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## Production subcontracting and the distribution of industrial activities in Onitsha metropolis Anambra State, Nigeria

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**Abstract:** Abstract Subcontracting is becoming increasingly significant and important in today's economic world. It emphasizes the importance of improved collaboration, coordination, and adaptability among production entities such as industries, businesses, and institutions. Although production subcontracting has sparked a lot of debate on a broad level, there has been relatively little research done on it in terms of industrial activity. This paper analysed the role of production subcontracting in the distribution of industrial activities in Onitsha Metropolis, Anambra State, Nigeria. While the study adopted a survey research design and a questionnaire survey of 115 industries, charts, percentages and tables were used to show results. The result of the study showed that 49.9% of the industries subcontracted manufacturing activities, while 26.7%, 5% and 1.7% of the surveyed industries subcontracted maintenance, technical development and distribution/marketing industrial activities respectively. The paper recommended that production subcontracting be made a deliberate government policy so as to propel the growth of service industries/subcontracting industries in Nigeria.

**Keywords** – Distribution, Industrial activities, Industries, Nigeria, Onitsha metropolis, Subcontracting

### 1. INTRODUCTION

Over the previous decade, the production subcontracting market has developed at a faster rate than the whole industrial sector (UNIDO, 2003 cited in Kongmanila & Takahashi, 2003). Because of the more volatile and competitive business settings, industries have been compelled to become more effective, innovative, and flexible (Ajagbe & Ismail, 2014; Nwokocha, Nwankwo, Nwosu & Madu, 2020). To achieve effectiveness, innovativeness and flexibility, many industries in recent times have seen the importance of adopting a more flexible structure in production subcontracting. Production subcontracting which is the externalization of production process from one industry to another involves the de-concentration of industrial task across space and industries so as to allow for specialization and competence. Subcontracting is becoming increasingly significant and important in today's economic world (Ahokongas et al., 2021; Sigot & Josione, 2020; Rivera-Gomez, Gharbi, Kenne, Montaro-Arano & Hernandez-Gress, 2018). It emphasizes the importance of improved collaboration, coordination, and adaptability

among production entities such as industries, businesses, and institutions. This promotes production quality, quantity, timeliness, and competitiveness. According to Singh (2020), “the incidence of subcontracting has dropped in rural areas among own-account firms and establishments with 2–5 workers during the research period, but has improved in the towns among the same firms”. The study showed that workers in subcontracting organizations are also significantly more productive to workers in non-subcontracted businesses, according to the research. Nevertheless, this may be attributed to organizational climate (Tan et al., 2021) among the subcontracted and non-subcontracted businesses. Although production subcontracting has generated substantial discussion at a general level (Kimura, 2002; Taymaz & Kilicaslan, 2005; Grossman & Heplman, 2005; Lawal, Ajonbadi & Otokiti, 2014; Ogbari, Ajagbe, Isiauwe & Ade-Turton, 2015; Eze & Idiake, 2017; Olusanya, 2017; Kumar, 2017; Gregson & Quinlan, 2020), very little research has been done from an industrial activities point of view as well as the distribution of these activities along industrial lines in Nigeria. Industrial activities subcontracted by industries are those activities/tasks- manufacturing, packaging, distribution/transportation, and marketing and others that lead to the production of a finished good/item. These activities vary from one industry to another and it enables industries to concentrate on their core competencies. Consequently, this paper contributes to the literature by advancing the debate on the use of production subcontracting, the industrial activities subcontracted and the distribution of these activities along industrial groups in Nigeria.

## 2. LITERATURE SURVEY AND THEORY

Production subcontracting is largely approached from networking and clustering point of view. This viewpoint is widely recognized as the academic foundation of subcontracting, and it encourages collaboration, cooperation and the growth of industrial clusters (Pyke, 1992; Nwokocha et al., 2015a 2015b). In view of this, Ceglie and Dini (1999) states that common challenges suffered by small business firms are best handled by these firms. They can do this through horizontal cooperation, vertical cooperation and networking among themselves. Furthermore, production Subcontracting is an inter-firm relationship where an industry is either producing different components, intermediate inputs and final outputs, or providing various assembling activities, post selling services etc for the parent industry (Lazerson, 1990; Sahu, 2010; Rivera-omez et al., 2017). Industrial activities subcontracted by industries are activities such as manufacturing, packaging, distribution/transportation, and marketing and many more that lead to the production of a finished good/item. These activities vary from one industry to another and it enables industries to concentrate on their core competencies. Industrial operations subcontracted in the IT sector, according to Sadhukhan and Basu Roy (2008), “span from H/W production and manufacture, product support, to S/W development, product services, and maintenance services”. These actions enable the IT business to achieve not just cost savings, but also agility in developing solutions, access to new resource pools, the capacity to use the power of scale, improved operational efficiency, and, most importantly, enhanced quality. According to Apu (2013), the textile and clothing manufacturing industries in Bangladesh outsource the most number of industrial activities out of all manufacturing and engineering sectors.

These industrial activities are research and development, design, production, logistics, marketing and services. Moreno-Monroy, Pieters and Erumban (2014) as well as Sigot and Vero (2020) on the other hand found that formal enterprises in India subcontract the most labour-intensive production activities to traditional informal enterprises in order to minimize labour costs. In other words, subcontracting enables firms address public policy issues arising from inequalities in employee participation with respect to the subcontracting relationship. Similarly, Holl (2007), found that most industries in Italy, India and Singapore now rely on other industries for their internal activities such as external security, transportation, distribution, logistics and operations. It is now common to subcontract

parts or components of an operation to independent firms so as to enable the industry to focus on its core activities. Industries in this category are textiles, and clothing, rubber and plastics, metallic products, motor vehicles, leather, chemical industries and others. Kumar (2017) discovered that large scale firms, which typically have greater capacities in research and development as well as access to funds, provide raw materials, technology, product designs, and other services to small scale firms, allowing small scale firms to produce more output at a lower cost and in a more efficient manner, while larger firms receive the necessary end-product at a lower cost. Moreno-Monror, Pieters and Erumban (2012), on the other hand, discovered that formal sector subcontracting is positively connected to the size of the informal sector. The result also showed that while subcontracting aids the informal sector modernization, there were no relationship between continued expansions of very traditional informal activities and increased outsourcing by formal manufacturing enterprises. Gakure, Kimemia and Waititu (2014) also believe that the degree of subcontracting participation has a favourable impact on the activities of micro and small businesses.

The study encouraged micro and small manufacturing businesses to participate in greater subcontracting while employing firm-specific techniques to acquire superior capabilities and become more competitive, according to the report. According to Ajayi (2007), the volume, pattern, and structure of production subcontracting links in Nigeria has increased. This was supported by Arimah's (2002) findings, which revealed that subcontracting in the Nigerian industrial sector can be found between large domestic corporations, government agencies, and foreign companies. Nwokocha and Madu (2015) also discovered that the majority of SME owners in the Onitsha metropolitan who engage in subcontracting arrangements had seen changes in their businesses' performance. The analysis found that SMEs performed best in terms of profit growth and worst in terms of return on assets. Other areas of studies that has dealt with production subcontracting are subcontracting constraints and firm performance (Nwokocha & Madu, 2015; Gakure, Kimemia & Waititu, 2014; Grossman & Helpman, 2002; Taymaz & Kilicistan, 2005), improved quality of service (Baily, Masson & Raeside, 2002; Marshalled, Mcivorb & Lamming, 2007) among others. From the foregoing, it is evident that the study of production subcontracting has received a great attention from scholars. This attention however fell short and did not take into consideration the activities subcontracted by these industries as well as the distribution of these activities among industries. This paper therefore, sought to advance the debate on the role of production subcontracting in the distribution of industrial activities in Nigeria.

### 2.1. Area of study

The study took place in the Nigerian city of Onitsha, in the state of Anambra. The area is situated between the Equator's latitudes of 060 04.5811N and 060 10.0011N, as well as the Greenwich Meridian's longitudes of 060 44.5911 E and 060 48.5211E (Nwokocha et al., 2015). Onitsha is mostly a commercial city in terms of economy. The Onitsha Main Market, the largest in the West African sub-region, is the city's most important commercial landmark (Manufacturers Association of Anambra and Enugu State Branch, 2000 as was shown in Nwokocha 2014). The study area is also a hub of economic activities. This can be seen in the setting up of industries such as Intafact brewery limited, Dossy power oil etc in the various areas within and around the city such as Ogbaru industrial layout, Awada industrial Layout and others. This made the area strategic for this study.

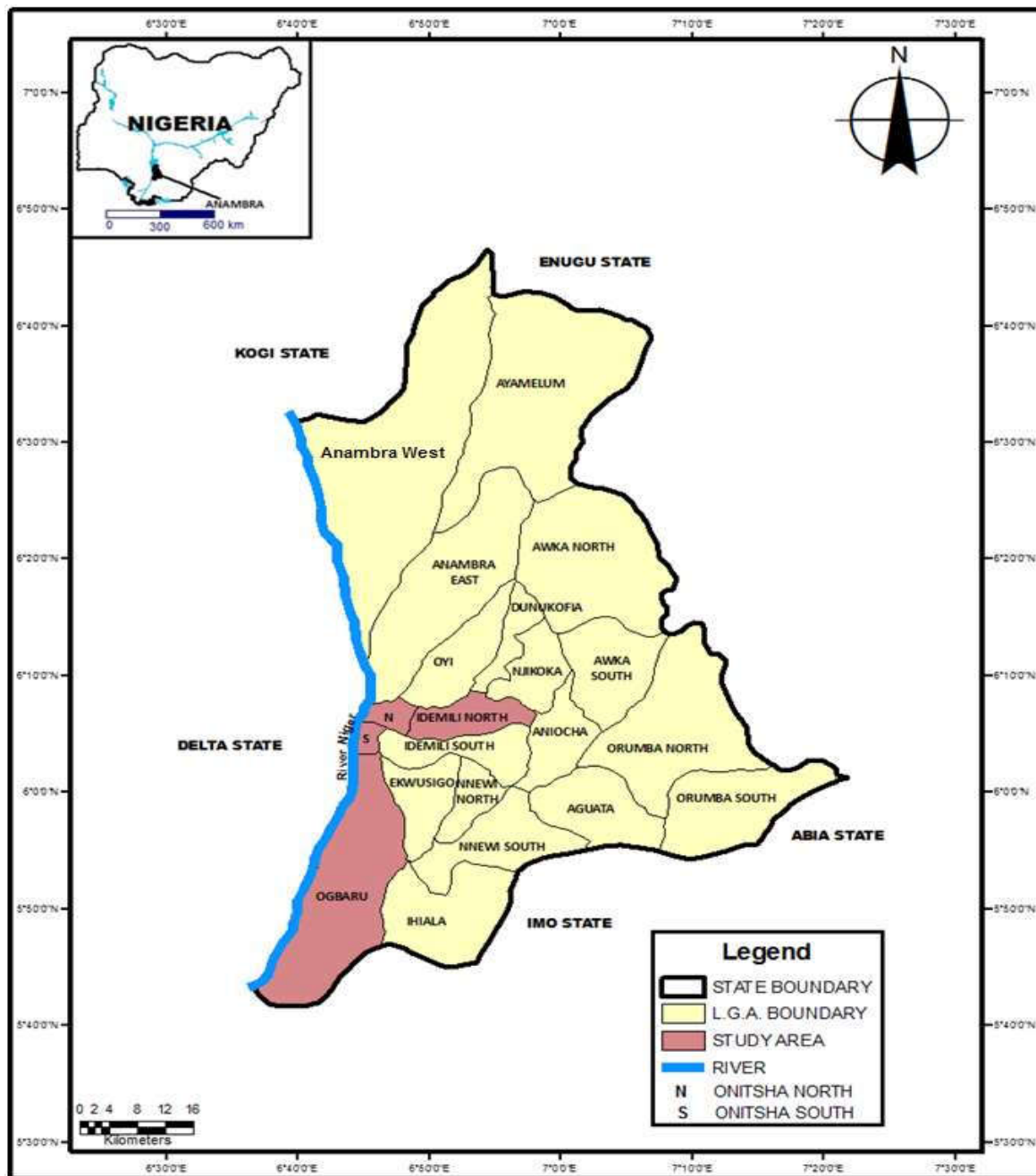


Figure 1: Anambra State Nigeria

Source: Nwokocho et al. (2015)

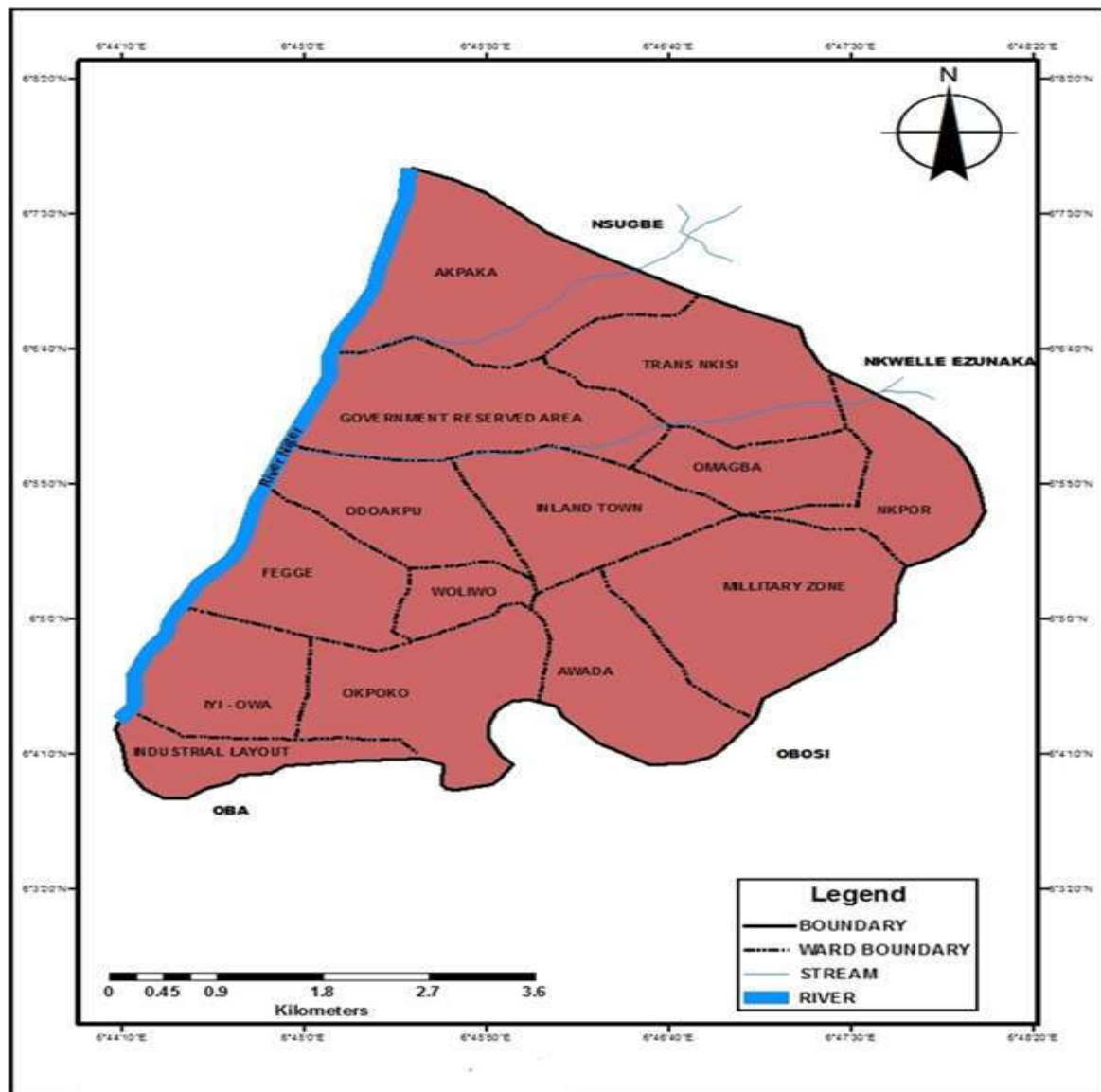


Figure 2: Onitsha metropolis  
Source: Nwokocha et al. (2015)

### 3. RESEARCH METHODOLOGY OR METHODS

This paper adopted a survey design based on quantitative approach. This was used to obtain information for the study using a questionnaire. The quantitative approach was achieved through the use of ordinal type questions.

#### 3.1. Sample selection and sample size

A total of 165 registered industries were identified from five (5) groups of industries in the surveyed area. These industries were selected from the Manufacturers association of Nigeria, Anambra State Industrial directory. From



this number, this study selected a sample size using Yaro Yamane formula for population size. This formula was adopted for this study due to its ability to establish an appropriate sample size. It is given as:

$$n = \frac{N}{1 + Ne^2} \dots\dots\dots (1)$$

Where

Where n = sample size, N = population size, e = the error of sampling/error of 5% points (0.05). In the present study n= 165/1+165(0.05)<sup>2</sup> 165/1+165(0.0025) 165/1.41 = 117 n= 117. Based on the analysis, this study selected 117 (one hundred and seventeen) industries from the five industrial groups. Stratified random sampling was adopted to select the ideal number of industries studied in each of the industrial groups. This was to give all the selected industries the opportunity of been selected for the study (Arnab, 2017).

### **3.2. Data collection**

Data for this study was collected from primary and secondary sources. While the primary sources included field observations and questionnaire survey of 117 industries, the secondary data was gathered by consulting relevant information both published and unpublished research materials). The study adopted a direct delivery technique for the questionnaire distribution. This method was used in this study to increase participation and to get a higher response rate. The respondents were the industry managers.

### **3.3. Instrument validation and reliability**

The instrument was reviewed and validated by three experts. These experts were selected from the field of Geography and Economics. The choice of these experts were based on their knowledge and understanding of the subject area. Similarly, to determine the reliability of the instrument, the questionnaire was trial tested in a pilot study of 10 industries. The internal consistency of the instrument was determined by Cronbach alpha reliability co-efficient. Cronbach's alpha co-efficient of the study was 0.72. This is considered statistical significant for the study and consistent with Cronbach alpha reliability principles which states that scales should be greater than 0.70 for items to be used together as a scale while factor loadings greater than 0.40 are considered statistically significant for studies.

### **3.4. Methods of data analysis**

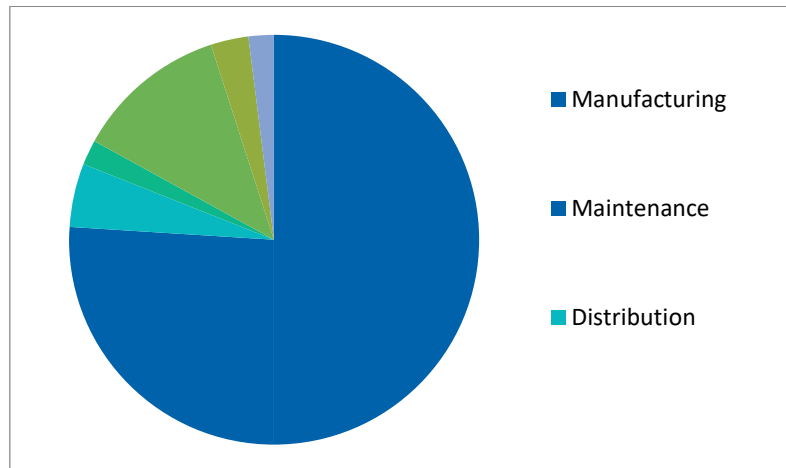
Basic data analysis such as percentages was used to analyse the data while charts was used to present the results in the paper. While charts were used to compare data series and the distribution of industries where subcontracted industrial activities took place, percentages and were used to show these industrial activities. All analyses were carried out using Microsoft Excel version 16.

## **4. DATA ANALYSIS AND DISCUSSIONS**

### **4.1. Industrial activities subcontracted by industries in the study area**

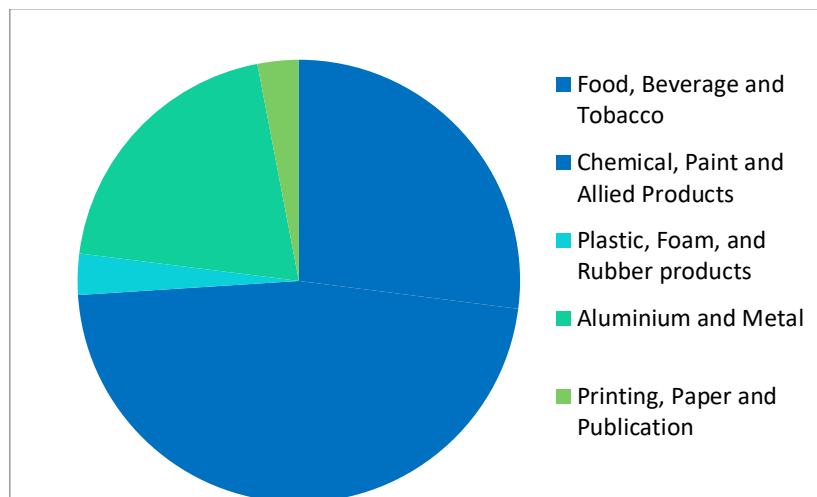
Industrial activities subcontracted by industries in the study were found to be manufacturing, maintenance, information systems management distribution/marketing and technical development industrial activities. From the study, 49.9% of the industries subcontracted manufacturing activities, while 26.7% subcontracted maintenance activities. Other activities subcontracted by the surveyed industries include technical development and distribution/marketing industrial activities with 1.7% and 5% respectively. The result also showed that a number of industries subcontracted more than one industrial activity. From this study, it was found that 11.6% of the

industries subcontracted both manufacturing and maintenance activities, 3.3% subcontracted both manufacturing and distribution and 1.7% subcontracted manufacturing and technical development (see Figure 3)



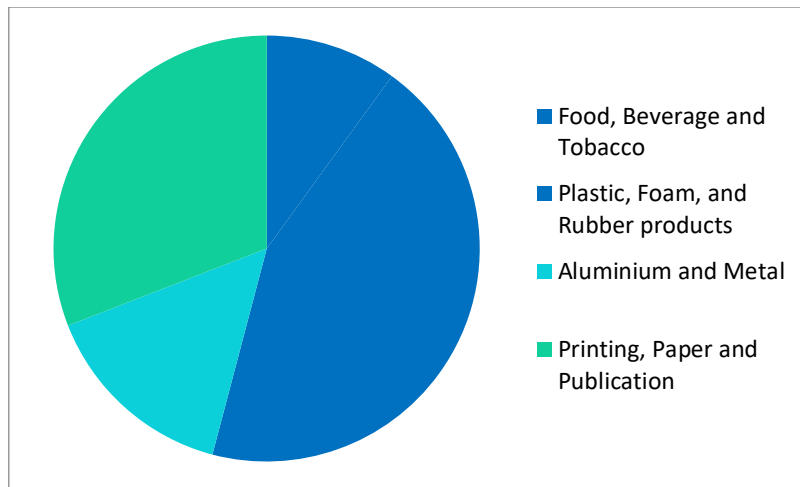
**Figure 3:** Percentage Distribution of Industrial Activities Subcontracted

According to the industrial groups, industries in the chemical, paint, and allied products industrial group; food, beverage, and tobacco industrial group; plastic, foam, and rubber products industrial group; aluminum and metal industrial group; and printing, paper, and publishing industrial group have a percentage share of subcontracted manufacturing activities of 47.0%, 27.0%, 20%, 3.0%, and 3.0%, respectively as was shown in Figure 4.



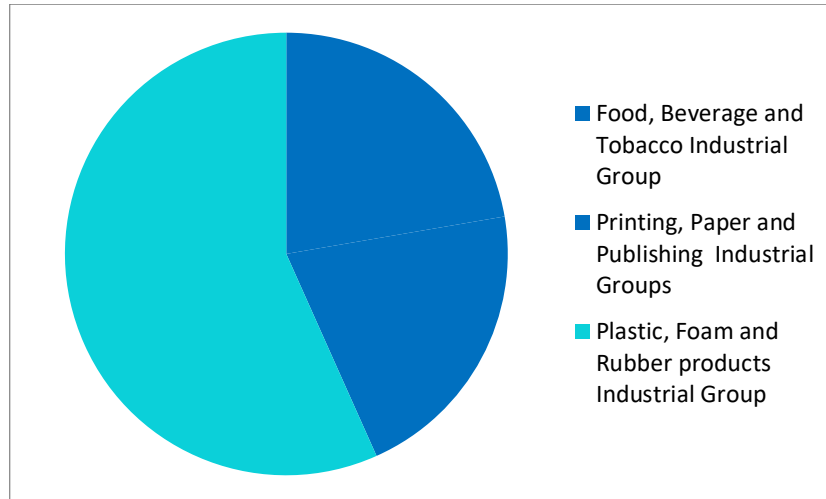
**Figure 4:** Percentage distribution of industrial groups that subcontracted manufacturing activities to other industries

Furthermore, a breakdown of industries that subcontracted maintenance activities to other industries showed that about 44.1% of industries in plastic, foam and rubber industrial groups subcontracted maintenance activities to other independent industries, while other industrial groups such as printing, paper and publishing industrial group; aluminium and metal industrial group; as well as food, beverage and tobacco industrial group have a percentage share of 30.9%, 15% and 10% respectively as was shown in figure 5.



**Figure 5:** Percentage distribution of industrial groups that subcontract maintenance activities to other industries

The study also revealed that there were industrial groups that subcontracted more than one activity in the study. Industrial groups that subcontract both manufacturing and maintenance activities to other industries were dominated by industries in plastics, foam and rubber products industrial group with a percentage share of 58.5% while those that subcontracted manufacturing and distribution as well as manufacturing and technical development were dominated by industries in food, beverage and tobacco industrial group with 23% and printing, paper and publishing with a percentage share of 18.5% respectively as was shown in figure 6.



**Figure 6:** Percentage distribution of industrial groups that subcontracted more than one industrial activity

**Source:** Authors computation

This study has been able to show the industrial activities subcontracted by industries. The study found that industries subcontracted more of manufacturing activities to other industrial activities engaged by the surveyed industries. While manufacturing activities accounted for 50% of the activities, technical development accounted for 2%. Manufacturing activities here involved the production of finished products which usually consist of parts and



components of a product. This from our observations was due to lack of capacity and the need for industries to focus on their core competence. Industries were also found to be more inclined to subcontracting maintenance activities in the study. Maintenance activities involved routine services of machines, equipments and parts which the industries lacked the capacity to handle in-house. The study also showed that while all the surveyed industries in the different industrial groups subcontracted at least one industrial activity among them, some industries was found to subcontract more than one industrial activity. This corroborates the work of Sadhukhan & Basu Roy (2008), which found that activities subcontracted in IT industries “span from software production and manufacture, product services, and maintenance services”. These actions enable the IT business to achieve not just cost savings, but also agility in developing solutions, access to new resource pools, the capacity to use the power of scale, improved operational efficiency, and, most importantly, enhanced quality.

For instance, Industries that subcontracted manufacturing and maintenance activities to other industries were dominated by industries in plastics, form and rubber products industrial groups while those that subcontracted manufacturing and distribution as well as manufacturing and technical development were dominated by industries in food, beverage and tobacco industrial groups as well as printing, paper and publishing industries. These industries were found to lack the capacity to pursue these activities in-house. These industries rather than create the processes that would lead to these activities being handled within the industries, outsourced them to other industries with such capacities while they concentrate on their core competence. This signifies that, there is no definite pattern to production subcontracting both in terms of types of production subcontracting engaged by the industries and in terms of the industrial activities to be subcontracted. This in other words means that what to subcontract and the type of subcontracting to engage in entirely depend on the management decisions of the individual industries. This further confirm or lay credence to the work of Alarape (2007) which found that there is no clear structure and model for both subcontracting and networking in the Nigerian industrial sector.

## **5. CONTRIBUTIONS TO SCIENTIFIC COMMUNITY AND FUTURE RESEARCH**

This study has showed that production subcontracting is a key strategy for industrial operations. This strategy involves the disintegrations of industrial activities from one industry to another so as to increase flexibility among the industrial system. This has the potentials to stimulate other industries in other parts of Nigeria and Africa as a whole to systematically inter-relate in carrying out their businesses for greater effectiveness. This study however was concentrated on one part of Anambra State Nigeria. This means that the finding made in this study cannot be used to assess production subcontracting and the distribution of industrial activities in all parts of Nigeria. The study also concentrated on industries engaged in subcontracting. This also means that very little is known about industries that do not engage in subcontracting of industrial activities. It is therefore important that further studies in this area of research examine the use of subcontracting by industries in other parts of Nigeria as well as the activities of other industries that are not engaged in subcontracting. These studies will not only allow for comparisons, it will also show other forms of production relationships engaged by industries in the Nigeria.

## **6. CONCLUSION**

This study has shown that industries in Onitsha metropolis subcontracted a wide range of industrial activities. These activities ranged from manufacturing, maintenance, technical development to distribution/marketing and information system management. While some industries in some industrial groups subcontracted one industrial activity, other industries subcontracted more than one industrial activity. The outcome of this study also showed that production subcontracting in Onitsha metropolis, Anambra State is a viable strategy for industries across space. Consequently, the present study would encourage many potential industries in the study area to

systematically inter-relate in carrying out their businesses for more effectiveness as no industry wants to be monotonous and bear the burden and risk of production alone. This study therefore recommends that production subcontracting be made a deliberate industrial policy in the country. This is to help propel the establishment of subcontracting and service industries which will not only help in servicing the already established industries; it will also encourage business collaborations as well as opportunities from foreign industries in Nigeria.

## 7. FUNDING

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