

**ASSESSMENT OF THE OPERATIONS OF PRODUCTION,  
PLANNING AND CONTROL UNITS OF PEUGEOT  
AUTOMOBILE NIGERIA (PAN) LIMITED  
KADUNA STATE, NIGERIA**

*BY*

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**DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY  
EDUCATION, FEDERAL UNIVERSITY OF  
TECHNOLOGY, MINNA.**

**NOVEMBER, 2008.**

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**A THESIS SUBMITTED TO THE DEPARTMENT OF INDUSTRIAL  
AND TECHNOLOGY EDUCATION, SCHOOL OF SCIENCE  
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**IN PARTIAL FULFILMENT OF THE REQUIREMENTS  
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AND TECHNOLOGY EDUCATION.**

**NOVEMBER, 2008.**

## DECLARATION

I **ABOLARIN, SAMUEL SEGUN M. TECH/2004/1188** a post graduate student of the Department of Industrial and Technology Education Federal University of Technology Minna declare that the work embodied in this project is original and has not been submitted in part or full for any other degree of this or any other university.

ABOLARINI SS

Name

Aban

Sign and Date

## CERTIFICATION

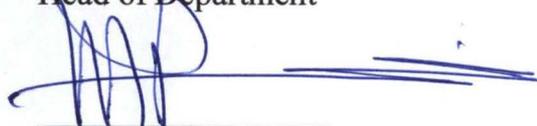
This is to certify that this thesis titled "Assessment of the operations of production, planning and control units of Peugeot Automobile Nigeria Limited in Kaduna State, Nigeria" has been read and approved by the undersigned persons as having been prepared in accordance with regulations of thesis presentations and meeting the basic requirements for the award of Masters Degree in Automobile Technology by the Department of Industrial and Technology Education, Federal University of Technology, Minna Niger State.

  
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## Abstract

The purpose of this study was to assess the operations of the Production, Planning and Control Units of Peugeot Automobile Nigeria Limited in Kaduna State, specifically the study was designed to determine the operation constraints of the Production, Planning and Control Units. To achieve this purpose, five (5) research questions and three (3) hypotheses were formulated to guide the study. A survey research design was employed for the study. A structured questionnaire was developed by the researcher and used in collecting relevant data from 226 respondents. A percentage return of 96% (218) of the total questionnaire distributed was obtained. Mean statistics was used in analyzing the data generated. The findings of the study showed that the operation constraints in Production, Planning and Control Units of Peugeot Automobile Nigeria Limited in Kaduna were non availability of raw materials and component for mass production; inadequacy of machinery for the production of some components among others. The Production, Planning and Control Units was complying with the procedural guide line of the company. The factors affecting market sales are the production costs; High price of Peugeot Automobile products etc; Also the study identified strategies such as the management of Peugeot Automobile Nigeria should procure machineries plan for the development of their major component for its production process; management of Peugeot Automobile Nigeria should improve generally on its production costs to make Peugeot Automobile Nigeria products affordable to customers among others. Based on these findings, five (5) recommendations were made which include government should make a policy to ensure greater protection for local industries so that they can produce more local components among others.

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# CHAPTER I

## INTRODUCTION

### **Background of the Study**

For maximum effectiveness there is a need, within any manufacturing company, to provide a system which will ensure that work flow, inventories and changing levels of production are managed in a manner that improves the overall manufacturing performance. The procedures and policies adopted comprise of a production planning and control system. When one considers the production system commonly referred to as job, batch and flow production, the relationship between the complexity of operation and requirement of a production control system will be appreciated.

If it were possible and desirable to produce each customer's order immediately, without stoppages and to deliver immediately on completion, the production control system required would be extremely simple. Production planning is defined as the function of planning and describing the manufacturing sequences, processes, and tooling for the complete fabrication and assembly of company products as engineering drawings and changes are released, production planning unit interprets these documents and determines the most efficient and economical method of production. Scheduled times for each parts are subsequently used to determine the work and completion dates for details assemblies in a planned pattern to support the end product at delivery schedule. Production control unit is concerned with the compiling of the types and quantities of materials required; ensuring their availability (when and where) for an uninterrupted

manufacturing of the product at the minimum cost (Ireson and Grant, 1999). Quality control unit is responsible for control of quality of company products. This is to check adherence to established company and customer specifications. It also include approval of qualified sources; calibration and certification of mechanical and electrical inspection and test equipment. Furthermore maintenance of proper quality control records and data; and review of discrepant material with customer representatives were also involved. (Sharma, 1978). He maintain that production planning and control unit includes those manufacturing planning, scheduling, and ordering activities which converted engineering and contractual paper into working documents. It also includes issuing the material, fabrication, assembly, and test order necessary to ship to the customer a quality product on schedule and at a profit to the enterprise. The conversion of a customers order into a finished product requires the interaction of many functions within the organization. The design of product, communicated to manufacturing in the form of engineering drawings and specifications must be converted into a language more readily useable in the manufacturing process. Since inception, Peugeot Automobile Nigeria is an integral motor manufacturing concern that is planned to provide the bed rock for the development of auto industry (Umar, 1999). Furthermore, Umar also emphasized that for the automobile industry to thrive, Peugeot Automobile Nigeria Limited was carefully planned and installed with all the necessary infrastructure and the structural arrangement to include all the necessary functional divisions or departments. The production planning and control unit is a key department in the operations of the industrial division. The major functions include reception of basic

production raw materials, planning and launching the product to produce in line according with the demand expressed by the commercial division. It also follows and controls the realization of the vehicles launched and keep records of such through the production process till the product are delivered to the sales department.

In order to give a true assessment of the operation constraints in production, planning and control department (PPCD) of Peugeot Automobile Nigeria one must view it through three (3) stages of the life of the company.

- i. The period of growth (1975-1984)
- ii. The Structural Adjustment Programmes (SAP) era (1984-1999)
- iii. The current to future (1999 up to date).

In the period of take off of the factory which resulted to the production of the first car ever. During this period the production, planning and control department (PPCD) had to take off as well, by pioneering all the production, planning and control activities. At the same time it had to cope with the increasing demand of the products as the new vehicle break into Nigeria market. This was certainly not an easy task as the production grew within the same period from Zero (0) to over fifty (50) thousand cars a year. Umar (1999), also stressed that the SAP period was one of stagnation and uncertainty for the industry. Peugeot Automobile Nigeria depending on over sixty (60) percent of its raw materials input coming from abroad (imported) completely knock down (ckd) had to suffer the effects of the ever increasing rate of foreign exchange, there by forcing the production to gradual decline. The Production Planning, and Control Department had to once

again operate under the stress of shrinking production volumes, having to cope with changing plans almost daily. As it were during the period of growth when CKD components were being flown to meet up with the production demands, extra care had to be taken during the SAP period as goods already ordered for, can not be flown back to Europe because of the daily drop in production, planning. The current situation with a more stable foreign exchange rate material acquisition planning is more certain and so is the production launching and follow-up. However, the problems of the department in term of planning have only changed in shape and type not in substance. The company has to take advantage of the rapid development in information technology to facilitate and enhance flexibility in production planning and control. This will make it easier to respond to the fluctuation in the implementation of production, planning and control. It has become worthwhile therefore, to undertake this study to find out some of the obstacles that hinder the improvement the operations of production, planning and control in the Peugeot Automobile Nigeria limited, for it serves as the bed rock of production advancement.

### **Statement of the Problem**

The Federal Government of Nigeria's (1975), policy on the development of Automobile Industry in Nigeria was aimed at 100% technology transfer within the Automobile Industry. Evidences from Peugeot Automobile of Nigeria Kaduna have shown that the technology transfer efforts in the industry has achieved only 32% local content over 26 years period. Thus up till today Peugeot Automobile Nigeria relies so much on completely knock Down parts from France for the production of

its products. With this level of achievement it is very difficult to attain the 100% local content ascribed in the technology transfer policy in the near future.

Industrialists and scholars such as (Dillibe, 1991; Adedoyin, 1986; Ade-Ojo, 1988; Michael, 1987; Aboyade, 1990), have observed that for too long a time, the Automobile Industry in Nigeria, which is a corner stone for industrial growth lacks the necessary local technology to fully harness its potentials to contribute to meaningful development. This state of affairs has been attributed to some of the constraints facing the production, planning and control units of the Peugeot Automobile Nigeria. For PAN Limited Kaduna to achieve the 100% local input target as ascribed in the national policy on the development of Automobile Industry, there is a need to determine the constraints facing the production, planning and control units of the company with a view to repositioning the units for the realization of the above policy.

Therefore, the problem tackled by the study is the assessment of the operations of the production, planning and control units of the company with a view to identifying the constraints and strategies for tackling them.

### **Purpose of the Study**

The main purpose of this study was to assess the operations of production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna with a view to evaluating its effectiveness.

Specifically, the study was designed to:

1. Find out the operation constraints in production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna.

2. Assess the extent to which the production, planning and control units complied with the procedural guide-line of the company.
3. Assess the factors affecting market sales of the Peugeot Automobile Nigeria Limited products in Kaduna.
4. Determine the adequacy of materials and equipment for the production of Peugeot Automobile products.
5. Suggest for improving the management of Peugeot Automobile Nigeria Limited Kaduna.

### **Significance of the Study**

The result of this study will help to provide data for improving the production, planning and control units of Peugeot Automobile Nigeria in the following specific ways. The information provided in this study will be of immense benefit to the Government since the feedback is based on practical assessment which will greatly enhance the performance of the industry and economy if the Government enshrines it into her policy. In addition, the study will help the federal government to create operational environment by articulating an enduring policy for the development of indigenous technology. Through this study, federal government will be able to protect the auto industry by guiding against indiscriminate importation of fully-built vehicles which is affecting the auto industry. It will also make the federal government to effectively protect the local industries so that they can enhance on local components. In order words, the government will be able to encourage the local manufacturing industries by giving them the required assistance so that they can produce. The Federal Government

will find the findings of this study useful in assisting Peugeot Automobile Nigeria Limited Kaduna in her efforts towards the development of local content. In line with this, it will enable the government to give all assistance to Peugeot Automobile Nigeria towards purchasing of stamping machine (e.g for sleeves and other engine parts), flat-sheet, etc. This study will finally be of great benefit to the management of Peugeot Automobile Nigeria for getting information well ahead of any policy that may be brought to effect in the nearest future and using it to anticipate solutions and plan ahead.

### **Scope of the Study**

This research work is concerned with the assessment of the operations of production, planning and control units in Peugeot Automobile Nigeria Limited Kaduna. Therefore, the research is only limited to the operation constraints of production, planning and control units of the Peugeot Automobile Nigeria Limited Kaduna.

### **Assumption of the Study**

In carrying out this study, the following assumptions were made;

1. Management staff workers were valid and reliable sources for obtaining information on the operation constraints in production, planning and control units.
2. That the questionnaire would elicit reliable information needed about assessment of the operation constraints in production, planning and control units of Peugeot Automobile Nigeria Limited and improving the effectiveness of its production process.

## Research Questions

To guide this study, the following research questions were formulated;

1. What are the operation constraints in production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna?
2. What is the extent to which the production, planning and control units complied with the procedural guide-line of the company?
3. What are the factors affecting market sales of the Peugeot Automobile Nigeria Limited products in Kaduna?
4. How adequate are the materials and equipment for the production of Peugeot Automobile products?
5. What suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna?

## Hypotheses

The following hypotheses are formulated to guide this research study ( $P < .05$ ).

1.  $H_{01}$ : There is no significant difference between the mean responses of the junior staff (workers) and management staff on the operation constraints in production, planning and control units Kaduna.
2.  $H_{02}$ : There is no significant difference between the mean responses of the junior staff (workers) and management staff on the extent to which production, planning and control units complied with the procedural guide-lines of the company.

3.  $H_{03}$ : There is no significant difference between the mean responses of the junior staff (workers) and management staff on suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

This chapter dealt with the review of related literature pertinent to this study.

Literature reviewed were discussed under the following sub-headings;

- Conceptual Framework of the Study.
- Historical Background of Peugeot Automobile Nigeria Limited Kaduna.
- An Overview of production planning and control units in Peugeot Automobile Nigeria Limited Kaduna.
- The Development of Indigenous Technology in Nigeria.
- Political factors in Auto Industry.
- Government Policy.
- The Automobile Industry Coping with the Times.
- PAN'S Automobile Technology Transfer Efforts.
- A Nigerian Owned Car.
- Review of Related Empirical Studies
- Summary of the Review of Related Literature

#### **Conceptual Framework of the Study**

Management is defined by Burbidge (1978) as the art and science, concerned with planning, directing and controlling the work of human beings, towards a common aim, in accordance with agreed policies. The three management processes of planning, directing and controlling apply to all management tasks. Planning is the process of deciding what to do in the future. Directing comprises the operations of issuing orders; instructing those who have to do the work of the

nature of the plan to be implemented, and finally of co-ordinating the work of the different people involved and of motivating their activity. Burbidge defined control as the constraining of events to follow plans. It operates in general principle by comparing actual achievement with the plans, and by feeding back information concerning variances to those who are in a position to take corrective action. Burbidge, also stressed that all the three management processes have to be carried out to complete any management task, although they need not necessarily all be carried out by the same individuals. Control is also defined by Burbidge, as the process of management which constrains events to follow plans. Production control, in the sense is the name of the management function concerned with the planning, direction and control of the material supply and processing activities of a business or in other words, of material flow. Control, then represents only one facet of the subject, the processes of control is also essential with other closely related management functions. The many different management tasks can be classified into groups of tasks known as the management functions.

Planning is defined by Burbidge (1978) as a rational process of preparing a set of decisions for future actions directed at achieving goals and objectives by optional means, according to this definition planning is future and goal-oriented. Planning does not exist in a vacuum, goals and objectives must be set since development takes place over a period of time, planning designed to achieve development has to be seen as a continuous spiral process. He also maintained that in this sense planning is not only concerned with objective but also with how to achieve them. There fore it is concerned with the implementation of those objectives. It usually starts with a set of

interrelated preliminary decisions called a plan. As efforts are made to carry out these decision there will always be feedback of new information revealing errors, unexpected events and new possibilities. This will require changed in original decisions in order to achieve better results.

Production is defined by Sharma (1978) as the transformation of raw materials by manufacturing methods into useful and valuable things needed by society. Production planning is the very basis of manufacturing, production planning and control is the process of planning production in an industry in advance of actual production. It consists of the following activities. Determining the practicability of a product design, Analysing the product for best methods of production, determining the economic lot size, selecting the best equipment for any manufacturing process, determining the best sequence of operations to manufacture each individual item, part, or assembly (routing), designing or supervising the design of tools, jigs, fixture, or other devices to best assist the manufacturing equipment to function as planned, estimating expenditure for equipment and tools and help making cost estimates on new jobs, setting starting and finishing dates for each important item, assembly and the finished product (scheduling), controlling the inventory of raw materials and in process parts, dispatching materials, tooling and equipment to the plant locations specified by the schedule (Dispatching). Keeping track of progress of production (follow-up) and providing programme evaluation review.

**Historical Background of Peugeot Automobile Nigeria (PAN) Limited Kaduna.**

Peugeot Automobile Nigeria limited was founded in August, 1972, by an official agreement signed between the Nigeria Military Government and Automobile Peugeot of France. The Company's equity structure stands at; Federal Government of Nigeria - 40%, Kaduna State Government – 10%, Nigeria Peugeot Distributors, 10%. Automobiles Peugeot (France) – 40%. The Company's Policy affairs are looked by a Board of Directors headed by a Chairman, while the general management structure is headed by a managing Director, assisted by a Deputy. The major divisions are; personnel, commercial, finance, industrial, and the local content purchase divisions, each headed by general manager. On March 14, 1975 the assembly plant in Kaduna was commissioned by the then head of state, general Yakubu Gowon and the first Nigerian Peugeot Automobile car rolled out of the plant (Akpaïdu & Ibrahim, 1998).

Akpaïdu, and Ibrahim (1998), further stated that since then, Peugeot Automobile Nigeria annual turnover has seen a remarkable growth from just N88.4 million in 1975 to 1984 height of N493.6 million with a declared profit of N128 million in that years. This is a clear indication that production at the plant has also tremendously increased year after year. For example, where as the year 1975 saw a production figure of just 2,592 cars, it had risen more than ten-fold to 59, 490 in 1981. it however fell sharply in 1984/95 due to the unhealthy state of nation's economy. But since its inception, Peugeot Automobile Nigeria had produced over 370,000 cars within her first decade. Oshomoji (1996), stated that the history of what has now become Nigeria favourite car dates back to 1957 when 100 units of

Peugeot 203 cars were imported by individuals into the country. Two years later, societe' commerciale Ouest Africaine, (SCOA) LTD. was appointed sole agent for Peugeot Automobile cars and she imported the first set of 403 and 404 Peugeot cars.

Since independence in 1960, however, the growth rate of the Nigeria economy had taken such a proportion that the number of imported cars no longer could cope with demand. Recognizing the need, therefore, to meet up with that demand, the then Military Government of Nigeria opened negotiation with Automobiles Peugeot of France for the setting up of an Assembly plant in the Country. That dream became a reality when on December 15, 1972, Peugeot Automobile Nigeria was incorporated with an authorized share capital of three million naira, and paid up capital of two million naira (Oshomoji, 1996).

Oshomoji (1996), further stated that, Peugeot Automobile Nigeria continuously evolved a dynamic automobile technology to provide the ever increasing demand of the people as well as the nation's diverse needs from time to time. As a result there are nine (9) series of Peugeot cars on the Nigeria road today. This are; the 504 family series, the 504 family A/c, the 504 GR/AC, 505 GL/AC, the 505 SR5 speed 505 SR, the 605 series and the most recent one the 306 series which is an improvement to higher executive class. It offers a lot of more innovation than others. According to Tumaka (1991), PAN's assembly plant which is located at Kaduna South is manned by experienced automobile engineers. The plant which is unique and one of its kind in the continent of Africa is equipped with sophisticated machinery and equipment. The departmentalization of the plant has

some specialized features which make for easy way of assembling the vehicles. Some of these features include a body welding shop, spraying workshop, engine/gear-box shop, etc. At full capacity presently Peugeot Automobile Nigeria is producing at least thirty five (35 cars per day). In order to ensure that every Peugeot car owner has easy access to adequate service facility, no matter where he may be and at the cheapest cost possible, Peugeot Automobile Nigeria feeds her over 200 accredited garage maintaining dealers in various locations throughout the country with adequate supply of spare parts from her spare parts centre at KM 18, Badagry expressway, in Lagos.

Tumaka (1991), further stated that this centre which covers an area of 11,100 sq metres on a 25 – acre site, is the largest spare parts depot for Peugeot in the world outside France. That is not all, in fact, every Peugeot car that passes through Peugeot Automobile Nigeria plant must have undergone a thorough check and very strict quality control tests before it is delivered to the commercial department where it begins its journey to life. It is only after car has gone through all the rudiments of such a test that it is finally passed. And to attest to its quality, it has a 6 – month WARRANTY certificate which is internationally accepted. A Peugeot warranty can be tendered any where in the world and would be honoured by an accredited Peugeot dealer. Peugeot Automobile Nigeria is well aware of its responsibilities to the Nigeria people. And, it is ever alive to them, which is why it is continually gearing its policies of making the nation self-sufficient through its dynamic training scheme for skilled Nigerians. Yusuf (1994), stressed that with a tremendous staff growth from 691 in 1975 to over 4,000 as at date, Peugeot

Automobile Nigeria has continued to maintain its dedication to the realization of the yearning of the nation. Since its inception, the company has maintained a dynamic training scheme through a unique SYSTEMATIC MODULAR concept approach which begins from identification of training needs, job description, Task Analysis, preparation of modules for those tasks, and Teaching lessons through to Evaluation and valuation of lessons.

Guduf and Aliyu (1999), remarks that this scheme has been guided by the professional leadership and management provided by Organisation for Rehabilitation through Training (ORT) of London, the largest international training organisation of its kind in the world. This training is provided both within the Peugeot Automobile Nigeria plant in Kaduna and in overseas. For example, a total of 2,500 Peugeot Automobile Nigeria staff acquired this specialist training in 1984 alone. This way, it is believed, more and more Nigerians would be able to acquire the necessary technological know-how in automobile industry before long. So far, a good percentage of the entire components of each Peugeot car assembled in Nigeria is locally sourced. Abdulmalik (1998), stated that purchase and local content development division is a distinctive division of Peugeot Automobile Nigeria Limited, designed to carry out PAN'S solid clearly marked out objectives for the development and growth of the automobile industry in Nigeria. The division is manned by seasoned dedicated PAN'S members of staff who work hard to develop and sustain sourcing of local goods, parts and services for sundry Peugeot vehicles and others in the Automobile industry. The Division is organized into the following sub-divisions for effective performance; local purchase, overhead purchase, local

content development with the research and development section. As a result of PAN'S belief and commitment to sourcing materials locally, a total sum of N85.5 million had been invested as at 1981. Abdulmalik (1998), further explained that by the beginning of 1986, the investment had increased to N99 million. In 1990, PAN'S local content percentage is 30 percent and the company was buying 560 parts from over 60 different suppliers spread over the country. Peugeot Automobile Nigeria goal is to create a reliable industrial development and growth in Nigeria, especially in the motor vehicle industrial sector for the benefit of all Nigerians, Nigerian car and component manufacturers. Peugeot Automobile Nigeria derives its CKD parts from Automobile Peugeot France. In fact, we cannot talk of the country's industrial development without mentioning. PAN'S achievements are quite palpable, talk of employments, talk of training of Nigerian technocrats, talk of durability of vehicles, then Peugeot's name must come to play.

#### **An Overview of Production Planning and Control Units in Peugeot Automobile Nigeria (PAN) Limited Kaduna.**

In a large industry such as Peugeot Automobile Nigeria a complex managerial system is required to do the work of advising, co-ordinating, controlling, and providing services to the production department. Production management is concerned with the planning and controlling of the processes of production so that they move smoothly at the required level. Thus production management consists of making choices about the use of men, money, materials and time. In Peugeot Automobile Nigeria the system of production management or planning and control can be seen as follows. The sales department in the

Mukhtar (1999), explained that final inspection is carried out before the product leaves any shop. Evaluation of the production operations is the main part of control both during and after these operations. This is handled by both the quality and study and methods personnel. Control cards are used as the means of evaluation and keeping records. The PPFS reports daily to the General Manager (GM), and the Deputy GM of the industrial Division, and the other Assistant GM involved. Mukhtar (1999), further stated that the study and methods department evaluates data obtained from the shops about operation times, the idle time of men and machines, the causes and effects of break downs, fluctuations in output, etc. Relevant information is passed to the GM industrial Division. The GM in turn reports to the top management at the Head Office (i.e MD and Deputy MD) if there is any hold-up of the production schedule. The finished vehicles are passed through super-control and when deemed acceptable are transferred to the commercial division sales department to deliver the products to the customers and the distributors nationwide.

The production planning and follow-up section (PPFS) is a section within supply and stock control department (SSCD) in Peugeot Automobile Nigeria Limited production, planning and control is co-ordinated by this section. PPFS is in charge of the planning and organization of the production according to the production programmes defined by the commercial division. The commercial division issues the annual production programme for each type and model of vehicle. It also issues the breakdown of the production showing the production

expected for each month during the year. It is then the responsibility of the PPFS to establish the weekly production programmes. (Adamu, 1998).

Suleiman (1997), maintained that the PPFS prepares the weekly programme taking into account of the stock level of the necessary parts for the various models. The weekly production programme for the up coming week is prepared on the preceding Friday. Copies of the programme are sent to all management personnel concerned. Information is then passed to the departments involved, ie supply department, study and methods department, and all the production shops. Body shop is the first shop concerned with the production programme as it is the first stage of the production process. Following the production programmes, Body shop workers know how to prepare its line production for the various models of car to be produced per day.

Suleiman (1997), also emphasized that it is therefore the duty of the Body shop manager to ensure that his or her shop meets its product on programme. Engine Assembly shop is informed of the production programme because it has to assemble the engines to correspond with the car bodies. This is because the engine for the 504 and 505 cars differ. Thus if the production programme is not known, when the engines reach the assembly shop where they are fitted to the car bodies, there might be shortage of one type of engine or the other. However, for the 306 there is no production programme in the engine Assembly shop as the engines are CKD and come fully assembled from France. The production programme consists of detail about the models of Peugeot vehicles (i.e 504 Saloon, 504 SW, 505 and 306) to be produced, and their respective types i.e New Line (NL), Best Line (BL),

Evolution (EVO), etc. stating the quantity of each to be produced. It also states the colours of paint to be used for the various models. This enables paint shop to organize its working schedule. The production planning and follow-up section informs all the stores involved of the production forecast for the following week. This is in order to enable the stores to ensure that all the parts and materials to be used in all the shops concerned are available and readily at hand. This is so as not to lead to delays and halts in the flow of production due to shortages (Sule, 1997).

Akanni (1997), stressed that the various stores notified are the Engine Assembly store, store D (this supplies the Assembly shop) store S1 (for body shop) store S2 (local parts stores), and store Q for chemicals and paints. The PPFS also has several other responsibilities. In the case of special orders, this section determines if the special order can be realized that day, and at what point of the production process the modification due to the special order will be made. It then sets into motion all the steps needed to carryout the production of this special order. Another major duty performed by the PPFS is the daily follow-up of the production. This is done with the aid of follow-up slips. There are six cards per vehicle. These cards will follow the production of the vehicle on the line. The PPFS has personnel monitoring the progress of the vehicles at various control points. As the cars passed for that particular point is turned off. Abdullahi (1998), explained that the follow-up of the automobiles is done from the initial stage at commercial division car park. There are 8 control points these are;

- Point 1: Inside body shop
- Point 2: End of body shop, entry to paint shop.
- Point 3: End of paint shop, entry to trim line.
- Point 4: End of trim line, entry to chassis line
- Point 5: Inside chassis line
- Point 6: End of chassis line, move to Touch-up
- Point 7: End of touch-up, delivery to commercial division.
- Point 8: Entry to stock at commercial car park. Here cars stays with the commercial division. At the end of each day, PPFS compiles a progress report showing how many cars are available at the various positions of the production process. The report also shows whether or not the production target of 24 cars per day for each shop has been achieved, under-achieved, or over-achieved. This then determines whether the particular shop which has under achieved will have to work extra hard the next day to make up the backlog, using the progress report, management can make decisions about how to rectify situations that have gone out of control from the target plan (Abdullahi, 1998).

### **The Development of Indigenous Technology in Nigeria**

There is today a growing consensus among development experts on the progressive view of technology as innovations and adaptations on traditional modes of behaviour applied to the solution of problems of man and his environment in peace or war (Bernal, 1971; Aminu, 1979; Suleiman, 1982). Viewed in this way, technology may be seen as a product of human resourcefulness and hence has

meaning with reference to collective goals and needs of a people in time and space.

Technology also defined as a variable concept.

Erukora, (1990) stated that;

“There are two broad types of technologies for work situation; the machinery-intensive (modern) technology and the labour intensive (indigenous) technology. The machinery-intensive technology involves the use of sophisticated machinery and labour saving devices in work situation. It is usually modern and brings about high quality in final product. By design, it is capital-intensive and this has significantly work situations to those of managing more machines rather than people”.

The importation of modern technology, inspite of its numerous short term advantages may ultimately be devastating to the general growth and development of poor countries. For instance, Morawetz (1975) illustrated the case of 6 petrochemicals industry, a turn-key project, in Colombia. His study revealed that investment in petrochemicals industry in the country does not compare favourably with potential alternative uses of equivalent investment funds in labour intensive import-oriented textiles.

Akinrinade, Omotunde and Ayoola (1988) stated that;

"In March 1988, Nigeria commissioned its own turn-key petrochemical industry which involved two petrochemical plants producing liner Alkyl Benzene (LAB) in Kaduna and a carbon black/poly propylene in Ekpan (Warri) at a total cost of N1.025 billion”.

In the automobile industry where Nigeria has a relatively longer history, a range of problems comparable to the Colombian turn-key project are quite evident. Commissioned between 1975 and 1978, automobile assembly plants in Nigeria include Volkswagen of Nigeria Limited (VON), Lagos; Peugeot Automobile Nigeria Limited, (PAN) Plc, Kaduna, Anambra motor manufacturing company (ANAMCO), Enugu; Nigeria Truck manufacturing company (NTMC), Kano; Steyr motors, Bauchi; and Leyland Nigeria limited Ibadan.

Enukora, (1990) in his article "Towards the development of indigenous technology in Nigeria, has this to say:

"After operating for well over ten years, these plants are yet to meet the aspirations of the Government and people of Nigeria with respect to; transfer of technology and linkage effects to the rest of the economy, checking capital flight and improving up on foreign exchange earnings providing cheaper and better means of transportation; job creation and security of employment."

These assertions on the poor performance of the automobile industry have been dealt with in sufficient details as topical issues in Nigeria's contemporary economic history and hence require no further elaboration here (Omokhodian et. al 1987; Omotunde et. al 1987; Akinrinade et. al 1987; Ossai and Ayoola 1987). One of the reasons offered by the motor companies for the low proportion of local content in their production process was that there were not enough local suppliers to supply the automobile plants with high quality components needed in the manufacture of vehicles (Omotunde et. al 1987). The implication is that several years after the commissioning of the companies, there were poor efforts at backward integration in the automobile industry which would have otherwise

environment has forced a lot of companies to sing their obituaries. The effect was the induced in high cost of production which resulted in high prices of their vehicles and a drastic reduction in demand for their finished products, which forced a few automotive firms to crash.

Peugeot Automobile Nigeria like other companies too had its fair share of SAP and to still remain in business, prices of vehicles had to go up by almost 500%. Though SAP as an inevitable measure was aimed at putting our economy back to a sound footing, it is a truism that so far the naira exchange rate continues to depreciate in the international market, certainly the prices of products whose production depend on high import will continue to go higher. PAN'S product is not an exception if this industry must continue to function.

Olowu, (1990) states that:

“The level of local content ratio is a far cry from the maximum standard required to ensure a successful take-off of the envisaged indigenous car and make the much be meant transfer of technology a reality. For sometime now, critics of the sector have left the impression that the industry is responsible for its present situation and it has contributed to the development of the nation's economy.”  
What then are the crucial problems that militated against the effective performance of the automobile sector?.

According to motor vehicles Assembly Association of Nigeria (MAN, 1989) emphasized that:

“Three main reasons are responsible for the state of affairs. These are:

- i. The absence of supportive industries to feed the automobile industry with component parts.

- ii. The non-concomitant development and integration facilities such as steel, cast-iron, flat- sheet, alloys and solvent, etc.
- iii. The sector has argued that importers of fully Built-up vehicles (F.B.U) have not helped to develop the supportive industries to feed with the sector. If they do so, coupled with petrochemical project (for the basic inputs for production) the future of the industry will turn around". According to Ade Ojo (1988), the automobile industry being capital intensive needs appropriate volumes in output for viability. Therefore, for any investor to go into the production of parts needed by the sector, the issue of volume of demand and costs are crucial". In view of the poor start in technological development, it may be fool hardy to expect that the industrial plants will readily provide any developing country short paths to technological innovation and development especially in situation where a sound indigenous technological base is non-existent.

### **Political Factors in Auto Industry**

Due to political factors indigenous production of automobile vehicle were hindered. Even the low production capacity in the auto industry is attributed to political factors. Ajaokuta steel factory was basically established to satisfy (supply) auto industry in Nigeria with components, but due to so many factors including politics which militated against the completion of the factory where auto industry were forced to continue to rely on foreign components and parts. Yet there is politics in the election of suppliers of components and parts for the manufacture of vehicles. The federal government and the politicians in Nigeria has shown great interest in the

automobile industry and on the process thereby enshrine selfish interest into the system that led to bad management (Micheal, 1987).

Micheal (1987), also stressed that any time federal government allocate funds to the industry in Nigeria for development, it is not always effectively utilized. The problem is that when the things are done, there is hardly any serious industrialists to take advantage of research results such as the two prototype cars so far produced in the country. Nigeria had the intellectual capacity to break new grounds in the auto-sector, but needed genuine businessman to effectively utilize research findings since the researchers were not expected to also produce the cars.

It is the manufacturers who will take it up, improve on the quality and then mass production” adding that what we need now was a stronger industrial presence by way of private sector investment to either popularize or market the research findings. The major problems of implementation of policies in Nigeria is politics and even the implementation of the research findings results failed due to the politics behind it. Ayu, (2002) stated further: “In spite of the inherent problems the government was determined to ensure that cheap and affordable vehicles were produced in the country explaining that the centre for automotive design and development (CADD) of A.B.U Zaria was still working on the prototype cars” considering the factor of Nigerian leaders and the politicians. “Government’s general policy was to revive the auto sector to a functional state where all the auto assembly plants in the country would be producing to full capacity so that a range of affordable vehicles could be produced for ordinary Nigerians to buy. To this effect, pressure had been brought to bear on the auto-sector assembly plants to improve on

their levels of productions, while also explaining the use of none local contents to encourage and aid the growth and development of industry in the country (Ayu, 2002).

Peugeot Automobile Nigeria in Kaduna was 30 years old in 2002. The management of Peugeot Automobile Nigeria celebrated the 30th anniversary. The then minister of finance, Adamu Ciroma attended the celebration. At the annual celebration, one of the issues raised by the management Director of Peugeot Automobile Nigeria is the need to protect our local industries citing the recent importation of Toyota Prado jeep for the police (Ayu, 2002).

Ayuba (1998), asserted that government have adopted measure to deal with this problem, it is not for stopping import, it is for facilitating domestic production, to be able to compete more favourably with imports and what we are doing is to reduced duty on raw materials to a bearest minimum and now we have reached the level of five (5) percent. Aina (1997), also remark that government are also to ensure that the machinery which they used, and whatever equipment they used are imported, infact at a duty of only. 2.5 percent. Adamu Ciroma commissioned the paint cabin of Peugeot Automobile Nigeria Limited as part of the 30<sup>th</sup> anniversary of the automobile assembly plant.

### **Government Policy**

With the development of indigenous technology in Nigeria, the federal government had between 1975 and 1980 commissioned five (5) assembling plants located all over the country. It is disheartening to note that inspite of all these commitment on the part of the government, the assembly plant are yet to meet the

aspirations of the government and people of Nigeria with respect to transfer of technology and linkage effect to the rest of the economy. As it is clearly stated in the second national development plan, the objective of setting up the assembly plants was to catch up with the industrialized world. But unfortunately the policy makers and the technical partners have failed within that reach, either by ignorance or designed policies for the setting up of assembly plants in favour of the foreign partners only (Bello, 1981).

Years after the establishment of the assembly plant, there is no sign of technological break through. We are all aware that technology is not transferable to some extent and one thing is that the assemblers are agents of their parents companies and are here to market their products, Therefore one can't expect them to sell their technology known how to us. It is therefore left to us to steal their technology. Government should have made it clear to the technical partners that any unfavourable policy to us means no agreement. And if the above is not complied with all forms of taxes like the custom tariffs excise duty and the import licence will be heavily imposed on them. It is evident that in order to realize our dream of producing an indigenous car, much will depend on the strength, and extent of co-operation between the vehicle assembling plants and components manufacturers. The assembling plants are expected to source for about 60% local content before any head way can be made (Ojelabi, 1991).

Adeyemi (2000), stated that despite policy initiative by Nigeria to open up its automobile sub-sector, the performance of the sector has not been that encouraging. He further posited that Nigeria concentrates today on importing completed units for

sale in the local market with more emphasis placed on after sales services. This really casts doubt over the ability of Nigeria to sustain any improvement on the performance of its manufacturing sectors.

Dama (2001) has observed that despite all the problems with the automobile sector in Nigeria, the local automobile parts or components manufacturers are said to have performed very well especially in the light of the problems that affected the manufacturing sector in the last 15 years, and could still do better in the future some of them have been forced to close down due to the harsh economic environment and the dumping of sub-standard products into the country. What, however, is needed is for further investment in the production of items such as contact sets (breaker), spark plugs, headlights and other bulbs, fuses, brushes, gaskets, wiper blades, hoses, lifting jack and tools which are much more in demand for servicing the second-hand cars in the system.

Balarabe (2001), maintained that government has directed all its Departments, parastatals, state governments, local governments and their agencies to patronize the products of the local assembly plants as a means of increasing their outputs. The government according to him is also currently trying to assist these plants to secure loans from the Automobile Development Fund (ADF) to beef up their working capitals.

With the above policy measures put in place through the activities of the National Automobile council (NAC), it is expected that the Nigeria Automobile Industry will sooner or latter experience a new dawn. Therefore, the future of the

Automobile industry in Nigeria hinges on how Technology and Research and Development will become part of Nigeria's investment curriculum.

### **The Automobile Industry Coping with the Times**

Adedoyin (1989) stated that:

There is mass dissatisfaction in the industry caused ironically, by certain government policies aimed at uplifting the auto sector and there by improving mass transportation. In the wake of the May, 89 anti SAP riots on government had sought to cushion the pairs of the SAP by introducing some relief measures in some key sectors of the economy including education, labour (employment scheme) and transport, for manufacturing sector including small and medium companies and organizations, which is equally being supported through continued re-capitalization of the Bank of industry to the tune of N6 billion (New Nigeria 2005).

Aboyade (1990), stated that: "The government has tried no doubt, but the situation could be better". The main grouse with the foreign exchange allocation is that facility was not extended to any of the nation's vehicle assembly plants and the major motor and spare parts firms.

According to Owolari, (1992) chairman of the 36-member motor and Air transport Trade Group of the Lagos chamber of commerce and industries deplored "the method adopted in the allocation which almost totally exempted members of the group" (only three companies in the group were considered). He also criticised the non-involvement of appointed distributors who have direct dealings with the overseas auto manufacturers. He says the method adopted by the government was fraught with danger of importation of spurious or non-genuine spare parts.

Ahlbrecht, (1990), Managing Director Anambra motor manufacturing company limited (ANAMCO) having watched with keen interest the abolition of duty on commercial vehicles and spare parts complained by saying that, "There is no protection of all; indiscriminate importation of fully built vehicles is killing the industry".

Ahlbrecht's statement is corroborated by Lindelanf, (1991), of cars Nigeria Limited marketers of ladacars who says: "instead of bringing satisfactory result to the industry, the duty abolition has only encouraged an influx of fairly used vehicles which he argued are early susceptible to breakdowns". Lindelauf (1991), further warns by saying "The nation's drive to produce Nigeria made car will suffer a serious reversal if the importation trend continues". Aboyade (1989), says that: "import has taken a disproportionate parts of the market; domestic production has further hindered and it has become more difficult for component suppliers to be in business". According to Owolari (1992), "Because of the multiple problems of foreign exchange squeeze, lack of protection and low volume (market), the vehicle assembly plants are currently producing between five and ten percent of their installed capacity".

Martins (1991), president, Nigeria Transport Owners Association (NTOA)

stated that:

"Bureaucratic practices were still holding the clearance at the ports of spare parts ordered by transporters under the SAP relief measures. Transporters ran into problems with Bureau vantax-appointed by the Government to verify and clarify goods; which allegedly refused to honour the letters and certificates of duty exemption issued to some transporters with SAP consignments (spare-parts) by the transport ministry and the Budget and planning department

in the presidency. Owolari adds: What ever new policy the government might decide to enunciate in the 1990 budget should be executed with military precision. A situation where by the budget takes up to three months to interpret or implement is unhealthy for the Nigeria economy”.

In previewing the 1991 budget on transportation, Adegbenro public Relations manager of Volkswagen of Nigeria limited (one of the nation's five major vehicle assembly plants) says that, 1990 has been a disaster in terms of government pronouncement and action on the auto industry. Adegbenro is particularly critical of the unrestrained importation of vehicles in 1990 despite the president's assurance to the contrary. Because of the late gazetting of the president's budget speech for 1989/90 fiscal year, the auto companies confirmed to pay duty on CKD until April, 1990. ANAMCO officials' say the Enugu based Mercedes Benz vehicle producers lost nearly N1 million on this ground. Peugeot Automobile Nigeria Kaduna based also expressed surprise at the non-inclusion of Peugeot 504 station wagon car, widely acknowledge as the number one passenger commercial vehicle for inter-state travels, from the CKD duty exemption. According to Micheal (1990), stated that “Nigeria passenger car still attracts 25 percent duty and Peugeot Automobile Nigeria pay ten percent on the J5 bus imported as fully-built but with cosmetic local fittings carried out-at the Peugeot Automobile Nigeria factory. But the greatest disappointment the auto-makers complain loudly about, is the unfulfilled promise of shutting the nation's door against indiscriminate importation of vehicles, particularly the secondhand variety”.

Babangida (1990), raising the hopes of the local vehicle manufacturers stated that: “Government is watching very closely various forms of abuse in the

importation of used motor vehicles and will soon design appropriate counter measures and sanctions". But there has been no sanctions and the used car business has flourished even more than the previous years. Official records show that 18, 505 units of vehicles came in 1990 through the Tin Can Island Port (TCIP) from January to September. These figures represent an 80 percent increase over the 10,504 units recorded within the same period in 1989 and even slightly higher than 18, 167 units imported for the whole year (1989) through TCIP- the ever bustling port that accounts for over 70 percent of vehicles imported into Nigeria.

The mass transit programme introduced in 1988 and as the final solution to Urban transport problems is greatly troubled. By June, 1990, nearly half of the over 2,000 buses bought for over N1 billion by federal and state government had become operational liabilities. However, some faulty ferry boats have been reactivated to boost the mass transit scheme but shortage of funds has mostly hampered their effective usage. Significantly, about N613 million (as at 1990) will be used to redress the pathetic situation in which the Nigeria Railway Corporation operates with less than 30 coaches as against a minimum 180 required for full services (Ladan, 1991). Adeyanju (1990) stated that: Going by official assurance at least 15 new locomotives were expected to join the Nigeria Railway Corporation (NRC) stock in the year (1991). In which, the NRC was slated for commercialization in January 1991.

According to Hamza (1991), Chairman of the Technical Committee on Privatization and Commercialization (TCPC). The national railway which finds it difficult to generate one quarter of its estimated N15 million monthly wage bill, will

be responsible for its financial needs. Ndakotsu, (1991), NRC Chief public Relations officer, who credits president Babangida with providing funds to create industrial harmony in the Nigeria Railway Corporation says, "The corporation proposal for 1991 brought an expansion of capacity. Everything still depends on how we can get more locomotives, spare parts and rolling stock for improved services".

### **PAN'S Automobile Technology Transfer Efforts**

Perhaps for the first time in the history of Nigerian's trade fairs, the 19<sup>th</sup> Kaduna international trade exposition was full of hopes for Nigeria's rapid industrialization through technology transfer especially in the field of automobile technology as shown by Peugeot Automobile Nigeria Limited exhibition. In line with the commendation were hopes expressed by both individuals and corporate bodies as regards the possibility of Peugeot Automobile Nigeria producing a Nigeria made car very soon and thus making real the Nation's dream of auto technology transfer. According to the former Managing Director Peugeot Automobile Nigeria Fanconrier (1988), Peugeot Automobile Nigeria had already registered a machining investment plan for the development of two major components in addition to the ones earlier integrated for the continual success of her local content programme.

The components, stressed as equally vital like others before them were pistons and rockers arms estimated to cost N20.5 million and N22.5 million respectively. Apart from the integration, a total of N22.5 million will be set aside for the manufacturing of new engines and mechanical parts. Thus, from a humble start with 15,300 cars per year Peugeot Automobile Nigeria rose gradually but assuredly to reach the annual production figure of over 50,000 vehicle through 1976 to 1982

while at the same time, the local content ratio achieved rose to 30 percent. In spite of the fact that PAN'S annual production figure has dropped in recent years, for reasons of economic recession, the company has in no way been daunted by circumstances in its bid to strengthen its policy for local content development. Presently, PAN'S efforts in this direction has earned it a propitious rise to 32 percent. The achievement by Peugeot Automobile Nigeria of 32 percent, integrated local content for its products within this short period of 26 years only points to possibilities of higher attainment in the non-distant future (Tunde, 1990).

Lami, Public Relations manager Peugeot Automobile Nigeria in the new Nigeria (1991) in an article captioned: PAN'S Auto technology transfer Efforts An assessment. Stated that; "Because of the non-encouraging volume of custom given by Nigerians themselves to Peugeot Automobile Nigeria's products, Lami says that; The situation calls for a need for in-house patronage. It evolves from unbeguiled patriotism and it must not be compromised".

Think (1978), stated that, the transfer of technology from the development nations to the third world countries. And said technology can be transferred by copying, borrowing, or stealing as the case may be. Lukin Gasparyant and Radionou (1984) stated that, a significant part of the economic and social development of a country should be assigned to its automobile industry. One of the leading branches of the national economy, Nigeria being a developing economy and a third world country has over the years tried hard to develop her technology by either of the term referred above. One of Nigeria quest to achieve this dream of technological advancement is through the Peugeot Automobile Kaduna. According to E nukora

(1990), there are two broad types of technologies for work situation. The machinery intensive technology and the labour intensive (indigenous) technology. The machinery and labour saving device in work situation, is usually modern and brings about high quality finished products. By its design, it is capital intensive and this has significantly reduced operational problems in work situations to those of managing mere machines rather than people. The reasons given by the suppliers of Automobile parts is that high quality components is required. Also one of the implications is that several years after the commissioning of these companies there has been bad management in automobile industry which affect proper development and assemblage of automobile system in the country (Yinka, 1989).

Adewoyin (1999) reported that Nigeria has not recorded the desired technological break through in the Automobile industry thirty years of its inception. He also noted that over the years, Nigeria has acquired the basic knowledge for the assembly and maintenance of both passenger cars and trucks especially the models assembled in the country. This great stride, however, is suppressed by many challenged among which are, poor technology acquisition, un-conducive socio-economic and political atmosphere on the part of the regimes that were in place over the period. He further explained that this un-conducive climate has brought about capacity under-utilization, shrunken market, high production cost, stunted growth and uncontrolled importation of FBU's and used vehicle.

One fundamental question is, do we transfer or acquire technology? To answer this question, Adewoyin (1999), has stated that the technology of any nation is a strongly guarded treasure against any external encroachment. Therefore, there is hardly anything like technology transfer. There is rather the acquisition of technology, which involves pilfering by the beneficiary nation. South Korea did it with Japan, so also did other developing countries like; Brazil, Malaysia, India, Taiwan, South Africa etc.

To acquire the necessary technology in the automobile industry Ogwuagwu (1996), suggested that the government should be serious with making the iron and steel industry, machine-tool industry in Nigeria reality. With little encouragement by the government for the private sector to invest more in the automobile industry, the needed technology for automobile parts industries such as: Material processing industry, Electric parts and components industry, casting industry, forging industry, plastic industry will be acquired. This will enable automobile industry to improve in the production of parts that will compete favourably with any standard in the automobile world. It is not too late and it can never be too late.

### **A Nigerian Owned Car**

It must be said in clear words that it is not possible to manufacture a 100% made in Nigeria vehicle at this present stage of our technological development. This must take a gradual process as it was done in other advanced countries. According to Fanconrier, (1988), Former Managing Director Peugeot Automobile Nigeria, said, a made in Nigeria car cannot be possible in the near future. Even the South Americans can't boast of a totally manufactured vehicles from their countries. They still import

“largely orthodox” because the four CADD centers worked without design and basic engineering drawings. According to Abdullahi (1992), it is hoped that the CADD will take very seriously the federal government’s charge to produce a functional low-cost vehicle which low income earning Nigerians can afford.

### **Review of Related Empirical Studies**

Related empirical studies with respect to assessment relevant to this study are presented.

Thanveer, (2006) conducted a study on the home building industry in the increase in demand for homes. With the projected demand for homes. In sight, many companies are preparing themselves to be able to build more and more homes. Hence, it is vital for companies to adopt the best practices of production planning and control. The research carried out planning and control process performance assessment tool for the home building industry while exploring the possibilities of using a combination of six sigma and lean construction principles to achieve the goal of zero defect in a process. Interviews with professionals from the home building industry were conducted to study the prevalent practices. Data was collected from a home building site and a set of analysis tools was used to analyze the data and find areas of improvement.

An assessment tool and a metric for performance assessment production planning and control process were developed. A production planning process model was developed based on this study. The model is a combination of the six sigma. DMAIC methodology and the last planner system. The study shows that home building companies generally perceive a higher production yield than actual. Data

analysis revealed that task prerequisites, coordination with suppliers, and overestimating productivity were major causes for unreliable production planning.

Ngoka (2002), study on the assessment of indigenous technology in Nigeria and the integration into the school system. The researcher found that there exist several activities which, constitute indigenous technology in Nigeria. The study employed three research questions and two hypotheses. The research design was survey which was conducted in ten randomly sampled polytechnic/college of Education in Nigeria that involved three lecturers, each were contacted.

The instrument used for collecting the data relevant for addressing the problem of this study was the indigenous Technology school integration Questionnaire (ITSIQ), developed and validated by an experts.

The followings are the findings of the study

1. There is a negative or sometime lukewarm attitude toward indigenous technology, among most Nigerians
2. Inadequacy of funding of technical education and by implication, indigenous technology
3. There is no concerted efforts initiated by technical schools, polytechnics and research institutes to carry out research and development in the area of indigenous technology.
4. Indigenous technology is regarded as inferior to western type technology because the former is slow, tedious and limited in its production capacity given that it sometimes lacks the use of efficient machines (if at all), tools materials and equipment.

5. That the dirty working environment, mysticism, unexplained strangeness and sometimes aloof and secretive nature of those engaged in indigenous technology, toward others, is a source of concern and disregard to this type of technology.

In conclusion he made the following recommendations

1. There are several technological activities which are indigenous to Nigeria and these activities must be systematically documented with regard to their types, geographical areas of origin, and skills/tools needed for carrying them out.
2. The Federal Government of Nigeria should commission a team, made up of experts in curriculum development and those engaged in research, teaching and implementation of indigenous and modern technology in Nigeria with the major aim of documenting the types of indigenous technology found in Nigeria, and determined the means of their integration into the school system and more systematically researched on and developed.
3. It is obvious that attempts at exploiting the contributions to national development which can be gained from indigenous technology must involve government's financial and material investment in this area. For instance, money will be needed for procurement of tools and materials for use by participating schools and for massive publicity for the programme to enable Nigerians, including those who practise indigenous technology appreciate the important role which this area can

play in Nigeria's quest for national development and the need for Nigerians to have interest in, and positive attitude toward indigenous technology.

4. Adequately funded to enable them procure and provide the necessary facilities (human and material) for successfully carrying out the teaching, learning, research and development involved in this area.

Sule (1989) conducted a study on the assessment of production of metamorphosis of Local Automobile manufacturing strategies in Nigeria. In his study, he formulated five research questions and tested three hypotheses. The research design was descriptive survey which was conducted in three randomly sampled in Automobile manufacturing companies, Peugeot Automobile Nigeria Limited (PAN), Kaduna, ANAMMCO Enugu, and Nigeria Truck manufacturing company (NTM) Kano, the instrument used for collecting the data relevant for addressing the problem of this study was the assessment of production of metamorphosis of Local Automobile manufacturing strategies in Nigeria. Questionnaire (APMLA), developed and validated by an experts.

The following are the major findings of the study. That the failure of LAMP, these are:

1. Inconsistent Government Policy, this greatly hampered the activities of the assembly plant. A typical instance was when the second tier foreign Exchange Market (STEM) was introduced in 1988. The import licence and the fiscal concession granted to the assembly plants were cancelled, thereby bringing about inadequate operating funds arising from the effect of devaluation that eroded the working capital base of most of the assembly plants who have to reduce their production volume.
2. Lack of Raw materials. Industrial raw materials such as flat sheet and alloys, plastic resins, aluminum, etc. which the country lacks also hindered the progress of LAMP.
3. Inadequate infrastructure: Lack of down stream infrastructures such as press shops, special alloys steel mills and upstream infrastructures like constant electricity supply and reliable telecommunication services contribute to the failure of LAMP.
4. Shortage of manpower: The absolute shortage of professionally skilled personnel in the areas of mechanical/electrical design, hydraulics, tool and die design and making, thermodynamics, stress analysis, human and industrial engineering, and ultimately, research scientists are retrogressive to the implementation of the LAMP.

### Population of the Study

The target population of the study is 226 subjects. This comprises of management staff and junior staff of production, planning and control units of Peugeot Automobile Nigeria limited. The junior staff comprises of technicians, craftsmen, artisan and other junior workers. The management staffs are 46 in number while the junior staff are 180. The whole 226 people that consists the population were used for the study.

No sampling was employed in carrying out this study because the population of the respondents was small. The entire population was therefore used for the study.

**Table: 1**  
**Management and Junior Staff of Production, Planning and Control Units of Peugeot Automobile Nigeria.**

S/No	Management Staff (Workers)	No of Staff	Junior Staff (Workers)	No of Staff
	Units / Department		Units / Department	
1	Maintenance	15	Body welding	19
2	Methods & quality	6	Panel Beating/painting	21
3	Technical secretariat	6	Auto-Electricians	20
4	Production planning & control	10	Engine Assembly	19
5	Logistic & supply	9	Petrol mechanic	21
6			Final touch-up	20
7			Vulcanizer	11
8			Trim line	29
9			Chassis line	20
Total		46		180

In conclusion he made the following recommendations.

1. The government with the assistance of standard organization of Nigeria (SON) should intensify efforts for standardizing and rationalizing parts as well as limiting the number of vehicle models produced by the assembly plant.
2. By every standard, much of the brainwork for resuscitating the automotive sub-sector for the betterment of the country's economy have been drafted and achieved.
3. There is the need to harmonize the backward and the forward integration programmes, with emphasis on the forward integration programme since a lot have been achieved in the backward integration programme through the activities of the assembly plants.
4. Indigenous researchers are optimistic that the forward integration programme for a product from raw materials to the finished product could be achieved through small-scale industries. Therefore, there is the urgency for the government to put in place or reinstate the necessary frame work for the improving the industrial development (income tax relief). Act 1958 as amended by decree No. 22 of 1971 which encourages the establishment and development of such industries classified as "pioneer industries", thereby entitling them to enjoy relief from income tax.

Marcus Williams (2004) conducted a study on the assessment of production planning and control practices in Kaduna Refining and petrochemical company limited (KRPC) the theory of production planning and control unit was highlighted in the literature review while its practical applications and procedure in KRPC were received in chapter three and four. The research method used for data collected was mainly personal interviews.

It was found out that the company practices production planning and control unit using standard techniques under some administrative and operation constraints. The followings are the major findings of the study.

1. Production control system will not in itself solve production problems, neither will a productions facility, as a rapid and efficient automatic data processing system is of limited value if it is processing in accurate or unsuitable data.
2. Inefficiency in company operations can be seen in numerous ways such as excessive stock levels, excessive work – in – progress and failure to meet delivery dates.
3. The weaknesses of the industrial unit such as excessive raw materials stocks or shortages, broken delivery promises and idle time etc.
4. That if the raw materials (crude) used is of low quality, the quantity of the finished products will also be low. In some cases such raw materials may also cause damage to the equipment resulting in to very heavy losses.

In conclusion the researcher made the following recommendations.

1. He recommends strongly that there is need to control production activities in order to make good profit, proper planning and control should be put into consideration.
2. Recommended that production planning and control personnel should be properly trained to improve production to optimum level.
3. Recommended that the raw materials (crude) used should be of high quality so that the quantity of the finished products will be high.

Marcus Williams's study is related to this research in that some of the administrative and operation constraints areas which highlighted was assessed to see the extent of their impact on the development and their effect on the production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna.

### **Summary of the Review of Related Literature**

Chapter two of this project reviews the available literature related to the topic of research and other studies and investigations pertinent to the present study. To allow for easy review, the researcher divided the chapter into eleven (11) sub-headings starting with historical background of Peugeot Automobile Nigeria Limited Kaduna; its ownership and management; its beginning; activities carried out in the various divisions, its success story, etc were briefly discussed. An overview of production planning and control units in Peugeot Automobile Nigeria Limited Kaduna; its managerial system of production, planning and control units; its production management been concerned with the planning and controlling of the processes of production so as to move smoothly at the required level were

highlighted. After this, the production planning and control units (follow-up section or department) is a section within supply and stock control department (SSCD) in Peugeot Automobile Nigeria production, planning and control is co-ordinated by this section. PPFs is in charge of planning and organizing for the production according to the production programmes defined by the commercial division.

Then the development of indigenous technology in Nigeria and how best to develop the country's indigenous technology were also reviewed. Then, making the production of indigenous car a reality in Nigeria, it is evident that in order to realize our dream on producing an indigenous car, much will depend on the strength, extent of co-operation between the vehicle assembly plants and components manufacturers. The assembly plants are expected to source about 60% local content before any headway could be made. Fact remains that low production capacity in the automobile industry can also be attributed to political factors for instance, Ajaokuta steel industry was established to supply automobile industry in Nigeria with components, but due to political factors which militated against the completion of the industry, the automobile industry were forced to continue to rely on foreign components and parts.

Then, government policy; with the development of indigenous technology in Nigeria, how federal government had between 1975 and 1980 commissioned five assembling plants located all over the country with the hope of achieving a perfect technological transfer and catch up with the industrialized countries but there is no breakthrough yet, therefore government objectives for setting up the assembly plants have not been realized. The importation of vehicle has taken a disproportionate parts

of the automobile market; domestic production of vehicle has further hindered and it has become more difficult for component suppliers to be in business.

Then Peugeot Automobile Nigeria's Automobile technology transfer efforts, has achieved 32 percent local content production, integrated into its production within the period of 26 years. This shows that higher percentage achievement is possible in no distant future. Peugeot Automobile Nigeria Limited has some problems, prominent or among these is the late development of local content and its total reliance on CKD parts from France. In light of what has been discussed manufacturing a 100% made in Nigeria vehicle at this present stage of our technological development becomes unrealistic, presently, Peugeot Automobile Nigeria only assembles the CKD parts sent from France because most of these parts are yet to be produced in Nigeria despite government huge investment on manufacturing companies like steel rolling mills etc. Therefore, there is a need for an assessment of the operations of production, planning and control units with the view to determine why Peugeot Automobile Nigeria is not able to achieve 100% local content target.

## CHAPTER III

### METHODOLOGY

In this chapter, the study discussed the following sub-headings: Research design, Area of the study, population of the study, instrument for data collection, validation of the instrument, reliability of the instrument, Administration of the Instrument, method of data Analysis and Decision rule for the study.

#### **Research Design**

The researcher adopted descriptive survey research design and it employed questionnaire and interviews to determine the opinion, preferences, attitudes and perceptions of people about issues under study.

#### **Area of the Study**

This research work was restricted to the production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna. Peugeot Automobile Nigeria Limited is located in the Industrial Area of Kaduna town which is in Kaduna South Local Government Area of Kaduna State. Kaduna town is the capital town of Kaduna State which is geographically located in Northern part of Nigeria.

It is within the North-West geo-political zone of Nigeria. The state is within latitudes  $9^{\circ}$  and  $12^{\circ}$  North and longitudes  $6^{\circ}$  and  $11^{\circ}$  East (see appendix A for location of Kaduna State in the map of Nigeria). Kaduna town itself lies at latitude  $10^{\circ}28'N$  and at longitude  $7^{\circ}25'E$ .

### **Instrument for Data Collection**

The instrument used for data collection is a structured questionnaire. The title of the instrument was Assessment of the Operations in Production, Planning and Control Units of Peugeot Automobile Nigeria Limited in Kaduna State, Nigeria (AOPPAL). The instrument was structured to answer the research questions of the study. It was developed by the researcher using items arising from the literature reviewed on the development of indigenous technology in Nigeria, making the production of indigenous car a reality, political factors in Auto industry. Government Policy and Automobile Industry coping with times for production planning and control units.

The structured questionnaire was divided into six sections of A – F. Section ‘A’ addresses company location, designation or position, responsibility and department of respondents. Section ‘B’ of the questionnaire addresses the operation constraints in production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna and has 15 items relating to the first research questions while section ‘C’ addresses the extent to which the production, planning and control units complies with the procedural guide-line of the company, which was related to research question two. This section contains 8 items. Section ‘D’ addresses the market sales of Peugeot Automobile Nigeria Limited products in Kaduna, which was related to research question three. This section contains 11 items.

Section ‘E’ of the questionnaire was directed towards the adequacy of materials and equipment for production of Peugeot Automobile products which were related to research question four. The section contains 9 items. Section ‘F’ with 7

items focuses on the suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna. Which was related to research question five. The management staff and junior staff (workers) were to respond to sections B – F of the questionnaire because they addressed the issues relevant to all the respondents.

A four point rating scale of measurement used in section 'B' are Strongly Agree (SA), Agree (A), Disagree (D) Strongly Disagree (SD) and in section 'C' are Highly Complied (HC), Complied (C), Least Complied (LC), and Not Complied (NC). The scale used in section 'D' are Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) and in Section 'E' are Very Adequate (VA), Adequate (A), Inadequate (I) and Very Inadequate (VI) while for section 'F' it was Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

**The Weighing Values Assigned to the Various Measurements are as Follows:-**

**Section B – Scale**

SA	=	4
A	=	3
D	=	2
SD	=	1

**Section C – Scale**

HC	=	4
C	=	3
LC	=	2
NC	=	1

**Section D – Scale**

SA	=	4
A	=	3
D	=	2
SD	=	1

**Section E – Scale**

VA	=	4
A	=	3
I	=	2
VI	=	1

**Section F – Scale**

SA	=	4
A	=	3
D	=	2
SD	=	1

### **Validation of the Instrument**

The instrument was scrutinized for content validity by two experts in Vocational Technical Education in the Department of Industrial and Technology Education; two experts in the field of educational measurement and evaluation from Federal University of Technology, Minna and two experts in the Production, Planning and Control Units of Peugeot Automobile Nigeria Limited. This procedure was to ensure that the items conformed with the concepts and language of the subjects. Experts who participated in the validation ascertained that all the variables of the study were adequately catered for by the items in the instrument and the number of items were reduced from 69 to 50 before final and valid instrument was produced. Based on the corrections, suggestions and recommendations from these experts the instrument was modified and finally used for the study.

### **Reliability of the Instrument**

The instrument was tested for reliability using Test retest method, the instrument was pilot tested on 20 management staff (workers) and 20 Junior staff (workers) in Nigeria Truck Manufacturing Company Kano who were not involved in the study. Data obtained from the pilot study were analysed using Cronbach Alpha.

Reliability co-efficient was calculated for each set of the questionnaire to determine the internal consistency the instrument. The reliability co-efficients obtained for the entire instrument is 0.90 which means the instrument was reliable.

### **Administration of the Instrument**

The questionnaire was administered to the population of 226 management staff workers and Junior Staff workers in production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna as of June, 2008. Each copy of the questionnaire was accompanied with a letter of introduction (Appendix D). The questionnaire was administered through personal contact with the help of research assistants. Two hundred and Eighteen Management Staff Workers and Junior Staff Workers in Peugeot Automobile Nigeria Limited Kaduna completed and returned the questionnaire used for data collection. This amounted to 96 percent return as shown in Table 2.

**Table: 2**

#### **Distribution of Returned Rate of Completed Questionnaire From the Respondents.**

Respondents	Numbers Distributed	Number Returned	% Returned
Management staff workers	46	44	95%
Junior staff workers	180	174	97%
Total	226	218	96%

### **Method of Data Analysis**

The data collected from the respondents of this study for the purpose of answering the research question were analyzed using mean statistic. This technique was adopted because it is the most appropriate tool for analyzing data that are based on interval scale and also due to the fact that it gives accurate information.

In interpreting the analysis of data, a decision rule (cut-off point) based on real upper and real lower limits of numbers on four point rating scale were used. Thus, items with mean scores of 2.45 and above was regarded acceptable, while items with mean scores of 2.44 or below were regarded as rejected.

$$\text{Mean} = \frac{4 + 3 + 2 + 1}{4} = \frac{10}{4} = 2.50 \text{ therefore, } 2.45 \text{ is the cut - off point.}$$

### Hypotheses Testing

All the hypotheses were tested, using a t-test. The computational formula used is:

$$t = \frac{X_1 - X_{11}}{\sqrt{\frac{N_1 S_1^2 + N_{11} S_{11}^2}{N_1 + N_{11} - 2} \left( \frac{N_1 + N_{11}}{N_1 N_{11}} \right)}}$$

Where  $t$  = t - test

$X_1$  = Mean score of 1<sup>st</sup> group of samples

$X_{11}$  = Mean score of 2<sup>nd</sup> group of samples

$S_1$  = Standard Deviation of 1<sup>st</sup> group of samples

$S_{11}$  = Standard Deviation of 2<sup>nd</sup> group of samples

$N_1$  = Total Population of 1<sup>st</sup> group of samples

$N_{11}$  = Total population of 2<sup>nd</sup> group of samples

$N_1 + N_{11} - 2$  = Degree of freedom (df)

Therefore, the t - critical Value necessary for rejection of acceptance of null hypotheses at 05 level of significance was + 1.96. Thus, any calculated value of t below the critical value was considered accepted, while anyone equal or more than, was considered rejected.

**Decision Rule**

To determine acceptance, a mean score of 2.50 was chosen as a decision point between Agree and Disagree. Consequently, any response with a mean score of 2.45 and above was considered Agree; while responses with a mean score equal to or below 2.44 were regarded as Disagree. The acceptance level of hypotheses was based on the degree of freedom (df) of 224 which gave a critical value of 1.96 at 0.05 level of confidence. Therefore any t – table value that was less than 1.96 was considered accepted and t – table value that was equal and less than 1.96 were considered rejected.

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF DATA

This chapter dealt with the presentation and analysis of data collected for the study. The data were presented and analysed based on the research questions and hypotheses posed in the study.

#### Research Question 1

What are the operation constraints in production, planning and control units of Peugeot Automobile Nigeria Limited?

Data required for answering this question are presented in Table 3

**Table: 3**

**Mean Responses of Management Staff and Junior Staff Workers on the Operation Constraints in Production, Planning and Control Units of Peugeot Automobile Nigerian Limited.**

S/NO		N <sub>1</sub> = 44,		N <sub>2</sub> = 174		X <sub>t</sub>	S.D <sub>t</sub>	REMARKS
		X <sub>1</sub>	S.D <sub>1</sub>	X <sub>2</sub>	S.D <sub>2</sub>			
1.	Low level of local content raw materials availability	2.84	0.85	3.22	0.80	3.03	0.83	Agree
2.	The location of others relevant small scale industries makes it difficult in sourcing for local content materials	2.84	0.76	3.10	0.60	2.97	0.71	Agree
3.	Inadequacy of machinery in the production, planning and control units for the production of some components	2.86	0.75	2.99	0.77	2.93	0.76	Agree
4.	The high level dependence of Peugeot Automobile Nigeria on foreign component or parts	3.05	0.85	2.90	0.92	2.98	0.89	Agree
5.	The distance from France leading to higher cost of importation of raw materials	3.22	0.66	3.21	0.47	3.22	0.57	Agree
6.	Low patronage of products led to difficulty in production, planning and control units	3.27	0.71	3.20	0.76	3.24	0.74	Agree
7.	The high interest and low rate of supplying of defective component by the local manufacturers affected production capacity adversely.	1.56	0.78	1.86	0.83	1.71	0.85	Disagree

S/NO		$N_1 = 44,$		$N_2 = 174$		$X_t$	$S.D_t$	REMARKS
		$X_1$	$S.D_1$	$X_2$	$S.D_2$			
8.	The low quality and standard of components being supplied by local manufacturers has affected production capacity	1.61	0.71	1.75	0.72	1.68	0.72	Disagree
9.	The second Tier foreign exchange market introduced in the late 80's led to high cost of production	1.61	0.68	1.85	0.81	1.73	0.75	Disagree
10.	Significant difference between locally manufactured components and imported one's in terms of production, durability for the mass production	2.75	0.86	2.45	1.02	2.06	0.94	Disagree
11.	Too much politics and bureaucracy usually at the expense of merit in the selection of supplier of component parts	1.36	0.74	1.77	0.82	1.57	0.78	Disagree
12.	The non completion of Ajaokuta steel factory by the Federal Government which should be a major source of supplier of local content materials to Peugeot Automobile Nigeria Limited	3.25	0.71	3.41	0.53	3.33	0.62	Agree
13.	The non development of local content materials by Peugeot Automobile Nigeria herself has affected production adversely.	3.09	0.70	3.12	0.63	3.11	0.67	Agree
14.	The usual delay in the arrival of the ordered completely knock down parts due to interruption by custom officers	3.22	0.70	3.37	0.54	3.30	0.62	Agree
15.	Lack of an enabling environment for local manufacturers of local content materials to operate.	2.43	0.86	2.42	0.99	2.43	0.93	Disagree

### Key

$N_1$  = Number of management staff

$N_2$  = Number of junior staff workers

$X_1$  = Mean responses of management staff

$X_2$  = Mean responses of junior staff workers

$S.D_1$  = Standard deviation of management staff

$S.D_2$  = Standard deviation of junior staff workers

$X_t$  = Average means of all respondents

$S.D_t$  = Average standard deviation of all respondents

The result presented in Table 3 revealed that on items 1, 2, 3, 4, 5, 6, 12, 13 and 14 both management staff and Junior staff workers agreed of the operation constraints of production, planning and control units of Peugeot Automobile Nigeria Limited with mean values ranging between 2.84 and 3.41. The Table further shows that on items 7, 8, 9, 10, 11 and 15 both management staff and junior staff workers disagreed of the operation constraints of production, planning and control units of Peugeot Automobile Nigeria Limited with mean values ranging between 1.56 and 2.45.

### Research Question II

What is the extent to which the production, planning and control units complied with the procedural guide line of the company?

Data required for answering this question are presented in Table 4

**Table: 4**

### Mean Responses of Management Staff and Junior Staff Workers on the Compliance of Production, Planning and Control Units with the Procedural Guide Line of the Company.

S/NO		N <sub>1</sub> = 44,		N <sub>2</sub> = 174		X <sub>t</sub>	S.D <sub>t</sub>	Remarks
		X <sub>1</sub>	S.D <sub>1</sub>	X <sub>2</sub>	S.D <sub>2</sub>			
16.	Production planning and control units receives basic production raw materials	2.88	0.96	2.95	0.96	2.92	0.96	Complied
17.	The production planning and control units plans and launches the product in line standard required by commercial division	3.27	0.72	3.24	0.81	3.26	0.77	Complied
18.	Production planning and control units ensure that vehicle are produced according to specification	3.20	0.72	3.39	0.77	3.30	0.75	Complied
19.	The production planning and control units compiles reports on number of cars at each production point.	3.31	0.72	3.36	0.86	3.34	0.77	Complied
20.	Production planning and control units translate production plan into simple terms meaningful to plant operators.	3.31	0.73	3.30	0.86	3.31	0.78	Complied
21.	Production planning and control units assigns desired completion dates to the operation needed to be performed on each car production order	3.25	0.80	3.32	0.81	3.29	0.85	Complied
22.	The production planning and control units determines what is to be covered weekly or monthly	3.13	0.97	3.28	0.89	3.21	0.93	Complied
23.	The production planning and control units meets up with the production target of 30 vehicles per day	2.05	1.09	2.48	1.10	2.27	1.10	Least Complied

**Key**

$N_1$  = Number of management staff

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$X_1$  = Mean responses of management staff

$X_2$  = Mean responses of junior staff workers

S.D<sub>1</sub> = Standard deviation of management staff

S.D<sub>2</sub> = Standard deviation of junior staff workers

$X_t$  = Average mean of all respondents

S.D<sub>t</sub> = Average standard deviation of all respondents

The result presented in Table 4 shows that on items 16, 17, 18, 19, 20, 21 and 22 both management staff and junior staff workers agreed that the production, planning and control units complied with the procedural guide-line of the company with mean values ranging between 2.95 and 3.34. The Table further shows that on items 23 both management staff and junior staff workers disagreed that production, planning and control units are not complying with, item 23 since the grand mean of the item is below 2.50.

### Research Question III

What are the factors affecting market sales of the Peugeot Automobile Nigeria Limited products in Kaduna?

Data required for answering this question are presented in Table 5

**Table 5**

**Mean Responses of Management Staff and Junior Staff Workers on the Factors Affecting Market Sales of the PAN Products in Kaduna.**

S/NO		$N_1 = 44,$		$N_2 = 174$		$X_t$	$S.D_t$	Remarks
		$X_1$	$S.D_1$	$X_2$	$S.D_2$			
24.	The Peugeot Automobile Nigeria does not produce enough of her products to meet its market demands	2.52	1.03	2.78	0.96	2.65	0.99	Agree
25	The production costs of vehicles affect the market sales of Peugeot Automobile Nigeria Limited adversely.	3.72	0.69	3.76	0.63	3.74	0.66	Agree
26.	Nigerians prefer the Tokunbo Cars more than Peugeot Automobile Nigeria products regularly.	1.93	1.11	2.09	0.71	2.01	0.91	Disagree
27.	High price of Peugeot Automobile products is responsible for low market sales.	3.77	0.70	3.74	0.63	3.76	0.67	Agree
28.	The price of Peugeot vehicles assembled in Nigeria is by far more than the one assembled in France	2.86	0.87	2.73	1.06	2.80	0.97	Agree
29.	The current price of Peugeot Automobile vehicles assembled in Kaduna are reasonable	1.86	1.08	2.47	0.86	2.17	0.97	Disagree
30.	Peugeot Automobile Nigeria PAN sells directly to Government.	2.15	1.17	1.96	0.73	2.06	0.95	Disagree
31.	Government, ministries and parastatals are buying Peugeot Automobile vehicle products than individuals.	3.77	0.59	3.86	0.44	3.82	0.52	Agree
32.	Peugeot Automobile Nigeria (PAN) still have sales distributors	3.06	0.75	3.32	0.67	3.19	0.71	Agree
33.	Peugeot Automobile Nigeria check areas of diversification according to needs of the market	2.54	1.01	2.60	0.83	2.57	0.92	Agree
34.	Peugeot Automobile Nigeria improved generally on its productions costs to make PAN products affordable to customers.	2.18	1.09	2.63	0.85	2.41	0.97	Disagree

#### Key

$N_1$  = Number of management staff

$N_2$  = Number of junior staff workers

$X_1$  = Mean responses of management staff

$X_2$  = Mean responses of junior staff workers

$S.D_1$  = Standard deviation of management staff

$S.D_2$  = Standard deviation of junior staff workers

$X_t$  = Average means of all respondents

$S.D_t$  = Average standard deviation of all respondents

The result presented in Table 5 revealed that on items 24, 25, 27, 28, 31, 32 and 33 both management staff and junior staff workers accepted that the market sales of Peugeot Automobile Nigeria Limited products in Kaduna are affecting by the low patronage with mean values ranging between 2.5 and 3.82.

The Table further shows that on items 26, 29, 30 and 34 both management staff and junior staff workers disagreed that the market sales of Peugeot Automobile Nigeria Limited products in Kaduna are not affect by low patronage with mean values ranging between 2.01 and 2.41.

#### Research Question IV

How adequate are the materials and equipment for the production of Peugeot Automobile products?

Data required for answering this question are presented in Table 6

**Table 6**  
**Mean Responses of Management Staff and Junior Staff Workers on the Adequacy of Materials and Equipment for the Production of Peugeot Automobile Products.**

S/NO		N <sub>1</sub> = 44, N <sub>2</sub> = 174				X <sub>T</sub>	S.D <sub>T</sub>	Remarks
		X <sub>1</sub>	S.D <sub>1</sub>	X <sub>2</sub>	S.D <sub>2</sub>			
35.	Materials (local contents) for the production of Peugeot Automobile	1.84	0.60	1.35	0.22	1.60	0.41	Inadequate
36.	Machinery and equipment in good working condition	2.63	0.86	2.87	0.67	2.75	0.77	Adequate
37.	Local content materials produced by local manufacturers	1.95	0.71	1.98	0.72	1.97	0.72	Inadequate
38.	Local content materials supplied by the steel and petro-chemical industries.	1.97	0.69	1.93	0.78	1.95	0.74	Inadequate
39.	The coverage of machines and equipment by insurance policy	2.95	0.67	2.97	0.67	2.96	0.67	Adequate
40.	Service materials for servicing of machines and equipment in the unit	2.84	0.67	2.88	0.68	2.86	0.68	Adequate
41.	Maintenance carried out when there is a fault in machines	3.01	0.74	2.89	0.79	2.95	0.77	Adequate
42.	Equipment in the unit	2.97	0.81	3.12	0.69	3.05	0.75	Adequate
43.	The rules governing the acquisition of materials and equipment in the unit.	3.01	0.77	2.93	0.73	2.97	0.75	Adequate

**Key**

$N_1$  = Number of management staff

$N_2$  = Number of junior staff workers

$X_1$  = Mean responses of management staff

$X_2$  = Mean responses of junior staff workers

S.D<sub>1</sub> = Standard deviation of management staff

S.D<sub>2</sub> = Standard deviation of junior staff workers

$X_t$  = Average mean of all respondents

S.D<sub>t</sub> = Average standard deviation of all respondents

The result presented in Table 6 revealed that on items 36, 39, 40, 41, 42 and 43 both management staff and junior staff workers accepted that there is adequacy of materials and equipment for the production of Peugeot Automobile products with mean values ranging between 2.75 and 3.05. The Table further shows that on items 35, 37, and 38 both management staff and junior staff workers disagreed on the adequacy of materials and equipment for the productions of Peugeot Automobile Products with an average mean values ranging between 1.60 and 1.97.

### Research Question V

What suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna?

Data required for answering this question are presented in Table 7.

**Table 7**

**Mean Responses of Management Staff and Junior Staff Workers on the Suggestions for Improving the Management of Peugeot Automobile Nigeria Limited Kaduna.**

S/NO		N <sub>1</sub> = 44,		N <sub>2</sub> = 174		X <sub>T</sub>	S.D <sub>T</sub>	Remarks
		X <sub>1</sub>	S.D <sub>1</sub>	X <sub>2</sub>	S.D <sub>2</sub>			
44.	The PAN management should order enough high quality local components needed for production of vehicles	2.88	0.94	3.29	0.71	3.09	0.83	Agree
45.	The PAN management should encourage the local manufacture of parts	3.09	0.87	3.31	0.68	3.02	0.78	Agree
46.	PAN management should procure machineries plan for the development of their major components for its production process e.g stamping machine	2.97	0.87	3.18	0.72	3.08	0.80	Agree
47.	The PAN management should apply current information and communication technology to enhance production planning and control.	2.97	0.94	3.21	1.25	3.09	1.10	Agree
48.	PAN management should expand its production range to include cars for low income earner	2.95	0.93	3.21	0.70	3.08	0.82	Agree
49.	PAN management should improve generally on its productions cost to make PAN products affordable to customers	2.93	0.94	3.31	0.70	3.12	0.82	Agree
50.	PAN management should check areas of diversification according to the needs of the market.	2.93	2.93	3.17	0.73	3.05	0.86	Agree

#### Key

N<sub>1</sub> = Number of management staff

N<sub>2</sub> = Number of junior staff workers

X<sub>1</sub> = Mean responses of management staff

X<sub>2</sub> = Mean responses of junior staff workers

S.D<sub>1</sub> = Standard deviation of management staff

S.D<sub>2</sub> = Standard deviation of junior staff workers

X<sub>t</sub> = Average mean of all respondents

S.D<sub>t</sub> = Average standard deviation of all respondents

The results presented in Table 7 revealed that on items 44, 45, 46, 47, 48, 49 and 50 both management staff and junior staff workers accepted on the suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna with an average mean values ranging between 3.02 and 3.12.

### Hypotheses I:

There is no significant difference between the mean responses of the management staff and junior staff workers with respect to their perception on the operation constraints in production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna.

**Table: 8**  
**t-test for the Operation Constraints in Production, Planning and Control Units of Peugeot Automobile Nigeria Limited.**

		(N <sub>1</sub> = 44, N <sub>2</sub> = 174, Df = 224)					
S/NO		X <sub>1</sub>	S.D <sub>1</sub>	X <sub>2</sub>	S.D <sub>2</sub>	t	Remarks
1.	Low level of local content raw materials availability	2.84	0.85	3.22	0.80	-2.77	S
2.	The location of others relevant small scale industries makes it difficult in sourcing for local content materials	2.84	0.76	3.10	0.60	-2.41	S
3.	Inadequacy of machinery in the production, planning and control units for the production of some components	2.86	0.75	2.99	0.92	0.98	NS
4.	The high level dependence of Peugeot Automobile Nigeria on foreign component or parts	3.05	0.85	2.90	0.77	-1.00	NS
5.	The distance from France leading to higher cost of importation of raw materials	3.22	0.66	3.21	0.47	0.11	NS
6.	Low patronage of products led to difficulty in production, planning and control units	3.27	0.71	3.20	0.76	0.55	NS
7.	The high interest and low rate of supplying of defective component by the local manufacturers affected production capacity adversely.	1.56	0.78	1.86	0.83	-2.17	S
8.	The low quality and standard of components being supplied by local manufacturers has affected production capacity	1.61	0.71	1.75	0.72	-1.15	NS
9.	The second Tier foreign exchange market introduced in the late 80's led to high cost of production	1.61	0.68	1.85	0.81	1.80	NS

		(N <sub>1</sub> = 44, N <sub>2</sub> = 174, Df = 224)					
S/NO		X <sub>1</sub>	S.D <sub>1</sub>	X <sub>2</sub>	S.D <sub>2</sub>	t	Remarks
10.	Significant difference between locally manufactured components and imported one's in terms of production, durability for the mass production	2.75	0.86	2.45	1.02	1.79	NS
11.	Too much politics and bureaucracy usually at the expense of merit in the selection of supplier of component parts	1.36	0.74	1.77	0.82	- 1.11	NS
12.	The non completion of Ajaokuta steel factory by the Federal Government which should be a major source of supplier of local content materials to Peugeot Automobile Nigeria Limited	3.25	0.71	3.41	0.52	- 1.65	NS
13.	The non development of local content materials by Peugeot Automobile Nigeria herself has affected production adversely.	3.09	0.70	3.12	0.63	- 2.51	S
14.	The usual delay in the arrival of the ordered completely knock down parts due to interruption by custom officers	3.22	0.70	3.37	0.54	- 1.54	NS
15.	Lack of an enabling environment for local manufacturers of local content materials to operate.	2.43	0.86	2.42	0.99	0.06	NS

#### Key

- X<sub>1</sub> = Management Staff mean score  
 X<sub>2</sub> = Junior Staff Workers' mean score  
 t = Critical = 1.96 at the 0.05 level of significance  
 S\*\* = Significant  
 N. S = Not Significant

The results in Table 8 revealed that there is significant difference between the mean responses of management staff of Junior Staff Workers on items 1, 2, 7 and 13. These items have obtained mean values of between 2.77 and 2.17 for Df of 224 at .05 level of significance which are less than the t-table value of - 1.96. The respondents however shares similar views on all the other items. The null hypothesis was therefore rejected for items 1, 2, 7 and 13 and upheld for the remaining items.

## Hypotheses II

There is no significant difference between the mean responses of the management staff and junior staff workers with respect to their perception on the extent to which the production, planning and control unit complied with the procedure guide line of the company.

**Table 9**  
**t-test for the Compliance with the Procedural Guide Line of the Company.**  
 ( $N_1 = 44, N_2 = 174, Df = 224$ )

S/NO		$X_1$	S.D <sub>1</sub>	$X_2$	S.D <sub>2</sub>	t	Remarks
16.	Production planning and control unit receives basic production raw materials	2.88	0.96	2.95	0.96	-0.43	NS
17.	The production planning and control unit plans and launches the product in line standard required by commercial division	3.27	0.72	3.24	0.81	0.22	NS
18.	Production planning and control unit ensure that vehicle are produced according to specification	3.20	0.72	3.39	0.77	-1.47	NS
19.	The production planning and control unit complies reports on number of cars at each production point	3.31	0.71	3.36	0.81	-0.37	NS
20.	Production planning and control unit translate production plan into simple terms meaningful to plant operators	3.31	0.73	3.30	0.86	0.07	NS
21.	Production planning and control unit assigns desired completion dates to the operation needed to be performed on each car production order	3.25	0.80	3.32	0.81	-0.51	NS
22.	The production planning and control unit determines what is to be covered weekly or monthly	3.13	0.97	3.28	0.89	-0.98	NS
23.	The production planning and control unit meets up with the production target of 30 vehicles per day	2.05	1.09	2.48	1.10	-2.60	S

### Key

- $X_1$  = Management Staff mean score  
 $X_2$  = Junior Staff Workers' mean score  
 t = Critical = 1.96 at the 0.05 level of significance  
 S\*\* = Significant  
 N. S = Not Significant

In Table 9 above, the t-test values revealed that there is significant different between the mean responses of management staff and junior staff workers on item 23. The obtained t value of -2.60 for Df of 224 at .05 level of significance was less than the 't' table value of -1.96. The null hypothesis was therefore rejected for item 23 and upheld for the remaining items in the section.

### Hypotheses III

There is no significant difference between the mean responses of management staff and junior staff workers with respect to their perception on suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna.

**Table 10**  
**t-test for the Suggestions for Improving the Management of Peugeot Automobile Nigeria Limited Kaduna.**

(N <sub>1</sub> = 44, N <sub>2</sub> = 174, Df = 224)							
S/NO		X <sub>1</sub>	S.D <sub>1</sub>	X <sub>2</sub>	S.D <sub>2</sub>	t	Remarks
44.	The PAN management should order enough high quality local component needed for production of vehicles	2.88	0.94	3.29	0.71	- 3.17	S
45	The PAN management should encourage the local manufacture of parts	3.09	0.87	3.31	0.68	- 1.80	NS
46.	PAN management should procure machineries plan for the development of their major components for its production process e.g stamping machines	2.97	0.87	3.18	0.72	- 1.65	NS
47.	The PAN management should apply current information and communication technology to enhance production planning and control	2.97	0.94	3.21	1.25	- 1.19	NS
48.	The PAN management should expand its production range to include cars for low income earner	2.95	0.93	3.21	0.70	- 2.97	S
49.	PAN management should improve generally on its production costs to make PAN products affordable to customers	2.93	0.94	3.31	0.70	- 2.97	S
50.	PAN management should check areas of diversification according to the needs of the market	2.93	0.99	3.17	0.73	- 1.79	NS

### Key

- $X_1$  = Management Staff mean score  
 $X_2$  = Junior Staff Workers' mean score  
 $t$  = Critical = 1.96 at the 0.05 level of significance  
 $S^{**}$  = Significant  
 N. S = Not Significant

The data presented in Table 10 indicated that significant difference exists between the mean ratings of management staff and junior staff workers on items 44, 48, and 49. The calculated 't' values of between -3.17 and -2.97 for these items are less than the 't' tabulated value of -1.96 for df of 224 at 0.5 level of significance. The null hypothesis was therefore rejected for the three items namely; 44, 48, and 49.

### FINDINGS

This section presents the summary of the findings of this study. The research questions as well as the hypotheses postulated for the study served as the frame work for presenting the findings.

1. Findings related to operation constraints in production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna are:  
 Both the management staff workers and Junior staff workers agreed that;
  - Low level of local content materials availability.
  - The distance from France leading to higher cost importation of raw materials.

- Inadequacy of Machinery in the production, planning and control units for the production of some component.
- The non development of local content materials by Peugeot Automobile Nigeria herself affected production adversely.

Also, the management staff workers and junior staff workers disagreed that:

- The high interest and low rate of supply of defective components by the local manufacturers affected production capacity adversely.
- The low quality and standard of components being supplied by local manufacturers has affected production.
- The second Tier Foreign exchange market introduced in the late 80's led to high cost of production.
- Too much politics and bureaucracy usually at the expense of merit in the selection of supplier of component parts.

2. Findings related to production, planning and control units complied with the procedural guide line of the company.

Both the management staff workers and junior workers agreed that the following are complied.

- The production planning and control units plans and launches the product in line standard required by commercial division.
- Production planning and control units ensure that vehicle are produced according to specification.
- The production, planning and control units complies reports on number of cars at each production point.

- Production, planning and control units translate production plan into simple terms meaningful to plant operations.
- Production, planning and control units assigns desired completion dates to the operation needed to be performed on each car production order.

Also, the management staff workers and junior staff workers agreed that this is not complied with.

- Production planning and control units meet up with the production target of 30 vehicles per day.
3. Findings related to market sales of the Peugeot Automobile Nigeria Limited products in Kaduna.

Both the management staff worker and junior staff workers agreed that:

- The production costs of vehicles affected the market sales of Peugeot Automobile Nigeria Limited adversely.
- The Peugeot Automobile Nigeria does not produce enough of her products to meets its market demands
- High price of Peugeot Automobile products is responsible for low market sales.
- Government, ministries and parastatals are buying Peugeot Automobile vehicle products than individuals.
- Peugeot Automobile Nigeria still have sales distributors.

Also, the management staff workers and junior staff workers disagreed that:

- Nigerians prefer the tokunbo cars more than Peugeot Automobile Nigeria products regularly.
- The current price of Peugeot Automobile vehicles assembled in Kaduna are reasonable.
- Peugeot Automobile Nigeria PAN sells directly to Government.
- Peugeot Automobile Nigeria improve generally on its production costs to make PAN products affordable to customers.

4. Findings related to adequacy of materials and equipment for the production of Peugeot Automobile products.

Both the management staff workers and junior staff workers agreed that the followings are adequacy.

- Equipment in the unit
- The coverage of machines and equipment by insurance policy
- Maintenance carried out when there is a fault in machines
- Service materials for servicing of machines and equipment in the unit
- Machinery and equipment in good working condition

Also, the management staff worker and junior staff workers agreed that the followings are inadequacy:

- Materials (Local contents) for the production of Peugeot Automobile.
- Local content materials produced by local manufactures
- Local content materials supplied by the steel and petro-chemical industries.

5. Findings related to suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna.

Both the management staff workers and junior staff workers agreed that;

- The Peugeot Automobile Nigeria Limited management should order enough high quality local components needed for production of vehicles.
- Peugeot Automobile Nigeria Limited Management should procure machineries plan for the development of their major component for its production process e.g stamping machine.
- Peugeot Automobile Nigeria Limited management should encourage the local manufacture of parts.
- Peugeot Automobile Nigeria Limited management should expand its production range to include cars for low income earner.
- PAN management should improve generally on its production cost to make PAN products affordable to customers.

## CHAPTER V

### DISCUSSION, CONCLUSION AND RECOMMENDATION

This chapter presents the discussion of findings, summary of the study, implications of the study, conclusions, recommendations and suggestions for further research.

#### **Discussion of the Findings**

The discussion of findings for this study were organized and presented in line with the research questions and hypotheses for this study.

The results in Table 3 revealed that on items 1, 3, 5 and 13 both management staff and junior staff workers agreed on the operation constraints of production, planning and control units of Peugeot Automobile Nigeria Limited with mean values ranging between 3.03 and 3.24. This implies that there are operation constraints in the production, planning and control units of Peugeot Automobile Nigeria Limited. This findings showed that low level of local content materials availability, the distance from France leading to higher cost of importation of raw materials, and inadequacy of machinery in the production, planning and control units for the production of some component as well as non development of local content materials by Peugeot Automobile Nigeria herself has affected production adversely.

This findings is in agreement with the views of Fanconier (1988) who supported this claim by saying, that even though Peugeot Automobile Nigeria with its numerous problems which makes it not strong enough to stand on its own but instead depends on other for survival in the area of technology, presently, Peugeot Automobile Nigeria only assembles the CKD parts sent from France because most

of these parts are yet to be produce in Nigeria despite government huge investment on manufacturing companies like steel rolling mills, etc. Despite the company's 30% sourcing of local content, its still depends on many suppliers as much as 60 different ones to supply all her different items.

Three main reasons are responsible for the state of affairs. These are the absence of supportive industries to feed the automobile industry with component parts, the non-concomitant development and integration facilities such as steel, cost iron, flat-sheet, alloys and solvent etc. The sector has agued that importers of fully built – up vehicle (FBU) have not helped to develop the supportive industries to feed with the sector. If they do so, coupled with petrochemical project (for the basic inputs for production) the future of the industry will turn around (MAN, 1989).

This findings also agreed with Olowu, (1990) who noted that the level of local content ratio is a far cry from the maximum standard required to ensure a successful take-off of the envisaged indigenous car and make the much be meaned transfer of technology a reality. For sometime now, critics of the sector have left the impression that the industry is responsible for its present situation and it has contributed to the development of the nation's economy.

The Table 3 also revealed that on items 7, 8, 9 and 10 both management staff and junior staff workers disagreed on the operation constraints of production, planning and control units of Peugeot Automobile Nigeria Limited with mean values ranging between 1.68 and 2.06.

The findings showed that the respondents disagreed that high interest and low rate of supply of defective components by local manufacturers affected

production capacity adversely, the low quality and standard of components being supplied by local manufacturers has affected production and second Tier Foreign exchange market introduced in the late 80's led to high cost of production as well as for too much politics and bureaucracy usually at the expense of merit in the selection of supplier of component parts.

This findings in agreement with the views of Dama (2001) who observed that despite all the problems with the automobile sectors in Nigeria, the local automobile parts or components manufacturers are said to have performed very well especially in the light of the problems that affected the manufacturing sectors in the last 15 years, and could still do better in the future and that some of them have been forced to close down due to the harsh economy environment and the dumping of substandard products into the country. What, however, is needed is for further investment in the production of items such as contact set (breaker) spark plugs, headlights and other bulbs, fuses, brushes, gaskets, wiper blades, hoses, lifting jack and tools which are much more in demand for servicing the second-hand cars in the system.

The analysis in Table 4 indicated that on items 17, 18, 19 and 20 both management staff workers and junior staff workers agreed that on the compliance of production, planning and control units with the procedural guide line of the company with a mean value ranging between 3.26 and 3.34.

This implies that production, planning and control units complied with the procedural guide line of the company. This findings showed that production, planning and control units plans and launches the product in line with standard

required by commercial division and ensures that vehicle are produced according to specifications as well as compiles reports on number of cars at each production point also translate production plan into simple terms meaningful to plant operators.

This findings is in agreement with the views of Suleiman (1997) who noted that production, planning and control units in Peugeot Automobile Nigeria prepares the weekly programme taking into account of the stock level of the necessary parts for the production of various models. The weekly production programme for the upcoming week is prepared on the preceding Friday. Copies of the programme are sent to all management personnel concerned. Information is then assed to the departments involved ie supply department, study and methods department and all the production shops. Body shop is the first stage of the production pecess. In the same Vain Abdullahi (1998) stressed that at the end of each day production planning and control units compiles a progress report show how many cars are available at the various positions of the production process which shows whether or not the production target of 24 cars per day for each shop has been achieved, under-achieved, or over-achieved, that determines whether the particular shop which has under-achieved will have to work hard the next day to make up the backlog.

The Table 4 further shows that on item 23 both management staff and junior staff workers accepted that production, planning and control units are not complied with, with mean value 2.27. This implies that the production, planning and control units produced less than 30 vehicle per day because of inadequacy raw materials for her production process.

This findings confirms the views of Owolari (1992) who noted that because of the multiple problems of inadequacy raw materials, foreign exchange squeeze, lack of protection and low volume, the vehicle assembly plants are currently producing between five and ten percent of their installed capacity.

The analysis of Table 5 revealed that on items 25, 27, and 28 both management staff workers and junior staff workers accepted that the market sales of Peugeot Automobile Nigeria Limited in Kaduna are affecting by the low patronage with mean values ranging between 2.80 and 3.76.

The findings showed that production costs of vehicles affected the market sales of Peugeot Automobile Nigeria Limited adversely and high price of Peugeot Automobile products is responsible for low market sales as well as the price of Peugeot vehicles assembled in Nigeria is by for more than the one assembled in France are responsible for the inadequacy sales of Peugeot Automobile Nigeria products in Kaduna.

The findings above is in agreement with Adedoyin (1991) who noted that the structural adjustment programme SAP was introduced to mitigate effects of the dramatic down turn in the economic fortunes of Nigeria. The SAP and Foreign Exchange Market (F.E.M) a beautifully coined acrynom has dealt several blows on all the companies in Nigeria including the automobile industries (PAN in particular). The economic duldrums and hard environment has forced a lot of companies to sing their obituaries. The effect was the induced in high cost of

production which resulted in high prices of the vehicles and a drastic reduction in demand for their finished products, which forced a few automobile firms to crash.

Aboyade (1989) emphasized that import has taken a disproportionate parts of the market; domestic production has further hindered and it has become more difficult for component suppliers to be in business Peugeot Automobile Nigeria, like other companies too had its fair share of SAP and to still remain in business, price of vehicles had to go up by almost 500%. Though SAP as an inevitable measure was aimed at putting our economy back to a sound footing, it is a truism that so far the naira exchange rate continue to depreciate in the international market, certainly the prices of products whose production depend on high import will continue to go higher. Peugeot Automobile Nigeria's product is not an exception if this industry must continue to function (Adedoyin, 1986).

The Table 5 also revealed that on items 26, 29, and 34 both management staff workers and junior staff workers disagreed that the market sales of Peugeot Automobile Nigeria Limited products in Kaduna are affect by low patronage with mean values ranging between 2.01 and 2.41.

The findings showed that the respondents disagreed that Nigerians are buying the products of Peugeot Automobile Nigeria regularly, the current price of Peugeot Automobile vehicles assembled in Kaduna are reasonable as well as Peugeot Automobile Nigeria improved generally it production costs to make Peugeot Automobile Nigeria products affordable to customers.

The analysis of Table 6 revealed that on items 36, 39, 41 and 42 both management staff workers and junior staff workers agreed on the adequacy of

materials and equipment for the production of Peugeot Automobile products with mean values ranging between 2.75 and 3.05.

This findings showed that machinery and equipment are in good working condition, there are coverage of machines and equipment by insurance policy, maintenance are carried out when there is a fault in machine and as well as adequacy of equipment in their unit for the production of Peugeot Automobile products. This findings agreed with Eukora (1990) who noted that there are two broad types of technologies for work situation; the machinery – intensive (modern) technology and the labour intensive (indigenous) technology. The machinery intensive technology involves the use of sophisticated machinery and labour saving devices in work situation. It is usually modern and brings about high quality in final product. By design, it is capital-intensive and this has significantly work situations to those of managing more machines rather than people. In the same vain Aina (1997) stresses that, government are also to ensure that the machinery which they used are imported infact at a duty of only 2.5 percent.

The Table 6 also revealed that on items 35, 37 and 38 both management staff workers and junior staff workers agreed on inadequacy of materials and equipment for the production of Peugeot Automobile products with mean values ranging between 1.60 and 1.97. The findings showed that materials (Local contents) for the production of Peugeot Automobile and local content materials produced by local manufacturers as well supplied by the steel and petro-chemical industrial are inadequacy for the production of Peugeot Automobile products. The findings above is in agreement with Fanconrier (1988) who noted that Peugeot

Automobile Nigeria with its numerous problems which makes it not strong enough to stand on its own but instead depends on others for survival in the area of technology presently, Peugeot Automobile Nigeria only assembles the CKD parts sent from France because most of these parts are yet to be produced in Nigeria despite government huge investment on manufacturing companies like steel rolling mills, etc. Despite the company's 30% sourcing of local content, it still depends on many suppliers as much as 60 different ones to supply all her different items. This clearly shows our low level of technological development.

Olowu (1990) stressed that the level of local content materials ratio is a far cry from the maximum standard required to ensure a successful take-off of the meant transfer of technology a reality. MAN (1989), emphasized that three main reasons are responsible for the state of affairs; these are the absence of supportive industry with component parts, the non-concomitant development and integration facilities such as steel, cast-iron, flat-sheet, alloys and solvent, etc.

The sector argued that importers of fully built – up vehicles have not helped to develop the supportive industries to feed with the sectors. If they do so, coupled with petrochemical project for the basic inputs for production the future of the industry will turn around.

The analysis of Table 7 indicated that on items 44, 45, 46, 47, 48, 49 and 50 both management staff workers and junior staff workers accepted on the suggestions for improving the management of Peugeot Automobile Nigeria Limited in Kaduna with mean values ranging between 3.02 and 3.12. The findings showed that all the statement listed were perceived by the respondents as agreed; that

management of Peugeot Automobile Nigeria should order enough high quality local component needed for the production of vehicles, management of Peugeot Automobile Nigeria Limited should encourage the local manufacture of parts, management should procure machineries plans their major components for its production process e.g stamping machines as well as apply current information and communication technology to enhance production, planning and control, expand its production range to include cars for low income earner, should improve generally on its productions cost to make PAN products affordable to customer and check areas of diversification according to the needs of the market.

The findings above is in agreement with Ogwuagwu (1996) who suggested that government should be serious with making the Iron and steel industry, machine tool industry in Nigeria reality. With little encouragement by the government for the private sector to invest more in the automobile industry, the needed technology for automobile parts industries such as material processing industry, Electric parts and components industry, casting industry, forging industry, plastic industry will be required. This will enable automobile industry (PAN in particular) to improve in the production of parts that will compete favourably with any standard in the automobile world. It is not too late and it can never be too late.

The t-test results in Table 8 revealed that there is significant difference between the mean responses of the two groups of respondents for items 1, 2, 7 and 13 with mean values ranging from - 2.77 and 2.17. However the respondents agreed on items 3, 4, 5, 6, 8, 9, 10, 11, 12, 14 and 15 with mean values of between - 1.00 and 1.80 for df of 224 at 0.05 confidence level.

This findings indicated that majority of the management staff and junior staff workers disagreed on the idea of operation constraints in production, planning and control unit of Peugeot Automobile Nigeria Limited as it concerns three items. The respondents also disagreed that operation constraints affect the operations in production, planning and control unit of Peugeot Automobile Nigeria Limited relative to one of the items.

The results also revealed that the respondents agreed on the operation constraints in production, planning and control unit of Peugeot Automobile Nigeria Limited as it relate to items 3, 4, 5, 6, 12 and 14. Also the two groups of respondents agreed that operation constraints affecting the operations in the production, planning and control unit of Peugeot Automobile Nigeria limited with respect to items 8, 9, 10, 11 and 15 which revealed that there is operation constraints in production, planning and control unit of Peugeot Automobile Nigeria limited.

The results are in agreement with the views of Fanconrier (1988) who noted that even though Peugeot Automobile Nigeria with its numerous problems which makes it not strong enough to stand on its own but instead depends on other for survival in the area of technology, presently, Peugeot Automobile Nigeria only assembles the completely knock down parts sent from France because most of these parts are yet to be produce in Nigeria despite government huge investment on manufacturing companies like steel rolling mills, etc. Despite the company's 30% sourcing of local content, its still depends on many suppliers as much as 60 different ones to supply all her different items.

Three main reasons are responsible for the state of affairs. These are the absence of supportive industries to feed the automobile industry with component parts, the non-concomitant development and integration facilities such as steel, cast iron, flat-sheet, alloys and solvent etc. The sector has argued that importers of fully built – up vehicle (FBU) have not helped to develop the supportive industries to feed with the sector. If they do so, coupled with petrochemical project (for the basic inputs for production) the future of the industry will turn around (MAN, 1989).

This findings also in agreement with Olowu, (1990) who noted that the level of local content ratio is a far cry from the maximum standard required to ensure a successful take-off of the envisaged indigenous car and make the much be meant transfer of technology a reality. For sometime now, critics of the sector have left the impression that the industry is responsible for its present situation and it has contributed to the development of the nation's economy.

The t-test result in Table 9 indicated that there is significant difference between the mean scores of management staff and junior staff workers on item 23 relating to the production, planning and control unit's compliance with the procedural guideline of the company. This is because the calculated 't' value of -2.60 for the item was less than the t-table value of -1.96 for df of 224 at .05 level of significance.

However, the respondents agreed on item 16, 17, 18, 19, 20, 21 and 22 with mean values of between -1.47 to 0.22 which are less than the 't'-table value of  $\pm 1.96$ .

These findings revealed that majority of the management staff and junior staff workers disagreed that production, planning and control units have least complied with the procedural guide line of the company as it concerns item 23.

The results also revealed that the respondents agreed on the compliance of production planning and control units with the procedural guide line of the company as it related to items 16, 17, 18, 18, 19, 20, 21, and 22. This revealed that production, planning and control units of Peugeot automobile Nigeria Limited have complied with the procedural guide line of the company.

The results are in agreement with the views of Suleiman (1997), who noted that production, planning and control units in Peugeot Automobile Nigeria prepares the weekly programmes taking into account of the stock level of necessary parts for the production of various models. The weekly production programme for the up coming week is prepared on the preceding Friday copies of the programme are sent to all management personnel concerned. Information is then passed to the departments involved, ie supply department, study and methods department, and all the production shops.

Management staff and junior staff workers differed significantly in their mean scores on three of the accepted items relating to suggestion for improving the management of Peugeot Automobile Nigeria Limited Kaduna namely; items 44, 48, and 49 (Table 10). The 't' - calculated values for these items ranging from -3.17 to -1.97 are less than 't' - table value of -1.96 for df of 224 at .05 confidence level.

However, the respondents agreed on items 45, 46, 47 and 50 with mean values of between -1.80 to -1.19 which are less than the 't' – tabulated value of -1.96.

This findings revealed that majority of the management staff and junior staff workers disagreed on suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna as it concerns items 44, 48 and 49.

The result also revealed that the respondents agreed on the suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna as it relate to these accepted items namely; 45, 46, 47 and 50 which revealed that there is need for improving the management of Peugeot Automobile Nigeria Limited Kaduna.

The results are in agreement with the views of Ogbuagwu (1996), who suggested that government should be serious with making the iron and steel industry, machine tool industry in Nigeria reality. With little encouragement by the government for the private sector to invest more in the automobile industry, the needed technology for automobile parts industries such as: material processing industry, Electric parts and components industry, casting industry, forging industry, plastic industry will be required. This will enable automobile industry (PAN in particular) to improve in the production of parts that will compete favourably with any standard in the automobile world. It is not too late and it can never be too late.

### **Summary of the Study**

This study was designed to assess the operation constraints in production, planning and control unit of Peugeot Automobile Nigeria Limited in Kaduna State.

Production, planning and control units is an important means of transforming of raw materials by manufacturing methods into useful things needed by society. Production, planning and control is the process of planning production in an industry in advance of actual production.

Literature in line with the five (5) researcher questions was reviewed. Descriptive survey research design was employed in carrying out this study. A total number of 218 respondents were involved in the study. This was made up of 44 management staff workers and 174 junior staff workers comprising of technicians, craftsmen, artisan and other junior workers.

A 50 items questionnaire was developed and used for data collection. Experts in the field of Industrial and Technology Education; Experts in the Educational measurement and evaluation and experts in the production, planning and control units of Peugeot Automobile Nigeria Limited validated the instrument. A test re-test method was used to determine the reliability of the instrument, the instrument was pilot tested on 20 management staff (Workers) and 20 junior staff (workers) in Nigeria truck manufacturing company Kano who were not involved in the study. Data obtained from pilot study were analysed using Cronbach Alpha.

Reliability co-efficient was calculated for each set of the questionnaire to determine the internal consistency of the instrument. The reliability co-efficient obtained was 0.90 which means the instrument were reliable.

The instrument was administered to the respondents by the researcher and three (3) research assistance. The data collected was analysed using mean statistic. Such as frequency count percentage, mean standard deviation and t-test.

t-test was used in testing the hypothesis. On the operation constraints in production, planning and control units of Peugeot automobile Nigeria Limited, it revealed that there is no significant difference between the mean ratings of the respondents (management staff and junior staff workers). On the extent to which the production, planning and control units complied with the procedural guide line of the company, it revealed that there is no significant difference between the mean ratings of the respondents management staff and junior staff workers. On the suggestions fro improving the management of Peugeot Automobile Nigeria Limited Kaduna, it revealed that there is no significant difference between the mean scores of the respondents management staff and junior staff workers.

### **Implications of the Study**

The findings of this study have some far reaching industrial implication. The findings of this study revealed that the production planning and control units of Peugeot Automobile Nigeria Limited will be supply the required local content materials and component for the mass production of their vehicles and to bring down the high prices of Peugeot vehicles assembled by PAN Limited. Therefore, government manufacturing companies will be made to produced parts and supply it to automobile industry so as to bring down the high prices of their vehicles. Therefore, greater protection will be given to local industries that they can produce more local components. In other words, government will be give encouragement to the local manufacturing industries by giving them the required assistance so that they can produce more parts.

The implication of this study to steel and petro-chemical industries, that the industry will be able to assist adequately so that they will produce and supply the automobile industry with their products thus making our automobile industry not to rely too much on overseas manufacturing companies.

Another positive implication of this study for Federal Government by protect the automobile industry by guiding against indiscriminate importation of new and used vehicles which is affecting the production capacity in the automobile industry.

## Conclusions

The study has assessed the operation constraints in production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna. The operation constrains is as a result of inadequacy of local content materials and component that are considered as required for low performance in the units. It is expected that local content materials and components supply adequately to the production, planning and control units in order to increase the production capacity that is based on the findings of this study will equip the production planning and control units with the adequate local content materials and component for the effective production of their products. As a result, the full production capacity will be improve. It was also found that there are professionally skilled men and women in Peugeot Automobile Nigeria Limited Kaduna but the problems at stake is that of the government inability to establish an automobile manufacturing company thus having to rely on suppliers before any work can be done by professional. Lack of manufacturing (components) industries poses a great problem to the automobile industry in terms of survival.

Since Peugeot Automobile Nigeria have to depend on others for the supply of parts, they cannot be said to be self-sufficient or independent. If the findings of this study are effectively utilized, quality of local content for the production of products. This will in turn improve their production performance level.

## Recommendations

Based on the findings of this study, the following recommendations were made.

- The Federal Government should create operational environment by articulating an enduring policy for the development of indigenous technology and giving greater protection for the local industries so that they can produce more local components.
- The Federal Government should protect the automobile industry by guiding against indiscriminate importation of new and used vehicles which is affecting the production capacity in the automobile industry.
- Steel and petro-chemical industries should be assisted adequately so that they can supply the Peugeot Automobile Nigeria Limited Kaduna with their product thus making our automobile industry not to rely too much on foreign companies like France.
- The Government should assist Peugeot Automobile Nigeria Limited Kaduna in her efforts towards the development of local content materials, in line with this, the government should give assistance to Peugeot Automobile Nigeria towards purchasing of stamping machines (e.g for sleeves and other engine parts); flat – sheets, etc.

### **Suggestions for Further Research**

The following suggestions have been made for further research.

- The effect of government policy on the development of Automobile Industry in Nigeria.
- Evaluation of production, planning and control units of Anambra motor manufacturing company Enugu, Nigeria.
- Assessment of Emission Control by Automobile Industries in Nigeria.
- Manpower Development Needs of Automobile Technicians in Automobile Industries in Nigeria.

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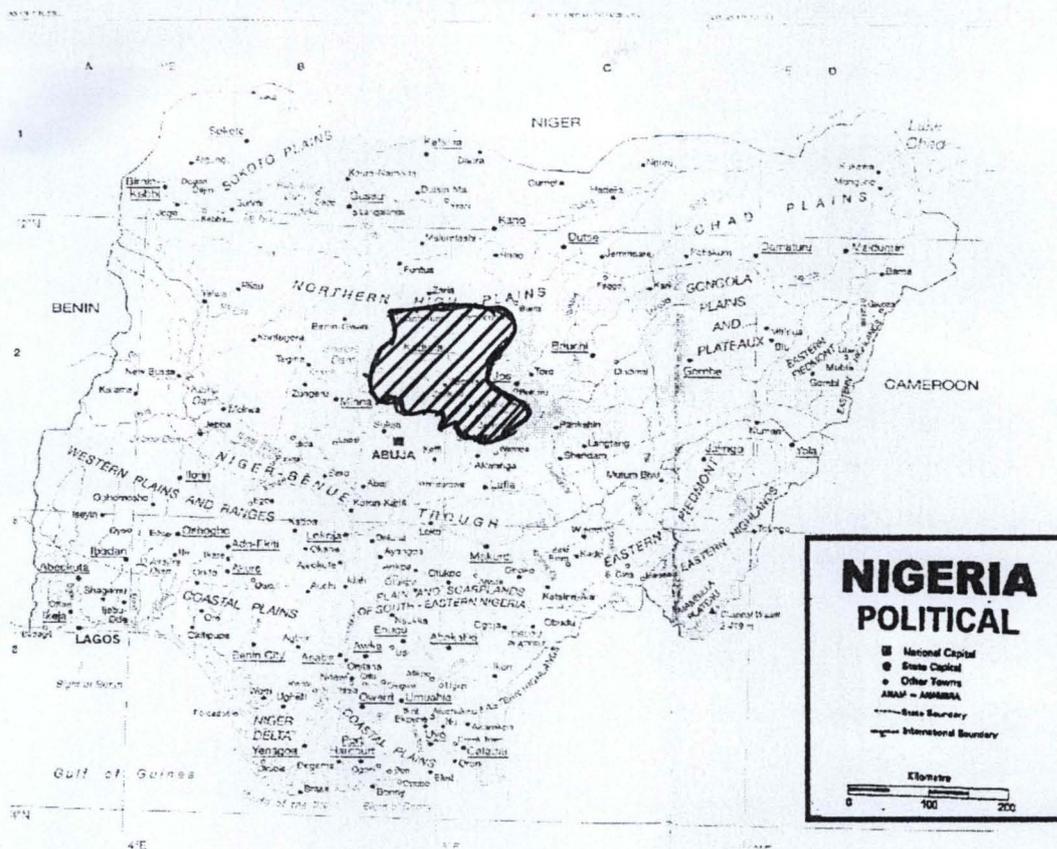
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## APPENDIX A

MAP OF NIGERIA SHOWING THE LOCATION OF NORTH – WEST STATES  
IN NIGERIA

## THE SIX POLITICAL ZONES OF NIGERIA (STATES AND CAPITAL)

NORTH EAST	NORTH WEST	NORTH CENTRAL	SOUTH EAST	SOUTH WEST	SOUTH SOUTH
Adamawa	Jigawa	Benue	Abia	Ekiti	Akwa – Ibom
Yola	Dutse	Makurdi	Umuhia	Ado – Ekiti	Uyo
Bauchi	Kaduna	Niger	Anambra	Lagos	Bayelsa
Bauchi	Kaduna	Minna	Awka	Ikeja	Yenogua
Borno	Kano	Kogi	Ebonyi	Ogun	Cross – River
Maiduguri	Kano	Lokoja	Abakaliki	Abeokuta	Calabar
Gombe	Kebbi	Kwara	Enugu	Ondo	Delta
Gombe	Birnin Kebbi	Ilorin	Enugu	Akure	Asaba
Taraba	Sokoto	Nassarawa	Imo	Osun	Edo – Benin
Jalingo	Sokoto	Lafia	Owerri	Oshogbo	
Yobe	Zamfara	Plateau		Oyo	Rivers
Damaturu	Gasau	Jos		Ibadan	Port Harcourt
	Katsina				
	Katsina				

Source (Kaduna State Government Diary, 2008).

APPENDIX B

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA  
DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

AUTO TECHNOLOGY  
BUILDING TECHNOLOGY  
ELECTRICAL TECHNOLOGY  
METAL TECHNOLOGY  
WOOD TECHNOLOGY

YOUR REF: \_\_\_\_\_  
OUR REF: ITE / PG / SP / \_\_\_\_\_

DATE: 28-11-05

THE GENERAL MANAGER  
CORPORATE RESOURCES  
PEUGEOT AUTOMOBILE NIGERIA (PAN)  
LIMITED P.M.B 2266, KADUNA- STATE NIGERIA.

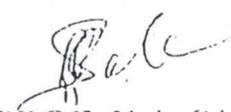
LETTER OF INTRODUCTION FOR CANDIDATE CARRYING OUT RESEARCH WORK

ABOLARIN, S. S. is a postgraduate student  
of the Department of Industrial and Technology Education of the Federal University  
of Technology, Minna. He/she is currently undertaking a research work on

ASSESSMENT OF THE OPERATIONS OF PRODUCTION  
PLANNING AND CONTROL UNIT OF PEUGEOT  
AUTOMOBILE NIGERIA (PAN) LIMITED IN KADUNA  
STATE, NIGERIA.

It would be highly appreciated if you could supply him/her with the  
information he/she may require from you. All information from you will be treated  
confidentially.

Thank you so much for your cooperation.

  
PROF. K.A. SALAMI  
Project Coordinator

**APPENDIX C****REQUEST LETTER TO VALIDATORS**

Department of Industrial and  
Technology Education,  
Federal University of Technology,  
Minna  
Date \_\_\_\_\_

Dear Sir/Madam,

**REQUEST TO VALIDATE RESEARCH INSTRUMENT**

I am a postgraduate student in the Department of Industrial and Technology Education, Federal University of Technology, Minna currently undertaking a research project titled:-

**ASSESSMENT OF THE OPERATIONS OF PRODUCTION, PLANNING AND CONTROL UNITS OF PEUGEOT AUTOMOBILE NIGERIA LIMITED IN KADUNA STATE, NIGERIA,**

Attached is draft copy of the questionnaire for the study. You are to please kindly go through the items and vet their clarity, adequate and relevance to the present study.

You are also to please write down your comments and suggestion in the plain paper attached.

Thanks

Yours Sincerely,

**ABOLARIN SAMUEL SEGUN**  
**M.TECH/SSSE/2004/1188**

**APPENDIX D**

**DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION  
SCHOOL OF SCIENCE AND SCIENCE EDUCATION  
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA.**

**QUESTIONNAIRE FOR THE ASSESSMENT OF THE OPERATIONS OF  
PRODUCTION, PLANNING AND CONTROL UNITS OF PEUGEOT  
AUTOMOBILE NIGERIA LIMITED KADUNA.**

Dear Sir/Madam,

The following list of information is required for the purpose of a research being conducted to assess operations of production, planning and control units of Peugeot Automobile Nigeria Limited, Kaduna.

Please, complete this questionnaire as honestly as possible. The answers given by you will be treated strictly as confidential and for the purpose of this research.

Your co-operation will be highly appreciated in order to make this research work successful.

Thanks.

Yours faithfully,

**ABOLARIN SAMUEL SEGUN.  
M.TECH/SSSE/2004/1188**

## APPENDIX E

### SECTION A

This section deals with company location, designation or position, responsibility and department of respondents.

Please fill in and tick (  ) to indicate the information that apply to you:

Company Location: \_\_\_\_\_

Department: \_\_\_\_\_

Rank/Position: \_\_\_\_\_

Manager [  ] Engineer [  ] Supervisor [  ] Foreman [  ]

Technician [  ] Craftsman [  ] Others [  ]

**SECTION B:** What are the operation constraints in production, planning and control units of Peugeot Automobile Nigeria Limited Kaduna? (Tick one)

Response scale Scale value

Strongly Agreed (SA) 4

Agreed (A) 3

Disagreed (D) 2

Strongly Disagreed (SD) 1

S/NO	ITEMS	SD	A	D	SD
1.	Low level of local content raw materials availability				
2.	The location of others relevant small scale industries makes it difficult in sourcing for local content materials				
3.	Inadequacy of machinery in the production, planning and control units for the production of some components				
4.	The high level dependence of Peugeot Automobile Nigeria on foreign component or parts				
5.	The distance from France leading to higher cost of importation of raw materials				
6.	Low patronage of products led to difficulty in production, planning and control units				
7.	The high interest and low rate of supplying of defective component by the local manufacturers affected production capacity adversely.				
8.	The low quality and standard of components being supplied by local manufacturers has affected production capacity				
9.	The second Tier foreign exchange market introduced in the late 80's led to high cost of production				
10.	Significant difference between locally manufactured components and imported one's in terms of production, durability for the mass production				
11.	Too much politics and bureaucracy usually at the expense of merit in the selection of supplier of component parts				
12.	The non completion of Ajaokuta steel factory by the Federal Government which should be a major source of supplier of local content materials to Peugeot Automobile Nigeria Limited				
13.	The non development of local content materials by Peugeot Automobile Nigeria herself has affected production adversely.				
14.	The usual delay in the arrival of the ordered completely knock down parts due to interruption by custom officers				
15.	Lack of an enabling environment for local manufacturers of local content materials to operate.				

**SECTION C:** What is the extent to which the production, planning and control units complied with the procedural guide line of the company? (Tick one).

Response scale		Scale value
Highly complied	(HC)	4
Complied	(C)	3
Least complied	(LC)	2
Not complied	(NC)	1

S/NO	ITEMS	HC	C	LC	NC
16.	Production planning and control units receives basic production raw materials.				
17.	The production planning and control units plans and launches the product in line standard required by commercial division.				
18.	Production planning and control units ensure that vehicle are produced according to specification.				
19.	The production planning and control units compiles report on number of cars at each production point.				
20.	Production planning and control units translate production plan into simple terms meaningful to plant operators.				
21.	Production planning and control units assigns desired completion dates to the operation needed to be performed on each car production order.				
22.	The production planning and control units determines what is to be covered weekly or monthly.				
23.	The production planning and control units meets up with the production target of 30 vehicles per day				

**SECTION D:** What are the factors affecting market sales of the Peugeot Automobile Nigeria Limited products in Kaduna? (Tick one).

Response scale		Scale value
Strongly Agree	(SA)	4
Agree	(A)	3
Disagree	(D)	2
Strongly disagree	(SD)	1

S/NO	ITEMS	SA	A	D	SD
24.	The Peugeot Automobile Nigeria does not produce enough of her products to meet its market demands.				
25.	The production costs of vehicles affect the market sales of Peugeot Automobile Nigeria Limited adversely.				
26.	Nigerians prefer the tokunbo cars more than Peugeot Automobile Nigeria product regularly.				
27.	High price of Peugeot Automobile products is responsible for low market sales.				
28.	The price of Peugeot vehicles assembled in Nigeria is by far more than the one assembled in France				
29.	The current price of Peugeot Automobile vehicles assembled in Kaduna are reasonable.				
30.	Peugeot Automobile Nigeria (PAN) sells directly to Government.				
31.	Government, ministries and parastatals are buying Peugeot Automobile vehicle products than individuals.				
32.	Peugeot Automobile Nigeria (PAN) still have sales distributors.				
33.	Peugeot Automobile Nigeria check areas of diversification according to needs of the market.				
34.	Peugeot Automobile Nigeria improve generally on its production costs to make PAN production affordable to customers				

**SECTION E:** How adequate are the materials and equipment for the production of Peugeot Automobile products? (Tick one).

Response scale		Scale value
Very adequate	(VA)	4
Adequate	(A)	3
Inadequate	(I)	2
Very inadequate	(VA)	1

S/NO	ITEMS	VA	A	I	VA
35.	Materials (Local contents) for the production of Peugeot Automobile.				
36.	Machinery and equipment in good working condition.				
37.	Local content materials produced by local manufacturers.				
38.	Local content materials supplied by the steel and petro-chemical industries.				
39.	The coverage of machines and equipment by insurance policy.				
40.	Service materials for servicing of machines and equipment in the units.				
41.	Maintenance carried out when there is a fault in machines.				
42.	Equipment in the units.				
43.	The rules governing the acquisition of materials and equipment in the units.				

**SECTION F:** What suggestions for improving the management of Peugeot Automobile Nigeria Limited Kaduna? (Tick one).

Response scale		Scale value
Strongly Agree	(SA)	4
Agree	(A)	3
Disagree	(D)	2
Strongly disagree	(SD)	1

S/NO	ITEMS	SA	A	D	SD
44.	The PAN management should order enough high quality local components needed for production of vehicles.				
45.	The PAN management should encourage the local manufacture of parts.				
46.	PAN management should procure machineries plan for the development of their major components for its production process e.g. stamping machine.				
47.	The PAN management should apply current information and communication technology to enhance production planning and control.				
48.	PAN management should expand its production range to include cars for low income earner.				
49.	PAN management should improve generally on its production costs to make PAN products affordable to customers.				
50.	PAN management should check areas of diversification according to the needs of the market.				