predictor variable (work process analysis tools) and the criterion variable (organizational sustainability).

VI. RECOMMENDATION

Based on the conclusion of this study, the following recommendations are made:
1. Value stream mapping should be given adequate attention as it helps organization to analyse the best decision in order to identify waste during work process and map stream the efforts employees produces as to bring about a sustainable organization.

2.   GAP analysis should be given a first-hand treatment as it is seen to remained one of the greatest tools in the work process analysis tools box and serve as the master-key that unlock the current performance of the organizations/individual in order to determine if employees or organizations are meeting expectation or actual performance.

3.   Management of organizations should ensure their 'life space' (field) should be equipped to handle forces that are for or against the organization or management and plan for change when they increase their understanding of force relationship.

4.   Leadership of manufacturing companies should provide the listed elements mentioned in this study to reciprocate the expectation of the employee as they are key to sustainability through work process analysis.

REFERENCES

[1].   IMT policy (2021), work process Analysis. Retrieved from;
        https://imtpolicy.sp.alberta.ca/standards/Pages/Work-Process-Analysis.aspx
        Indeed Editorial Team (2021). Understanding Product Quality: What It Is and Why It Matters. Retrieved from https://www.indeed.com/career-advice/career-development/product-quality#:~:text=What is product quality%3F, efficiently or suits customers' purposes

[2].   Wilson, M. A. (2012). Methodological decisions in work analysis. A theory of effective work analysis in organizations. In M. A. Wilson, Jr., W. Bennett, S. G. Gibson & G. M. Alliger (Orgs.), The handbook of work analysis. Methods, systems, applications and science of work measurement in organizations (3-21). New York: Routledge.

[3].   Powell, T., Woodhouse, M., & Guenole, N. (2012). Selling Work Analysis. In M. A. Wilson, Jr., W. Bennett, S. G. Gibson & G. M. Alliger (Orgs.), The handbook of work analysis. Methods, systems, applications and science of work measurement in organizations (23-29). New York: Routledge.

[4].   Kahya, M. (2010). The effects of job performance on effectiveness, International Journal of Industrial Ergonomics, 39(1), 96–104.

[5].   Armstrong, M. (2003). A handbook of management techniques. London: Kogan Page

[6].   Sanchez, J. I., & Levine, E. L. (2012). The rise and fall of job analysis and the future of work analysis. Annual Review of Psychology, 63(1), 397-425.

[7].   Sackett, P. R. & Laczo, R. M. (2003). Job and work analysis. In W. C. Borman, D. R. Ilgen & R. J. Klimoski (Orgs.), Comprehensive handbook of psychology: Industrial and organizational psychology (48-87). New York: John Wiley & Sons

[8].   Ciarapica, F., Emanuele, M., Bevilacqua, I., & Mazzuto, G. (2016). Performance analysis of new product development projects - An approach based on value stream mapping. International Journal of Productivity and Performance Management, 65(2), 177-206

[9].   Grewal, C. (2008). An initiative to implement lean manufacturing using value stream mapping in a small company. International Journal of Manufacturing Technology and Management, 15(3), 404-417.

[10].   Swallmeh, E., A. Tobail, W. Abo-Hamad, J. Gray, & Arisha, A. (2014). Integrating simulation modelling and value stream mapping for leaner capacity planning of an emergency Department." Sixth International Conference on Advances in System Simulation.

[11].   Abuthakeer, S.S., Mohanram, P.V. & Kumar, G.M. (2010). Activity based costing value stream Mapping, International Journal of Lean Thinking. 1(2), 51-64.

[12].   Ali, N., Bin, K., Petersen, K., & Schneider, K. (2016). Flow-assisted value stream mapping in the early phases of large-scale software development. The Journal of Systems and Software, 111(1), 213-227.

[13].   Martin, K., & Osterling, M. (2013). Value stream mapping: how to visualize work and align leadership for organizational transformation. New York: McGraw-Hill.

[14].   Liker, J. K., & Meier, D. (2006). The Toyota way field book: a practical guide for implementing Toyotas 4Ps. New York: McGraw-Hill.

[15].   Keyte, B., & Locher, D. (2016). The complete lean enterprise: Value stream mapping for office and services, Second Edition.

[16].   Weston, R., Agyapong-Kodua, K., & Ajaefobi. J (2009) Modelling dynamic value streams in support of process design and evaluation." International Journal of Computer Integrated Manufacturing, 22 (5), 411-427.

[17].   Seyedhosseini, S., & Ebrahimi-Taleghani, A. (2015). A Stochastic Analysis Approach on the Cost-Time Profile for Selecting the Best Future State Map. The South African Journal of Industrial Engineering 26(1), 267-291.

[18].   Seth, D., Seth, N., & Dhariwal, P. (2017). Application of value stream mapping (VSM) for lean and cycle time reduction in complex production environments: a case study." Production Planning & Control, 28(5), 398-419.

[19].   Ben, F., Fredj-Ben, U., & Alaya, L. (2016). VSM a powerful diagnostic and planning tool for a successful Lean implementation: A Tunisian case study of an auto parts manufacturing firm." Production Planning & Control, 27(7-8), 563-578.

[20].   Tortorella, G., Silva, G., Campos, L.M., Pizzeta, C., Latosinski, A., and Soares, A. 2018. "Productivity improvement in solid waste recycling centres through lean implementation aided by multi-criteria decision analysis." Benchmarking: An International Journal, 25(5), 1480-1499.

[21].   Singh, B., Garg, S.K., & Sharma, S. K. (2011). Value stream mapping: Literature review and implications for Indian industry. The International Journal of Advanced Manufacturing Technology, 53(5-8), 799-809.

[22].   Shou, W., Wang, J., Wu, P., Wang, X., & Chong, H.Y (2017). A cross-sector review on the use of value stream mapping." International Journal of Production Research, 55(13), 3906-3928

[23].   Will, K. (2020). Gap analysis. Retrieved https://www.investopedia.com/terms/g/gap-analysis.asp#:~:text=A gap analysis is the means by which a company, fill in the performance gaps.

[24].   Sora, K., & Yingru, J. (2018). Gap analysis. TheInternational Encyclopedia of Strategic Communication. 1(2) 3-14

[25].   Aman, K. (2016). Conducting a gap analysis: A four-step template. https://www.clearpointstrategy.com/gap-analysis-template

[26].   [26]   Lewin, K. (1942). Field theory and learning. In D. Cartwright (Ed.), (1951) Field theory in social science: Selected theoretical papers by Kurt Lewin (pp. 60-86). New York: Harper & Brothers Publishers.

[27].   [27]   Bozak, M. (2003). Using lewin's force field analysis in implementing a nursing information system. Journal of Nursing Management. 21(3), 80-85.

[28].   Burnes, B., & Cooke, B. (2013). Kurt Lewin's field theory: A review and re-evaluation. International Journal of Management Reviews, 15(1), 408-425.

[29].   Sheeva Dubey (2017). Force Field Analysis for Community Organizing. Proceedings from ICMC 2017: The 4th International Communications Management Conference

[30]. Batista, A.A.D.S., & Francisco, A.C.D. (2018). Organizational sustainability practices: A study of the firms listed by the corporate sustainability index, Sustainability, 10(1), 2460-2471.

[31]. Nwinyokpugi, P. N. & Nenage, M. F. (2019), Sustainability of the Hospitality Sector in Rivers State; the Leadership Succession Strategy Option, International Journal of Latest Research Research in Humanities and Social Sciences, 2(8); 55-64

[32]. Closs, D, Speier, C., & Meacham, N. (2011). Sustainability to support end-to-end value chains: The role of supply chain management, Journal of the Academy of Marketing Science, vol. 39(1), 101-116

[33]. Porter, M., & Kramer, M. (2011). Creating shared value, Harvard Business Review, 89(1–2), 62–77.

[34]. Don Tapping, T., Luyster, T., & Shuker, (2002). In value stream management: eight steps to planning, mapping and sustaining productivity press, ISBN 1-56327-245-8, 2002.