

PRODUCTION SCHEDULING AND ORGANIZATIONAL PRODUCTIVITY IN TRANSPORTATION COMPANIES IN AKWA IBOM STATE

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Abstract

This paper examines the contribution of production scheduling to the productivity of transport companies in Akwa Ibom State. Organizational productivity was measured in terms of improved equity capital, cost minimization, growth and profitability. Using Taro Yamene's formula, a sample size of 67 was drawn from the population of 80 transport companies based in Akwa Ibom State and published by Ibom Yellow Pages. Copies of the questionnaire were distributed to the Managers of these companies and 60 copies were completely filled and returned. Four hypotheses were formulated. Analysis was done using Spearman Ranked Correlation and the result was subjected to a t-test. Based on findings, it was revealed that production scheduling has significant relationship with productivity of these companies in all four dimensions measured. It was recommended that all other companies in the service industry should as a matter of urgency formally adopt effective production scheduling for their activities in order to continue to boost their productivity and that the transport companies should apply computerized and online services in scheduling for booking, ticketing and other operations in order to sustain or improve on the current productivity level.

Introduction

Worldwide, organizations work hard to increase productivity so as to maximize profit and enhance growth. Successful organizations are the ones with specific time-table for the use of its resources and processes required by a business to provide services. These organizations modify its production schedule in response to large customer orders to accommodate resource changes, to reduce costs and to increase overall production efficiency (Business Dictionary, 2015). Production scheduling is therefore a very vital function that guarantees decency and orderliness.

Since productivity drives the Gross Domestic Product (GDP) of every economy, it behooves organization and indeed nations to devise means of enhancing productivity. The manufacturing and the service sector contribute the most to the GDP of many industrialized and emerging economies in the world. In India for instance, the growth rate of the GDP rose due to several reasons and it has given a major boost to the Indian economy accounting for about 53% in 2005. Also in Nigeria, it was reported that the service sector accounted for the largest share of real GDP in 2017 amounting to 50% of the total GDP. It was also reported that the services sector recorded a growth rate of 7.20% during the third quarter of 2017 followed by Agriculture at 5.13% and Industry at 3.21% (National Bureau of Statistics, 2017).

Umoh (2013) found out in a study that production scheduling does not really impact on corporate productivity performance in Nigerian manufacturing sector. Thus, it is also necessary to begin to talk about service/production scheduling to see the relationship that exist between scheduling and productivity in the service sector particularly transportation sub-sector in Nigeria. This relationship is important because as Dorn (2014) puts it, there has been a shift from products to services in business management and especially in marketing. This explains why industries and government now focus on becoming more systematic about innovation in the service sector which is now the largest sector of the economy in most industrialized nations, and is fast becoming the largest sector in developing nations as well.

Going by the above scenario where service sector is the dominant character, we wish to assert that productivity of the service sector in Nigeria and in other countries is driven by many factors including production scheduling. Winston (2014) assumes that service delivery can be effective if an appropriate and efficient production scheduling technique is put in place. According to Winston (2014), Production Scheduling (PS) is the filling of specific jobs into a general time table so that what is ordered can be manufactured in accordance with contracted liability or in mass production,

such that each component may arrive at the assembly in the order and at the time required. However, Dorn (2014) notes that the management and predicted planning or processes to create business services is more difficult than the planning of production processes, because service cannot be produced in stock and moreover, customers are involved in their creation. Each customer has his/her individual expectations on the services he/she will obtain. This is perhaps one of the reasons Chinweizu (1979) stresses that, empirical studies on production scheduling and its effect on productivity in Nigeria are not sufficient or are scanty.

Transport operation is the responsibility of private sector and public sector operators. However, the economic recession and the high costs of vehicle operation is seriously eroding their profit margin (Aderamo, 2004). Majority of transport operators in Nigeria provide transport services, which are primarily demand responsive and unscheduled in the urban center. In the road passenger transport sector, the available buses and taxes gradually reduced in sized, while many of the available public transport vehicles showed apparent sizes of ill maintenance (Azagba, 2004). According to Aworemi and Ilori (2008), the dwindling economic fortunes affected virtually every sector of the economy, including the urban public transport sector. It is difficult for many private sector operators to maintain and manage their fleet of mini buses and taxis and the scope for fleet expansion is constrained by the exorbitant prices of vehicles, spare parts and high vehicle operating expenses. Also, public transport operation has suffered severely and the consequence is untold hardship on passengers and the operators themselves.

Statement of the Problem

Productivity is a major parameter in measuring organizational effectiveness. The economic growth of most developed economies is driven by productivity of the service sector. The Nigerian transport sector is service oriented but this services sub-sector is plagued by problems such as bad roads; inadequate fleets of buses or trucks; irregular, inadequate and overcrowded trains and airplanes and congested ports. Added to this are the dearth of suitably-trained transport managers and planners, capital restructuring bottlenecks, serious issues of institutional reforms and ineffective traffic regulations. These factors have no doubt affected the productivity of the industry. Furthermore, the economic recession and the spiraling cost of vehicle operation is seriously eroding their profit margin.

Available studies on production scheduling focuses on the manufacturing, processing, mining and drilling industries at the expense of the service industry. To the knowledge of these researchers, no study has been conducted to investigate the linkages between production scheduling and organizational productivity in the transport sector as if production scheduling was not applicable to this sector. This study is set out to measure the relationship between production scheduling and dimensions of organizational productivity (equity capital, growth, cost minimization and profitability) in transport companies in Akwa Ibom State.

Objectives of the Study

The general purpose is to investigate the relationship between production scheduling and organizational productivity in transport industry in Akwa Ibom State. The specific objectives were:

- (i) to examine the relationship between production scheduling and equity capital in transport companies in Akwa Ibom State
- (ii) to ascertain the relationship between production scheduling and growth of transport companies in Akwa Ibom State;
- (iii) to investigate the relationship between production scheduling and cost minimization in transport companies in Akwa Ibom State; and
- (iv) to assess the relationship between production scheduling and market share of transport companies in Akwa Ibom State.

From the above objectives, the following hypotheses were formulated to guide the study.

(H₀₁): There is no significant relationship between production scheduling and equity capital of transport companies in Akwa Ibom State.

- (Ho₂): There is no significant relationship between production scheduling and growth of transport companies in Akwa Ibom State.
- (Ho₃): There is no significant relationship between production scheduling and cost minimization in transport companies in Akwa Ibom State.
- (Ho₄): There is no significant relationship between production scheduling and market share of transport companies in Akwa Ibom State.

LITERATURE REVIEW

Theoretical Framework

Production scheduling theory originated from Kelly and walker in 1957 following their attempt to develop the 'activity-on-Arrow' scheduling methodology. It is concerned about questions on the development of optimal schedules for performing finite (or repetitive) sets of operations (Conway, Maxwell and Miller, 1967). The areas of application of results in scheduling theory include management production, transportation, computer systems, construction, etc (Tanaev and Shkurba, 1975). Transport companies plan their schedules based on available buses, routes and number of passengers. The problems that scheduling theory deals with are usually formulated as optimization problems for a process of processing a finite set of jobs in a system with limited resources. In scheduling theory, the time of arrival for every job into the system is specified. Within the system the job has to pass several processing stages, depending on the conditions of the problem. A schedule can be understood as a single-valued mapping that takes every job at every moment and assigns a certain set of resources (Conway et al, 1967).

A schedule can be understood as a single-valued mapping that to every job at every moment assigns a certain set of resources. Through the schedule, most practical problems can be successfully solved. In this study, we focused on the travelling salesman problems (TPS) with profit which is a production scheduling algorithm. The goals of this model is the simultaneous optimization of the collected profit and the travel cost. In TPS with profit, we have to find an optimal tour and a set of customers satisfying a specific constraint the essence of TPS is to find an appropriate trade-off between the total collected profit and the cost of the tour. So in the work we took production scheduling (PS) as the function of organization productivity(OG) where OG = cost minimization (CM), Improved equity capital (EC), growth (GW) and market share (MS). PS was measured in terms of available bases, routes and number of passengers.

Concept of Production Scheduling

Every organization has a time of how and when resources should be used and the processes required to produce goods or services. Production is a process or procedure developed to transform a set of inputs like men, materials, capital, information and energy into a specified set of output like finished products or service in proper quantity, thus achieving the objectives of an enterprise (Vollman et al, 2007; Jain and Aggarwal, 2008). The production system according to Umoh (2013) is the design process by which elements are transformed into useful products. He also defined a process as an organized procedure for accomplishing the conversion of input into output.

Scheduling comprise the definition of starting and finishing times and the assignment of resources to each task of the set, while being restricted by several constraints, which may involve the tasks and/or the resources (Elwany, Shouman and Abou-Ali, 2013). It follows that scheduling is a key factor for manufacturing productivity. It is a decision making process that plays a very important role in most manufacturing and service industries. Scheduling function deals with the determination of time sequence for job, orders, tasks and operations as well as the allocation of the required resources to accomplish the related set of jobs, orders, operations, and tasks.

According to Telsang (2007), scheduling can be defined as prescribing of "when and where" operations that are necessary to manufacture a product are to be performed. It implies establishing of times at which to begin and complete each event or operation comprising a procedure. Telsang (2007) stresses that the principal aim of scheduling is to plan the sequence of work that production can be systematically arranged towards the end of completion of all products by due date. It follows that the management and predictive planning processes to create business services is more difficult

than the planning of production processes because services cannot be produced in stock and more over, customers are involve in their creation. Scheduling is the process of arranging, controlling and optimizing work and workloads in a production process or manufacturing process. It used to allocate plant and machinery resources, human resources and production process and purchase materials.

In business management and especially in marketing, a shift of interest from product to services has made the management of services to be more and more important. A person or a legal organization may own a product or may use a service. The lifetime of a service is rather short in contrast to most products. A good schedule system is the one that has the capability of dynamic decision making for scheduling function in a timely and high quality fashion while simultaneously maximizing throughput, satisfying customer desires and needs and minimizing direct operating cost.

Companies use backward and forward scheduling to allocate plant and machinery resources, plan human resources, plan production processes and purchase materials.

Backward Scheduling is Planning the task from the due date or required-by date to determine the start date and/or any changes in capacity required. It is often used in assembly type industries and commit in advance to specific delivery dates.

Forward Scheduling involve planning the task from the date resources become available to determine the shipping date or the due date. (Telsang, 2007).

Scheduling Strategies

Telsand (2007) identified four classes of scheduling strategies which range from “no scheduling” to very sophisticated approaches. They are: detailed scheduling for specific jobs cumulative scheduling of total workload, cumulative detailed combination and priority decision rules.

These strategies have the following benefits, processes change, over reduction; inventory reduction, leveling; reduced scheduling effort; increased production efficiency, labour load leveling; accurate delivery date; and real time information Telsang (2007) however pointed out 3 principles of scheduling to include: the principles of optimum task size, production plan and sequence.

Elwany, et, al (2013) classify scheduling technique into two broad category, namely: traditional and modern techniques. The traditional scheduling approaches include simple dispatching rules, composite dispatching rules, computer simulation approaches , mathematical programming and branch and bound. Modern approaches are local search approaches simulated annealing, tabu search, genetic algorithms artificial neural network and case-based reasoning. Others are experts system, petro-net, beam search and fuzzy system (Freize and Tadegar, 1983; Taha, 1988; Averill, 1991; Morten & Pentico, 1993; Sule, 1997)

Production Scheduling and Productivity of Transport Companies

The output per unit of a factor of production is called the productivity of that factor (Imaga, 2003). The productivity of an input (factor of production) is the output per unit of that input. Umoh (2013) assumes that production can be effective if an appropriate and efficient production scheduling technique is in place. It is questionable whether there is a robust production scheduling mechanisms that could enhance organizations productivity in the service sector in Nigeria. This issue is pertinent because scheduling is a tool to coordinate and enhance the performance of all production activities.

Experience show that the performance of Urban transport service delivery in many developing countries is low; policy makers have incomplete information to make decisions and managers and professionals rarely have a clear picture of their operational performance, best practices elsewhere or the desired level of their service provision. Key performance indicators of transport companies are customer satisfaction, safety and security (Nwgboso and Geirgakis, Onatere, 2015)

Umoh (2013) investigated the extent to which production scheduling, has affected the corporate productivity performance of the Nigerian manufacturing industry. In this study, corporate productivity performance was measured in the area of cost minimizations, enhance equity capital and growth. The study was carried out on a sample size 80. Primary data were obtained through questionnaire. Tool of analysis was simple regression. 62 copies of the questionnaire were retrieved. It was revealed that production scheduling truly has insignificant impact on corporate productivity performance of Nigerian manufacturing industry. In this study cost minimization was identified as

one of the major ways a firm measures its success. Production scheduling had an insignificant influence on equity capital and growth of manufacturing industries in Nigeria. Production scheduling can boost production planning and control for improve performance it properly utilized. Umoh (2013) corresponds with Olarewaju (2010) and Poterba (2006) who assert that in order to enhance productivity in Nigeria, adequate attention must be given to proper work scheduling by administrators and the result of undermining work schedule in business organization is inefficient operations, low sale revenue and lack of biz growth. Recommendation was that the Nigeria manufacturing industry should totally be overhauled especially in the areas of scheduling, in order to realign and restore the industry from total collapse.

Aworemi, Abdulazeez and Olagun (2009) evaluated the variables that tend to determine the level of the performance of public transport companies in Niger State, Nigeria. Structured questionnaire and interview techniques were adopted for data collection. This study was based on a sample size of 60 respondents. Findings showed that the cost of maintenance had a significant coefficient of 1.99. This was so because transportation in urban areas is highly complex because of the modes involved, the multitude of origins and destinations and the amount and variety of traffic (Onatere, Nwagboso & Georgakis, 2014). Previous studies on public bus transport services at national and local levels focused on constraints, impacts and the effect of congestion on vehicle movement; but there is scanty literature on passenger satisfaction with levels of public bus service provision in Nigerian cities. To keep and attract more bus passengers, public bus transport must have high service quality to satisfy and fulfill a wider range of different passenger needs (Nwachukwu, 2014). Aworemi et al (2009) concluded that cost of maintenance and organizational structure play prominent role in performance of private transport companies in Niger State.

The performance of the private sector transport providers are still terribly hampered by the exorbitant prices of vehicle and spare parts among others. Consequently, the private transport operations are hardly able to replace the existing aged vehicles. Based on this, Aworemi and Ilori (2008) evaluated the performance of private transport companies in south western Nigeria. The study was conducted to ascertain the influence of identified variables on the performance of the companies. The study was based on a sample size of 27 respondents. Correlation and regression analysis techniques were adopted in analyzing the data collected. Findings showed a significant relationship between the performance of private transport companies and each of the independent variables (age of establishment, wages/ Salaries trends and number of functioning vehicles). The result was possible because the private sector operators are by far the largest providers of passenger services. Private registered companies are relatively better organized than the individuals, small-scale operators (Aderamo, 2004). Aworemi and Ilori (2008) recommended that government, private and public transport companies should start thinking about more concrete, short and medium range plans and consistent policies that have far reaching effect on public transport operators and management.

METHODOLOGY

The study adopts cross-sectional survey design to examine and identify patterns of association and to reveal the relationship between production scheduling and organization productivity. This design enabled us to establish a relationship between these two variables and test of hypotheses. The population of this study covers all transport companies in Akwa Ibom State. The total number of companies made available through Ibom Yellow pages as registered by Akwa Ibom State Ministry of Transport was eighty (80). This formed the target population of the study. The study adopted Taro Yamane's formula for sample size determination. From the population of ninety one (80) transport companies, the sample size was 67 companies. The formula was given

$$n = \frac{N}{[1 + N(e)^2]}$$

Where: n = Sample size
 N = Population size
 e = sampling error

$$\begin{aligned}
\text{Thus } n &= \frac{N}{[1 + N(e)^2]} \\
&= \frac{80}{1 + 80(0.05)^2} \\
&= \frac{80}{1 + 80(0.0025)^2} \\
&= \frac{80}{1.2} \\
&= 67
\end{aligned}$$

The instrument used in data collection is the research developed questionnaires. The questions were related to production scheduling as they affect organizational productivity in transport companies in Akwa Ibom State. Our targeted respondents were mainly the managers of these companies or their representative at that capacity. Respondents were measured based on a five point Likert scale. The researchers administered 67 copies of the questionnaire and were able to retrieve 60. The data were collected and presented in tables for analysis. The statistical tool used for analysis was Spearman's Ranked Correlation Technique. A t-test was run for test of significance of the relationship. The functional equations used for the analysis were:

$$r_s = 1 - \frac{6\sum D^2}{N(N^2 - D)}$$

Where r_s = Spearman Coefficient of correlation
 D = Square of the difference between ranks respectively
 N = number of observations

The following equation was used to test the four hypotheses

$$t = r \sqrt{\frac{n - 2}{1 - r^2}}$$

Where r^2 = coefficient of determination
 t = test of significance
 n = number of observations

DATA PRESENTATION, INTERPRETATION AND ANALYSIS

The analyses were based on the collected copies of the questionnaire. 60 copies collected and duly filled out of the 67 copies distributed.

Table 4.1a: Determining whether production scheduling has a significant relationship with equity capital.

	Strongly agreed	Agreed	Strongly disagreed	Disagreed	Undecided	Total
Responses	28	22	2	5	3	60
%	46.7	36.7	3.3	8.3	5	100

Source: Filed Survey, 2018

Test of hypothesis 1

H_{01} : There is no significant relationship between production scheduling and improved equity capital in transport companies in Akwa Ibom State.

Spearman Ranked Correlation was used in testing this hypothesis using responses from respondents on the impact of schedule on equity capital. We present the final result below:

Table 4.1b: Final result

Spearman' Coefficient of correlation (rs)	0.7
Coefficient of determination (rs ²)	0.49
N	60
Test of significance (t)	7.4653

Source: computed from table 4.1a

The rs-value of 0.7 suggests a positive significant relationship between scheduling and improved equity capital in transport companies. The rs² shows that 49% variation in equity capital is accounted for by variations in production scheduling. Since the calculated t-value of 7.4653 is greater than the critical value of 2.051, null hypothesis which state that there is no significant relationship between productions scheduling and improved equity capital was rejected.

Table 4.2a: Determining whether production scheduling has relationship with growth dimension of productivity.

	Strongly agreed	Agreed	Strongly disagreed	Disagreed	Undecided	Total
Responses	26	24	3	4	3	50
%	43.3	40	5	6.7	5	100

Source: Filed Survey, 2018

Test of hypothesis 2

Ho₂: There is no significant relationship between production scheduling and the growth of transport companies in Akwa Ibom State.

This hypothesis was tested using Spearman Ranked Moment Correlation Coefficient to determine the influence of scheduling on growth dimension of productivity in transport companies. We present the result obtained here below.

Table 4.2b: Final Result

Spearman's Coefficient of correlation (rs)	0.821
Coefficient of determination (rs ²)	0.674
N	60
Test of significance (t)	10.950

Source: computed from table 4.2a

From the table (4.2), correlation coefficient (rs) value of 0.821 suggests a positive significant relationship between production scheduling and the growth of transport of companies. The rs²-value of 0.674 shows that 67.4% variation in growth dimension is accounted for by variations in production scheduling. Since calculated 10.950 was greater than the critical value of 2.021, null hypotheses which state that production schedule has no significant relation with the growth of transport companies in Akwa Ibom State was rejected.

Table 4.3a: Determining whether there is a relationship between production scheduling and cost minimization

Strongly agreed	Agreed	Strongly disagreed	Disagreed	Undecided	Total
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Responses	27	23	4	4	2	50
%	45	38.3	6.7	6.7	03.3	100

Source: Filed Survey, 2018

Test of hypothesis 3

Ho₃: There is no significant relationship between production scheduling and cost minimization in transport companies in Akwa Ibom State.

Table 4.3b: Final Result

Spearman’s Co-efficient of Correlation (rs)	0.975
C-efficient of determination (rs ²)	0.951
N	60
Test of significance (t)	33.53

Source: computed from table 4.3a

The coefficient of Spearman Ranked correlation of 0.975 suggests a strong positive significant relationship between scheduling and cost minimization. The rs² value of 95.1% shows that 81% variation in cost minimization is accounted for by variations in production scheduling in the transport companies of the service sector. Since the t-value of 33.53 is greater than the critical value of 2.021, the null hypothesis which states that there is no significant relationship between production scheduling and cost minimization was therefore rejected.

Table 4.4a: Determining whether there is a relationship between production scheduling and Market Share

	Strongly Agreed	Agreed	Strongly Disagreed	Disagreed	Undecided	total
Responses	28	24	3	4	1	50
%	46.7	340	5	6.7	1.7	100

Source: Field Survey, 2018

Test of Hypothesis 4

Ho₄: There is no significant relationship between production scheduling and market share of transport companies in Akwa Ibom State.

Table 4.4b: Final Result

Spearman’s Co-efficient of Correlation (rs)	0.900
C-efficient of determination (rs ²)	0.81
Test of significance (t)	15.72
N	60

Source: computed from table 4.4a

The coefficient of correlation of 0.9, suggest a high significant relationship between production scheduling activities and market share of transport companies in Akwa Ibom State. Coefficient of determination (r²) value of 0.81 shows that 81% variation in market share is accounted for by variations in production scheduling activities. Since the calculated t-value of 15.72 is greater than

the critical value of 2.021 null hypothesis which states that there is no significant relationship between production scheduling activities on market share of transport companies was rejected.

Major Findings

- (1) Production scheduling has significant relationship with equity capital of transport companies in Akwa Ibom State.
- (2) Production scheduling has a positive significant relationship with the growth of transport companies in Akwa Ibom State.
- (3) Scheduling for production has significant relationship activities minimized cost of operation in transport companies in Akwa Ibom State.
- (4) Scheduling for production activities has significant relationship with market share of transport companies in Akwa Ibom State.

Discussion of Findings

In this research, we found out that scheduling for production activities has a significant relationship with equity capital of the firms as the coefficient of determination showed that 49% variation in equity capital was accounted for by variations in production scheduling. The size of equity capital determines the financial strength of firms, as such organizations work hard to enhance the size structure of it capital through scheduling of their activities.

Scheduling for production activities had a strong relationship with growth of transport companies. 67.4% variation in growth was accounted for by variations in production scheduling. Service managers in these companies pay attention to scheduling to meet customer's requirements on timely service delivery and this reduced wastages in waiting times and enhanced service efficiency.

Our findings showed that production scheduling was associated with cost minimization in terms of service efficiency. 95.1% variation in cost minimization was accounted for by variation in production scheduling. Scheduling does not only guarantee timely departure of vehicles, but also ensure that adequate maintenance facilities are in place at all times to reduce servicing cost.

Production scheduling had positive relationship with the market share of these companies. The coefficient of determination showed that 80.9% variation in market share was accounted for by variations in scheduling for production activities in transport companies. No doubt that minimizing cost will invariably impact on the profit of companies. Transport companies see proper scheduling as a way of cutting down on unnecessary service expenses. Due to efficiency of operation and timely service delivery, this companies have experienced increased customer patronage, thus expanding their market share.

According to Umoh (2013), production scheduling serves to boost production planning and control, which brings about smooth flow of work throughout the production cycle, prevent conflicts and delays in the use of productive resources and determines the expected times for the arrival of supplies and shipping of finished products at minimum costs. In our research, we found out that production scheduling had significant impact on all dimensions of productivity measured (equity capital, growth, cost minimization and market share). It was 49% variation in equity capital, 67.4% variation in growth, 95.1% variation in cost minimization and 81% variation in market share; all accounted for by variations in production scheduling. It is a good fit for the transportation sub-sector. These findings are contrary to similar study conducted by Umoh (2013). Umoh found out that production scheduling did not impact significantly on corporate productivity performance in manufacturing companies in Nigeria. Dorn (2014) asserts that the management and the planning processes to create services are more difficult than the planning of production processes. Transport companies in the service sector in Akwa Ibom State have recorded high productivity due to production scheduling activities. This is possible because they mostly adopt production algorithms called first-come first serve (FCFS) to meet customer satisfaction. However, our finding are in line

with Elwany, Shouman and Abou-Ali (2014) who state that the purpose of production scheduling is to minimize the production time and cost, by telling a production facility when to make, with which staff, and on which equipment.

CONCLUSION

For organization to continue to achieve operational efficiency in terms of cost minimization it is necessary to devote attention to scheduling for production activities. Enhanced equity capital and growth of transport firms in Akwa Ibom State are driven primarily by adequate scheduling of service activity which in turn enhance service delivery and in turn increase customers' satisfaction.

Achieving efficiency in operation and prioritizing service tasks in line with organization goals are sure ways of maximizing profit in transport companies and these are indeed, the goals of production scheduling in Akwa Ibom State transport companies. Going by the above and findings of our study, we can confidently conclude that the performance of the transport sector in AKS is significantly related to scheduling for production/service activities of these companies and that the transport sub-sector is successful because it has indeed identified and applied scheduling techniques to its operations thereby enhancing overall productivity. Therefore, production scheduling and organizational productivity are significantly related in transport companies in AKS.

RECOMMENDATIONS

Concerning the findings of our study, we have made the following recommendations.

- i. Since production scheduling was found to have enhanced organizational productivity in transport companies, other companies in the service industry should, as matters of urgency formally adopt effective production scheduling for their activities order to boost their productivity.
- ii. For transport companies in Akwa Ibom State and beyond to continue to sustain or improve upon its productivity, the companies should adopt computerized systems and online services in scheduling for booking, ticketing and other operations. This will not only enhance customer's convenience and satisfaction but will reduce operational cost of labour.
- iii. Companies in other sectors of the Nigeria economy should as well apply advance technology in scheduling for their operations if they must contribute significantly to the growth of Nigeria's GDP as it is being recently recorded by the service sector.

Reference

- Aderamo, A. J. (2004). Planning for Urban Transportation in Nigeria. Nigerian Institutes of Transport Technology pp. 312-331
- Averill, M. L. (1991). Simulation Modeling and Analysis. McGraw-Hill
- Aworemi, J. R. and Ilori, M. O. (2008). An Evaluation of the Performance of Private Transport Companies in Selected South-Western States of Nigeria. African Journal of Business Management, 2(8): 131-137
- Aworemi, J. R., Adul-azeez, I. A. and Olaogun, O. B. (2009). A Study of the Performance of Public Transport Companies in Niger State, Nigeia. International Journal of Business and Management, 4(11): 73-77
- Azagba, P. J. I. (2004). Effect of Regulatory Failure on Urban transport Fares. Zaria: NITT Publication pp 361-363.
- Business Dictionary (2015). Web finance Inc, available www.businessdictionary.com/definition-schedule.html, Retrieved 33/07/2017.
- Chinwezu, C. (1979). *The West and the Rest of US*. London: NOK Publishers.
- Conway, R. W., Maxwell, W. L. and Miller L. W. (1967). Theory of Scheduling. Addison-Wesley.
- Dorn J. (2014). *Service Scheduling*. Institute Software Technology and Interactive

- Systems, Vienna University of Technology
- Elwany, H., Shouman, M. and Abou-Ali, M. (2013). *Production Scheduling Techniques – A Review*. Department of Production Engineering, Alexandria University.
- Freize, A. M., Yadegar, J. (1983). On the Quadratic Assignment Problem. *Discrete Applied Mathematics*.
- Gnatere, S. O., Nwagboso, C. and Geogakis, P. (2015). Performance Indicators for Urban Transport Development in Nigeria. Faculty of Science and Engineering, University of Wolverhampton, Uk.
- Imaga, E. U. L. (2003). *Theory and Practice of Production and Operations Management*, 3rd Edition. Enugu: Rhyce Kerex Printers.
- Jain, K. C. and Aggarwal, L. N. (2008). *Production Planning Control and Industrial Management*. Delhi, Nai-Sarak: Kharma Publishers.
- Morten, T. E. and Pentico, D. W. (1993). *Heuristic Scheduling Systems*. New York: John Wiley and Sons Inc.
- National Bureau of Statistics (2017). Nigeria Gross Domestic product Report, Quarter one.
- Nwachukwu, A. A.(2014). Assessment of Passenger Satisfaction with Intra-city Public Transport Services in Abuja, Nigeria. *Journal of Public Transportation*, 17(1):99-119
- Olarewaju, A.D. (2010). Productivity Improvement Techniques in the Public Service. *International Journal of Management and Administration*; 31(1):144-159
- Onatere, J. O; Nwagboso C., & Geogakis. P. (2014) Performance Indicators for Urban Transport Development in Nigeria. *Urban Transport*, 138.
- Poterba, D. (2006) Work Schedule and Business Growth in India Manufacturing Firms. *Administrative Science Quarterly*; 21(2):247-261
- Taha, H. (1988). *Simulation Model and Simnet*. Prentice Hall.
- Tanaev, V. S., and Shkurba, V. V. (1975). Introduction to Scheduling Theory. Moscow (In Russian)
- Telsang, M. T. (2007). *Production Management*. Ram Nagar, New Delhi: S. Chand & Company Ltd.
- Umoh, G. I. (2013). *Production Scheduling and Corporate Productivity Performance in the Nigeria Manufacturing Industry*. IOSR Journal of Humanities and Social Science, Sept – Oct, 16(5).
- Vollman, T. E. Benny, W. L. and why Bark, D. C. (2007). *Manufacturing Planning and Control Systems*. Boston: McGraw-Hall.
- Winston, W. L. (2004). *Operations Research: Applications and Algorithms*. California: ITP Wadsworth Inc.