

Occupational Vat Dyeing Practices in the Kano Metropolis of Nigeria Part 4: Challenges and Prospects

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ABSTRACT

Indigo dyeing is far from thriving in Nigeria and therefore youths in Kano metropolis including traditional indigo dyers of “Kofar Mata” follow the trend of dyeing textiles with synthetic vat dyes and chemicals. Currently, competition with the Chinese and high cost of chemicals are likely to render over 30,000 dyers and traders jobless. The aim of the research is to determine the challenges and prospects of vat dyeing occupation in Kano metropolis, Nigeria. A structured questionnaire was administered among 1387 dyers selected purposively together with focus group discussions with dyers and vendors from ‘Kantin-Kwari’ cloth market. Findings revealed that among the challenges faced by the dyers, lack of capital, high cost of production, low patronage and competition with imported textiles are more prevalent. The dyers believed that the venture/occupation was lucrative before the 3rd quarter of 2015 basically because the Country’s economy was better and there was little or no competition with the Chinese in the dyeing business as at that period. Most of the dyers can dye over 20000 yards (> 18288 m) of fabric weekly as at then but the number has reduced to not more than 400 yards (not >365.76 m) at present due to the current economy and foreign competition. The dyers believe that government can help revive the dyeing occupation especially by improving the economy and banning importation of coloured textiles which will otherwise subject them to the same fate as traditional indigo dyers.

Keywords: vat dyeing, challenges, prospects, Kano metropolis, cloth vendors

INTRODUCTION

It is widely recognized that Small and Medium Enterprises (SMEs) play dynamic role in enabling economic growth, poverty alleviation, employment and wealth creation for equitable distribution of income and increased productivity (Igwe *et al.*, 2018). In most countries including developed nations such as Japan, USA, UK etc., SMEs account for more than half of the total share of employment, sales, and contribution to GDP (Ogbo and Nwachukwu, 2012). Productivity in the informal sector of typical African countries ranged from 29 % GDP in South Africa, 60 % in Zimbabwe, 34 % in Kenya, 43 % in Uganda, and 75 % in Nigeria. According to International Labour Organization (2014a), SMEs have the potential to contribute significantly to the social and economic progress of workers and communities. In the developing regions, self-employment which constitutes a greater share of informal employment (non-agricultural) represents nearly one third of total non-agricultural employment in Sub-Saharan Africa. The manufacturing sector in Sub-Saharan Africa is dominated by very small and informal

enterprises and majority of them grow only when they are young and because of this lack of growth, the job creation falls short of what they are expected to achieve (Sonobe *et al.*, 2011). Business environment in Africa is affected by some institutional barriers such as: ineffective credit and finance system; corruption, political instability and inefficient legal system; lack of quality education; poor infrastructure; religion; tradition and customs (Igwe *et al.*, 2018).

Studies have shown that Micro, Small and Medium Enterprises (MSMEs) have the propensity to drive the Nigerian economy where over 17 million MSMEs employed about 31 million Nigerians and also accounted for more than 80 % of all enterprises (Afolabi, 2015). Their contribution to the total industrial employment in the country was estimated at 70 % and total manufacturing put at 10-15 % (Ogbo and Nwachukwu, 2012). Most SMEs in Nigeria die within the first 5 years of existence, a few go into extinction between the 6th and 10th year while only about 5-10 % survive, thrive and grow (Agwu and Emeti, 2014; Aremu and Adeyemi, 2011). Factors responsible for premature death of

SMEs in Nigeria include: insufficient capital, infrastructural inadequacies, lack of proper book keeping, lack of proper records or no records at all, inability to separate business and family or personal finances, inability to distinguish between revenue and profits (Agwu and Emeti, 2014), lack of focus, lack of succession plan, inexperience, and lack of business strategy (Aremu and Adeyemi, 2011).

Since the mid-1980s there has been an increased commitment of government to entrepreneurship development especially after the introduction of Structural Adjustment Program (SAP) in 1986, and the establishment of National Directorate of Employment (NDE), National Open Apprenticeship Scheme (NOAS), the Small and Medium Enterprise Development Association of Nigeria (SMEDAN) (Afolabi, 2015), Nigerian International Development Bank (NIDB), Nigerian Export-Import Bank (NEXIM), Nigerian Bank of Commerce and Industry (NBCI), National Economic Reconstruction Fund (NERFUND) (Ogbo and Nwachukwu, 2012), and Bank of Industries (BI) among others. In classifying SMEs, 3 parameters are generally applied by most countries singly or in combination namely capital investment on plant and machinery, number of workers employed, and volume of production or turnover of business. Within the Nigerian context, roadside artisans, petty traders, pure/bottled water producers, bakers, local fabricators (regarded as micro enterprises) constitute part of SMEs (Aremu and Adeyemi, 2011).

Artisanal indigo dyeing using different plant species has been practiced in Europe, west Africa, central Asia and America (Mcfoy, 2008). Artisans use natural indigo in Japan (Yoshioka, 2010; Aino *et al.*, 2018), China (Zhang *et al.*, 2016; Li *et al.*, 2019), Korea (Park *et al.*, 2012; Shin *et al.*, 2019), India (Gilbert and Cooke, 2001; Clark *et al.*, 1993) and Mexico (Mcfoy, 2008) among others. Natural indigo dyeing has been an art in many African countries including Egypt (Byrne, 1981), Gambia (June, 2000), Ghana (Abas, 2014; Asmah and Sherifatu, 2016), Sierra Leone (Mcfoy, 2008), Guinea (Ringuede, 2016), Morocco (Alouaniet *al.*, 2016) and Nigeria (Owoeye, 2014; Ezeanya-Esiobu, 2019) to mention a few. Two important events had disrupted the field of traditional indigo dyeing globally; the production of synthetic indigo in 1880 and the development of sodium dithionite (Vuromaet *al.*, 2008). Economic penetration of textile market by China and the wave of terror and insurgencies led by Boko

Haram in Nigeria had negative impact on occupational dyeing in West Africa (Ringuede, 2016). Until now, little work has been done to examine the challenges and prospects of the dyeing occupation in Kano metropolis. Previous studies investigated occupational dyers elsewhere (Amubode, 2009; Selaseet *al.*, 2019; Asmah and Sherifatu, 2016; Acquah and Oduro, 2012).

Kano metropolis was selected because the ancient city has attracted historical prominence since the 14th Century with its fine indigo dyed cloth (Ezeanya-Esiobu, 2019) and currently there are many secondary dyeing units in the area that are engaged in hand dyeing using synthetic vat dyes. Large population and abundant markets enable huge patronage of the services offered by the dyers. The study will contribute in addressing the fundamental question: what are the challenges and prospects of occupational vat dyeing in Kano metropolis? The study will focus on dyers using synthetic vat dyes and chemicals.

MATERIALS AND METHODS

Study Area

Kano metropolis is the second largest industrial and commercial centre in Nigeria after Lagos and it has experienced rapid population growth rate. Its population is 1.6 million in 2000, 2.3 million as at 2003, 2.8 million in 2006 (Balogun *et al.*, 2020), about 3.5 million as at 2014 (Weber *et al.*, 2017) and is projected to reach about 5.7 million by 2025 (Abdullahi *et al.*, 2019). It is bordered by Madobi and Tofa Local Government Areas to the South West, Gezawa to the East, Dawakin Kudu to the South East, and Minjibir on the North East (Balogun *et al.*, 2020). Kano metropolis covers the whole of Dala, Gwale, Fagge, Nassarawa, Kano Municipal, Tarauni and parts of Kumbotso and Ungogo Local Government Areas (Liman, 2015). It lies between Latitude 10° and 12°N and longitude 8° and 9°E, covers an area of 600 km² with an altitude of 488 m above sea level (Suleiman *et al.*, 2020).

In pre-colonial time, Kano city exported leather, dyed cloth and plain-woven fabric because the people were astute entrepreneurs who managed workers with skills in tanning, dyeing, weaving, and metal work which is highly developed (Afolabi, 2015). In contemporary northern Nigeria, Kano provides a stable continuous market for both manufactured and semi-processed goods. There are many privately owned SMEs in the metropolitan area producing textile, tanned leather, foot wears, plastics, cosmetics, foods and

beverages etc. located in Bompai, Sharada (phase I, II and III), Challawa or Tokarawa industrial estates (Tanko and Idris, 2013).

Indigo dyepits are located at various locations in Kano Metropolis namely the ones in Kofar Mata which is the most organized and dyepits in *Zage, Dala, KarofinGangamau* (Barau, 2007), *Kankarofi, KarofinSudawa, and KarofinKwalwa dye pits* which are out of business. Before its decline, indigo dyeing also flourished at Rano and Kura towns in the southern and central Kano respectively. Kofar Mata, located in the ancient city of Kano and renowned for traditional indigo dyeing, has been discovered and documented by the famous Moroccan Traveller ibn Batuta in the 14th Century even though it was not officially opened until in 1498. It is a landmark for some of the country's earliest export which played a significant role in the economic growth of Kano (Jakobsen, 2016). According to Flynn (2007), on a good day, one of the 60 dyers working at Kofar Mata could earn ₦2000 (\$5.17) for dyeing 5 garments. It is still open for trade although most of the pits are filled with waste and out of use. Thus, the dyers had to follow the modern trend of dyeing with synthetic dyes and chemicals. "KantinKwari", a 2nd generation international market established in 1934 (Ibrahim, 2015), provides a significant demand for the locally dyed materials. For the purpose of this study, the respondents are called "dyers", non-industrial dyeing units are referred to as dyehouses, and traders in 'Kantin-Kwari' cloth market are called cloth vendors.

Data Collection and Analysis

The research relied on primary data gathered through a structured questionnaire and focus group discussions. A structured questionnaire was developed according to standard protocol for questionnaire design and testing (Geer et al., 2006) and questions were developed as a result of insight from Johnson (1999). The validity of the coverage of questions included in the questionnaire (content validity) was gained through experts in the field, colleagues as well as members of the target population. Reconnaissance visits were made in June, 2020 to locate the dyers and cloth vendors. The developed questionnaire was pretested in a pilot study among the dyers that did not participate in the study and during the reconnaissance visits. Variability in dyers response and the understanding of question content (face validity) was evaluated and this information was used to produce a revised final version of the questionnaire, specifically

questions were added where content coverage was lacking and questions were rephrased where understanding was vague. The questionnaire was prepared in English but was communicated to the dyers in their local dialect (Hausa).

This part of the series covered 12 questions in 1 section which dealt with the challenges and prospects of the dyeing occupation (e.g. challenges faced by the dyeing enterprises, period that the occupation was more lucrative, quantity of material that can be dyed in the past and at present time, what government can do to revive the dyeing occupation etc.). The research population is the total number of occupational dyers in Kano metropolis where participating dyers were chosen as a purposive sample. A total of 1387 questionnaires were administered in 20 dyeing units (geographical locations of the dyehouses are shown in part 1 of the series) where willingness to participate in the study was confirmed through completed consent form. Dyers who are at least 18 years of age and had worked for at least 5 years in the dyehouses were eligible to participate in the study. Data was collected from August to December, 2020, with the dyers working, through self-completed questionnaire by the researcher and 2 enumerators over a duration of 25-30 minutes with each dyer being asked the same question in the same order. A monetary incentive of ₦3000 (\$7.75) was provided for participation due to initial reluctance to participate because according to the dyers, the Chinese used similar approach to learn their techniques. Before initial data screening all the completed questionnaires were coded and entered in Excel software after which the data were analysed by descriptive statistics (frequency) using SPSS version 26.

Additional information was obtained from focus group discussion with the researcher, assistant researcher and 7 dyers, 1 from a dyehouse in each of the 7 local government areas (Nassarawa was not represented) and with 5 cloth vendors separately in December, 2020 at Senior Secondary School Rumfa College, Kano and KantinKwari cloth market respectively. The focus groups were selected by purposive sampling technique. Two key informants were used in the study. Aliyu Umar, a wholesale colour vendor, whose nature of business permits him to know the major dyers in Kano metropolis as well as cloth vendors in the market, and Mallam Haruna Baffa who has valuable information being the Secretary of "Kofar Mata" dyers Association coupled with his exposure having attended numerous

exhibitions of Africa by Design namely Ghana (2016 and 2019), Dubai (2017), London (2018), United States (2019) and Abuja (2020).

Focus group discussion with the dyers centred on a short list of 3 open-ended questions namely the challenges of the occupation, how the business declined, and prospect of the dyeing job while discussion with the cloth vendors centred on 2 open ended questions including how the dyers are paid for their services and customers' preference

RESULTS AND DISCUSSION

Challenges of the Dyeing Occupation

As shown in Figure 1, the dyeing occupation is threatened by numerous challenges among which the major ones in order of proportion are limited capital, high cost of production, low patronage,

to imported and locally dyed materials. Focus group discussions were audiotape-recorded so that reference could be made to the remarks of the participants in order to ascertain common themes. Discussion with the dyers lasted for 2 hours while that with cloth vendors lasted for 1 hour. Discussion was recorded using paper and pencil. Dollar exchange rate has fluctuated considerably between 2020 till date. (exchange rate of ₦386.96 per US\$ as at 30th August, 2020 was used where dollar equivalent is given in the text).

competition with foreign dyed cloth, and insecurity. Other challenge, which is of high proportion is credit owed by cloth vendors. Training problems, occupational hazard, variability in cost of services, and decline in local fabric production appear to be relatively less significant.

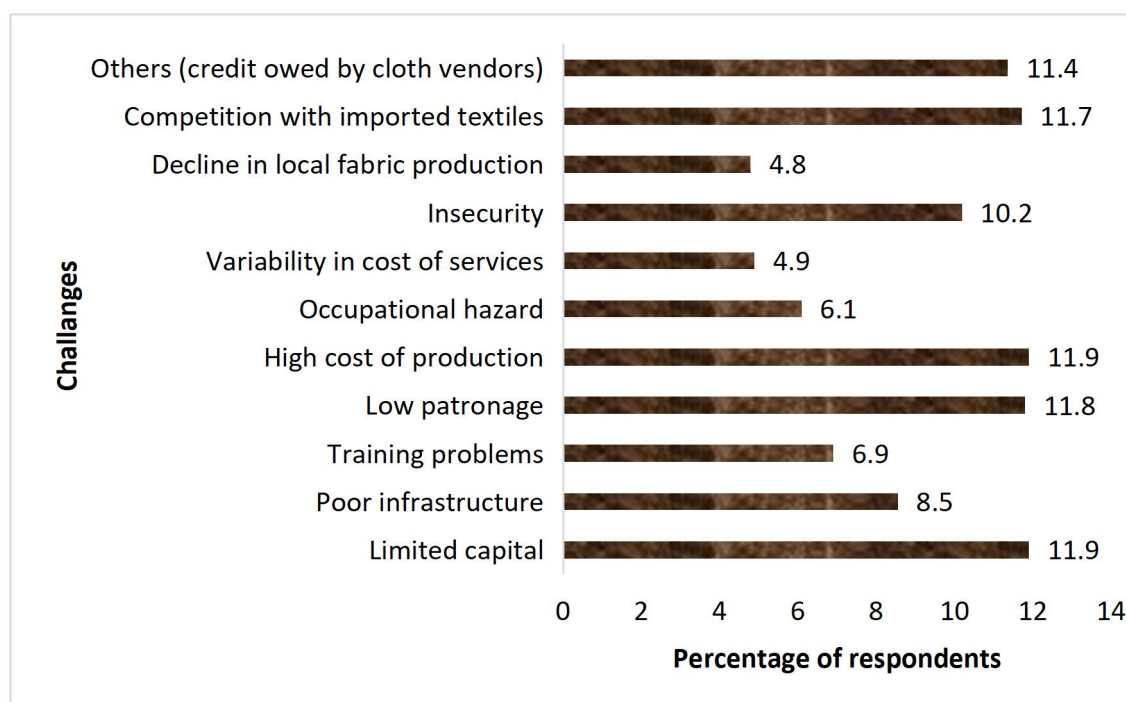


Figure 1: Challenges of the dyeing enterprises

Limited of capital

Limited capital is a major challenge confronting the dyers even though the venture requires low capital investment as reported in part 2 of the series. Similarly, Selase et al (2019) reported that lack of capital is the major reason for the decline of batik and tie-dye centres in Ghana. Also, according to Agwu and Emeti (2014), poor financing constitutes a big problem in the performance of majority of SMEs in Nigeria. The dyers revealed that they need money to be able to complete the work collected from cloth vendors since in most cases the advance payment received

is not sufficient. They also wish to own stalls along the streets of "KantinKwari" cloth market for selling dyed materials which is capital intensive. According to them, they do not have access to credit due to lack of collateral neither do they get financial support from Government or any other organization. We reported in part 1 of this series that the dyeing enterprises were informal and do not enjoy secure property rights which deprives them of access to both capital and credit.

High cost of production

High cost of production is also a major challenge to the dyeing occupation. We reported in part 2 of the series that vast majority of the dyes and chemicals used are imported from China where their costs have increased about 5 times from 2015 to date and that most of the dyers purchase 25 L of borehole water at ₦30(\$0.077) and tap water at ₦50(\$0.129) from vendors. This will invariably add to the cost of dyeing considerably due to high water consumption. The dyers revealed that cost of dyes and chemicals, water, fuel, calendering and stipend paid as labour make it very difficult for them to break even especially due to the fact that there is very little increase in cost of services. Similarly, according to Afolabi (2015) and Ogbo and Nwachukwu (2012), over dependence on imported raw-materials is a problem to SMEs. High cost of production was also found to be a challenge to batik and tie-dye centres in Ghana (Selase *et al.*, 2019).

Low patronage

The dyers disclosed that majority of customers coming from Niger, Chad and Cameroun were lost due to Boko Haram insurgency and also poor economy has resulted in many customers not being able to afford their services. According to them, presently, many people change their mode of dressing to western style contrary to mostly using 'Caftan', 'Bubu', 'Buba' etc. in the past (see part 2 of the series). Similarly, change in fashion trend where people see anything western as modern is one of the reasons for the decline in indigo dyeing in Africa (Mayusoh, 2015) and nowadays, most Nigerians have developed a high propensity for the consumption of foreign goods as against their locally made substitutes (Agwu and Emeti, 2014). Similarly, locally dyed fabrics that used to be the toast of many people in Ghana now appeared to have gone out of fashion as the popularity of western clothes has grown over the years (Selase *et al.*, 2019). Decline in local dyeing in Ghana was also attributed to low patronage (Asmah and Sherifatu, 2016; Selase *et al.*, 2019). Cloth vendors disclosed that their customers prefer locally dyed materials as it takes longer time to fade. According to them, the customers are sometimes compelled to buy imported dyed materials due to availability of designs which may not be found locally. This is attributable to Chinese competitive advantage discussed in part 2 of the series.

Competition with imported textiles

We reported in part 2 of the series that at the peak of the dyeing business in 2015, the Chinese started bringing similar dyed cloth to 'Kantin-

Kwari' which are sold at the outskirts of the market and that on the 14th of May, 2015, thousands of local fabric dyers staged a demonstration against the importation of Chinese textiles and engagement of the expatriates in retail sale of dyed fabrics in the Kano market. This also appears to be the case in Egypt where an influx of Chinese goods has swamped local production, and in Zambia and Zimbabwe where there has been riots against Chinese merchants and products (Eisenman, 2012). This is also in line with the findings of Ringuede (2016) that Chinese manufacture synthetic textiles reproducing a variety of traditional designs and keeping the counterfeit for sale in the region where they are usually produced, directly competing with the local cloth dyers. Nigeria was China's 2nd largest trading partner in Africa, after South Africa, and importation of manufactured textiles from China have undermined both hand and mechanized textile production in the country which endangers the self-sufficiency of the people (Enejiet *et al.*, 2012). Similarly, influx of Chinese textiles threatened local textile dyeing industries in Abeokuta, Nigeria, making it difficult for the industry to compete favourably in the local market (Amubode, 2009).

Credit owed by cloth vendors

We reported in part 1 of the series that the dyeing occupation employs many youths with different job specifications including marketing which involves getting job from the market and also reported in part 2 that cloth vendors are next to customers from the neighbourhood in terms of patronage. The dyers and cloth vendors disclosed that the latter pay only 40-50 % of the charges as advance payment to the former and due to increasing cost of raw-materials, calendering etc. the money is usually inadequate for the dyers to complete the job and have to owe for either dyes and chemicals or calendering or payment of jobbers. According to the dyers, cloth vendors, in most cases, feel reluctant to pay the balance when the job is completed where some of them offer clothes equivalent to the money they owed. This default in payment will naturally affect business relationship between the dyers, jobbers, colour vendors etc. which may cripple the dyeing venture. Similarly, default in payment by clients has been reported as a challenge to Ntonso local dyers in Ghana (Acquah and Oduro, 2012).

Insecurity

We reported in part 2 of the series that some of the dyers have customers from other states in Nigeria and from neighbouring African countries

namely Niger, Chad and Cameroun. The dyers disclosed that insecurity threatens the dyeing occupation because the number of foreign customers buying the dyed materials in the market has drastically reduced thus the demand for their services has declined. According to them, Ethnoreligious violence and Boko Haram insurgency are the causes of the problem. It is known that there have been many outbreaks of bloody violence between communities since the return of democracy in 1999 such as the riots in the urban centres of Kaduna and Kano (Walker, 2012). Boko Haram is a Hausa language nickname given by outsiders meaning “western education is forbidden by Islam”. The jihadi group pledged allegiance to the Islamic State in March, 2015 and has killed many people in Nigeria, Niger, Chad and Cameroun (Thurston, 2016) resulting in the loss of significant number of trading partners in the dyeing business. Currently, banditry is also a mitigating factor in the dyeing venture.

Poor infrastructure

The dyers revealed that their infrastructural challenge includes wastewater disposal problem due to lack of proper drainage, lack of water, and inadequate space for the dyeing job. We reported in part 2 of this series that the dyers work in the neighbourhood of residential houses and that water is mostly purchased from vendors. Some of the dye houses do not have drainage at all while the available drainages are usually shallow and stagnate wastewater. Similarly, a local newspaper reported that residents of Kano metropolis lamented on lack of drainage on the streets of the city (Murtala, 2018). Informal enterprises have limited or no access to public infrastructure and infrastructural inadequacies such as water etc. are serious problems to SMEs (Agwu and Emeti, 2014).

Training problems

The dyers disclosed that in the past, politicians have organized several training sessions involving various entrepreneurial skills (including dyeing) among selected individuals as a reward for loyalty. According to them, the training usually last for few days after which money is shared as capital to set up business related to the skill acquired. It was also revealed that none of the beneficiaries has ever opened a dyeing venture and that no occupational dyer has ever been recruited. In contrast, government and non-governmental organizations have trained and continue to train people in the making of batik and tie-dye in Ghana in an attempt to create employment and

alleviate poverty (Selase *et al.*, 2019). We reported in part 3 of this series that the dyers lack technical chemistry background and will therefore require training to improve on the technical know-how of vat dyeing processes. Similarly, lack of technical know-how and training were reported as challenges facing Daboya local dyeing industry in Ghana (Asmah and Sherifatu, 2016).

Occupational hazard

Hazard due to dye and chemicals is of great concern in dyeing industries hence several safety measures including the use of personal protective equipment are put in place. The dyers revealed that occupational hazard is not a serious problem to them because they tend to become resistant to inhalation of chemicals and believe that eating meat and drinking milk immediately after the dyeing process suppresses the effects. According to them, some have suffered work related symptoms as well as chemical burns due to spills and splashes. Typically vat dyes have carcinogenic health effects (Asgher *et al.*, 2008) and certain vat, reactive and disperse dyes are recognized as skin sensitizers. Most of the dyers use protective hand glove, protective boots, and polyethene skirt but rarely use nose guard/face mask. It has been reported that annually, occupational accidents and work-related diseases caused over 2.3 million fatalities, out of which over 350,000 are caused by occupational accidents and close to 2 million by work related diseases

Variability in cost of services

The dyers reported that, nowadays, it is typical of youths to start working as apprentice and suddenly decide to start their own business without completing the training. They disclosed that their apprentices just stay for a few weeks learning the job and running errands either to buy chemicals, collect materials from or deliver finished goods to cloth vendors. Such apprentices quit the job that is supposed to last for at least 3 years and open their own dyehouse competing directly with the local market and delivering poor quality services. The cloth vendors use this opportunity to reduce cost of dyeing in their favour and this ultimately brings about variation in cost of services which affects the profit that could be made after a good quality job. For this reason, an experienced dyer may have no choice but to accept a meagre amount and reduce the dyeing quality.

Decline in local fabric production

The dyers revealed that due to limited number of textile manufacturing companies hence limited availability of locally produced fabric, currently, both availability and cost of white undyed fabric is determined by the Chinese. Similarly, according to Renne (2015), by 2012, most of the textiles sold in “Kantin Kwari”, are imported from China. Formally, Nigerian textile industry was the 3rd largest in Africa after Egypt and South Africa and was the largest employer of labour in the manufacturing sector where it accounted for about 25 % of total manufacturing employment (Eneji *et al.*, 2012). At present, there is serious decline in local fabric production which gave the Chinese a competitive advantage. For example, in a typical textile industry studied, production figures per meter from a weaving department has shown that about 9.6 million meters were produced in 2000 which fell to about two third and then one third in 2009 and 2013 respectively (Muhammad *et al.*, 2017) and since then the figures continue to decline.

Prospects of the Dyeing Enterprises

Occupational vat dyeing before 2015

The dyers almost entirely believed that the dyeing occupation has declined with majority of the opinion that it was more profitable over 5 years ago i.e. before the 3rd quarter of 2015 (Figure 2).

The result shows that during the period that the business was more lucrative, most of the dyers can process over 20000 yards (>21872.26 m) weekly as shown in Figure 3. Among the reasons why the business excelled in the past, better economy was found to be of greater importance followed by little or no competition with imported dyed materials as can be seen in Figure 4.

Occupational vat dyeing as at 2020

Vast majority of the dyers are of the opinion that the dyeing occupation is no longer thriving. Figure 5 shows that only 3.7 % of the dyers can dye up to 1601-2000 yards of material (1463.95-1828.8 m) in a week at present time while the majority can only dye not more than 400 yards (not >365.76 m). This indicated that the quantity of material that can be dyed weekly has declined significantly. This collaborate well with the fact that most SMEs in Nigeria die within the first 5 years of existence and only about 5-10 % survive, thrive and grow (Agwu and Emeti, 2014; Aremu and Adeyemi, 2011). Among the reasons given for the decline in dyeing rate, the dyers consider poor economy, competition with imported dyed materials, and increasing cost of inputs/raw materials to be more important as shown in Figure 6. This is in line with the major challenges mentioned previously.

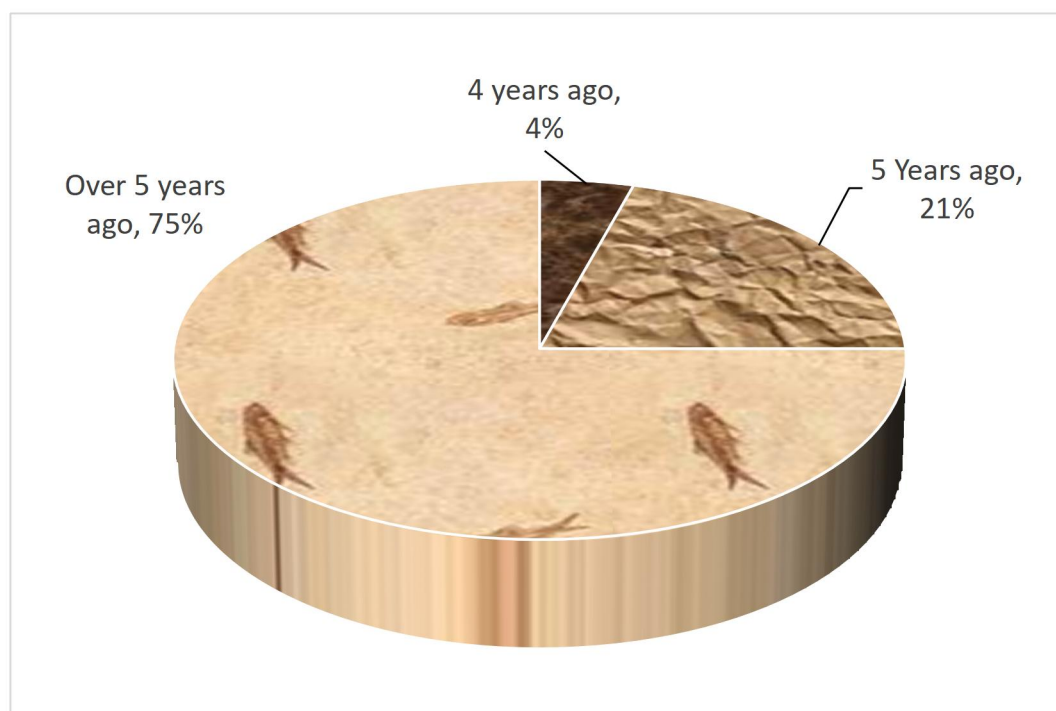


Figure 2: Period that the dyeing occupation flourished

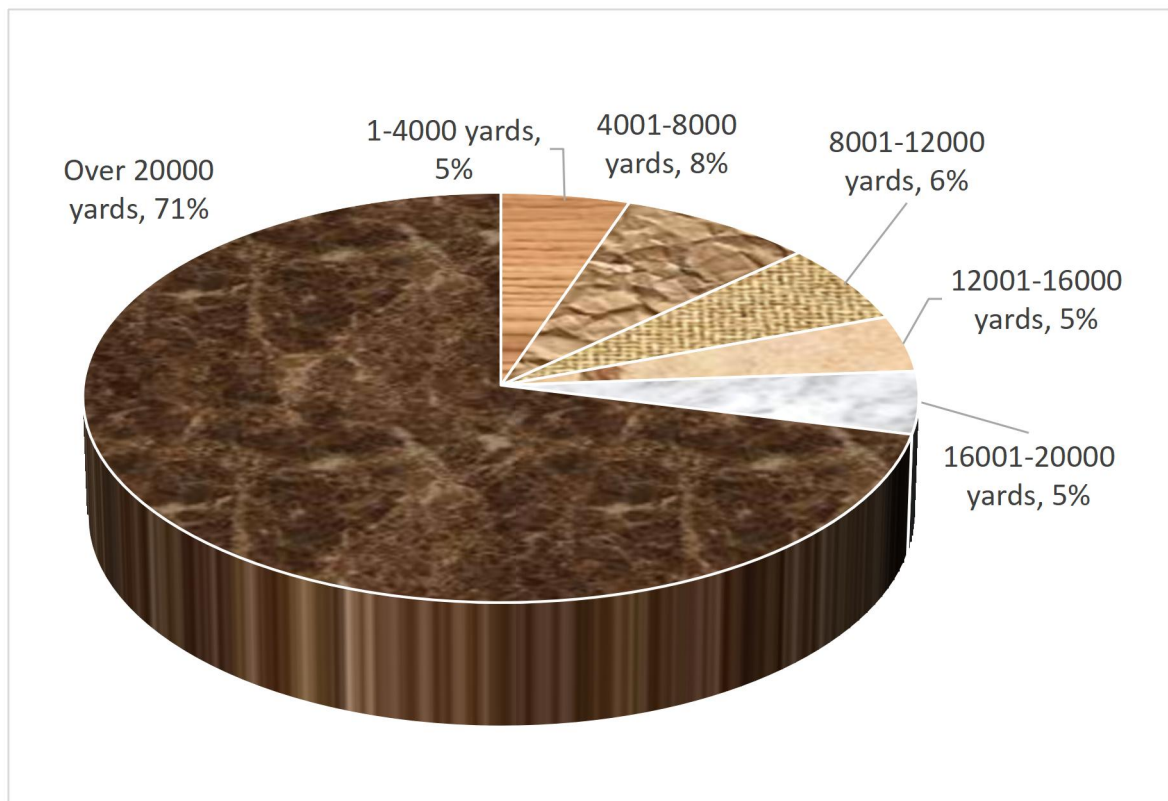


Figure 3: Weekly dyeing rate before 2015

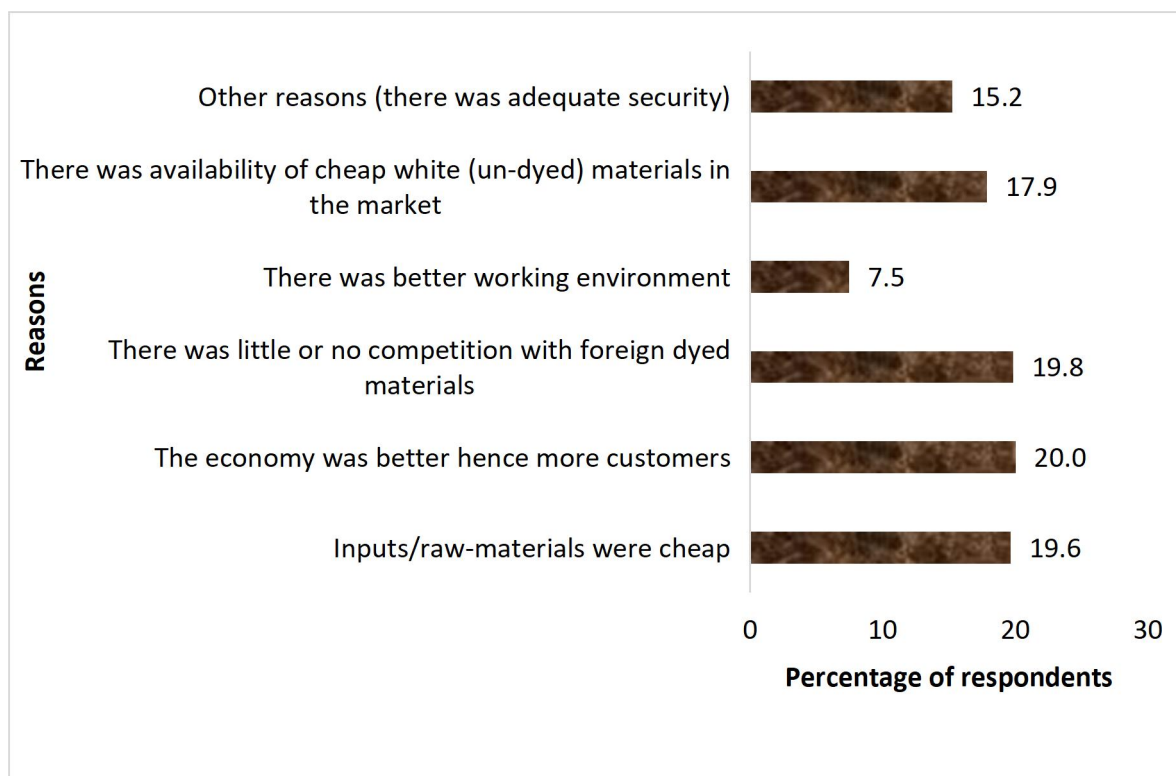


Figure 4: Reasons why the dyeing occupation blossom in the past

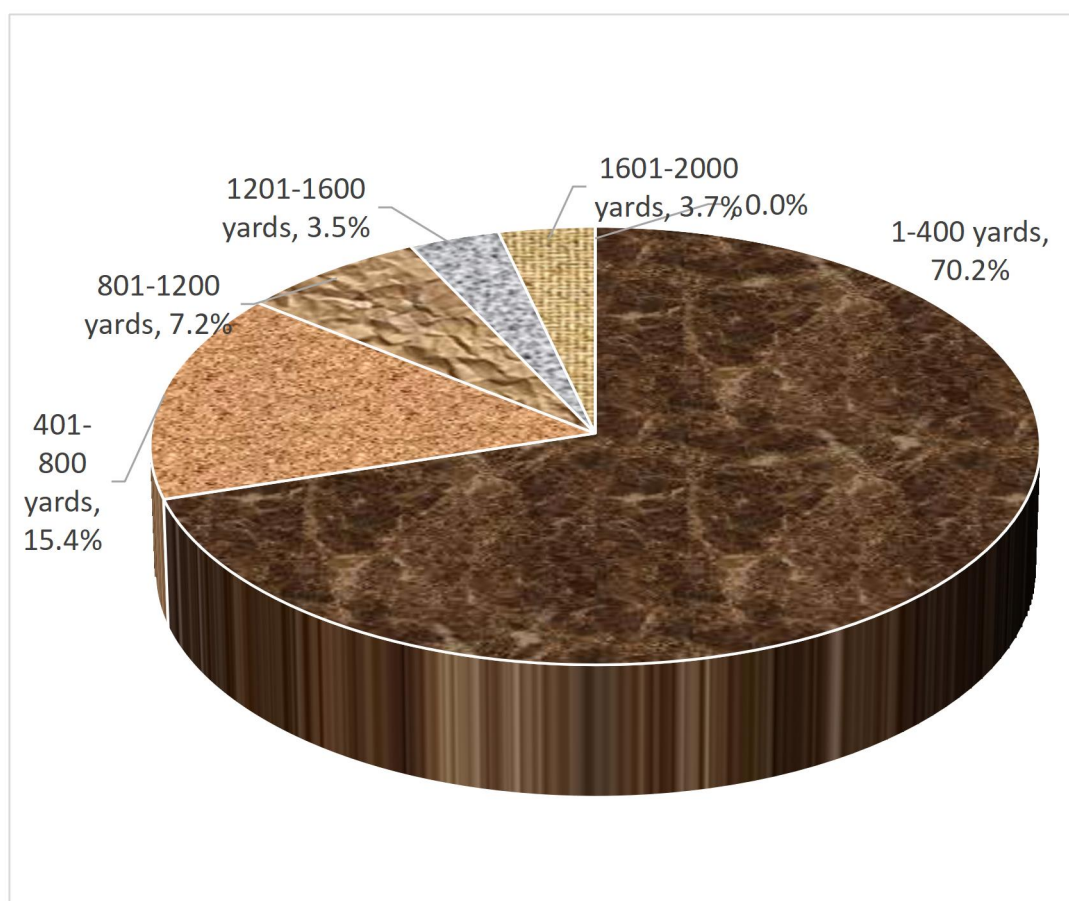


Figure 5: Weekly dyeing rate as at 2020

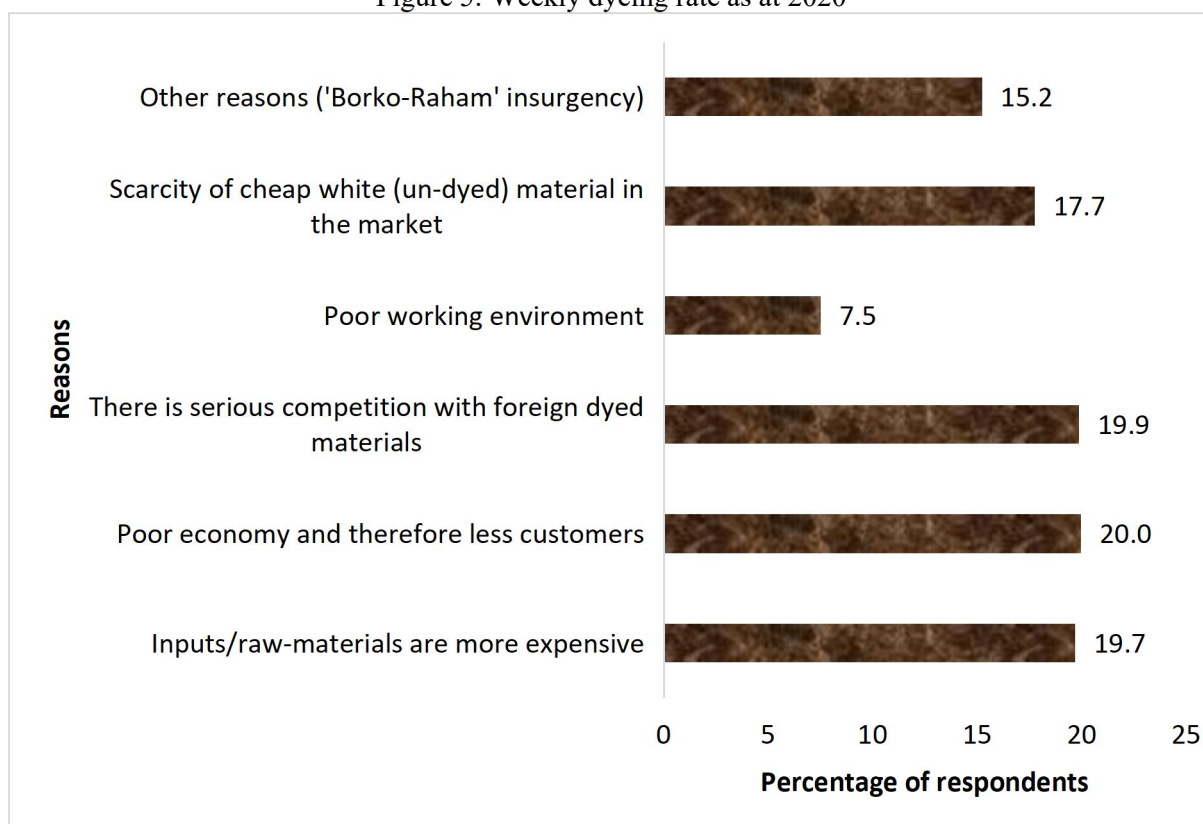


Figure 6: Reasons why the dyeing occupation declined

The role of Government

A larger proportion of the dyers believed that Government can help revive the dyeing occupation. The major support required by the dyers are for the Government to improve the economy, stop importation of coloured textiles, revive textile industries, and construct dyeing

units in the industrial areas of Kano metropolis as shown in Figure 7. The dyers constantly look for competitive advantage in order to sustain the venture. One such move is the modification of their dyeing methods e.g. “shadow” effect which is quite appealing thus attracting customers (see part 3 of the series).

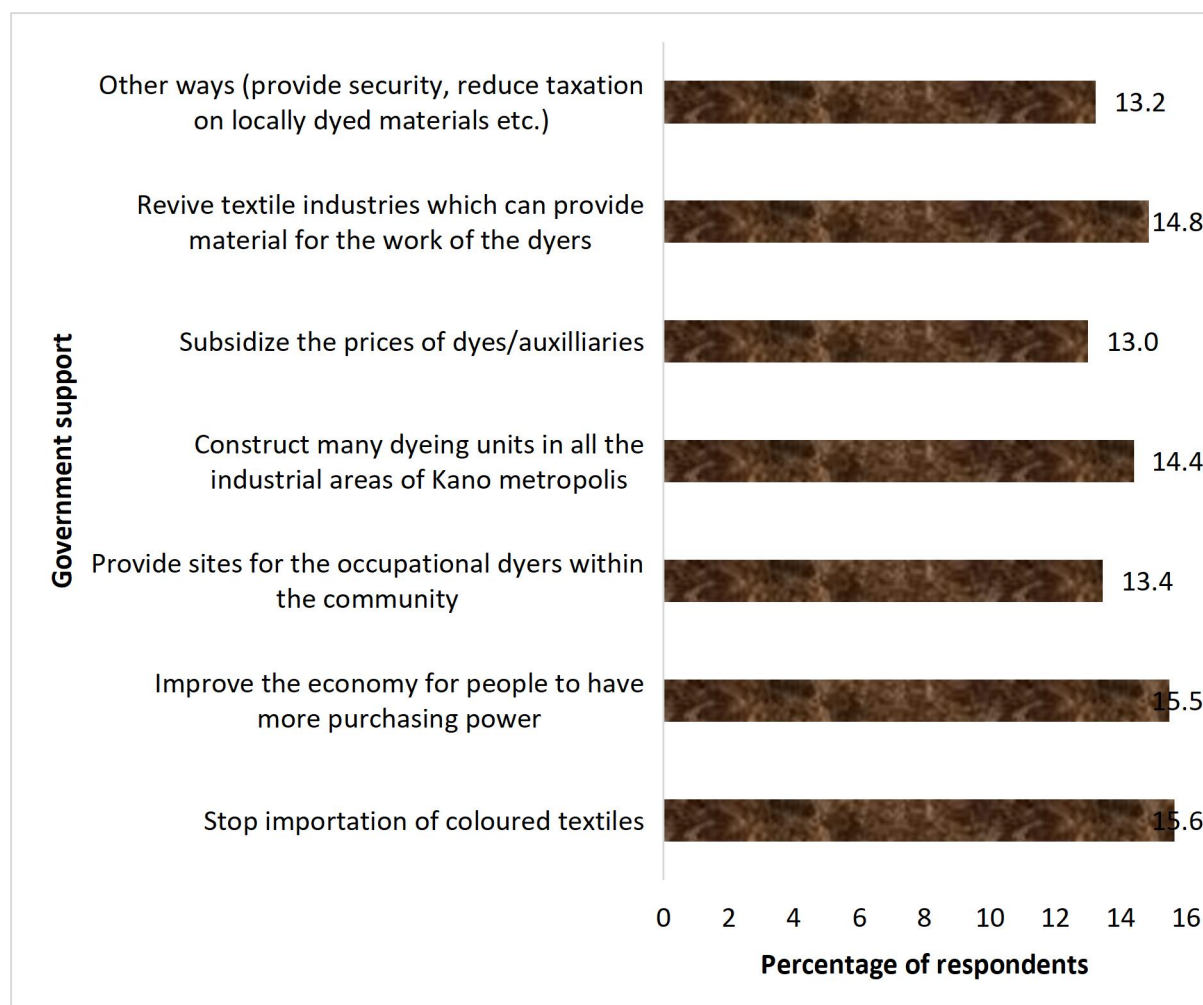


Figure 7: Government support for the revival of the dyeing occupation

Occupational vat dyeing in years to come

To speculate the future prospect of the dyeing occupation, there is need to know the reasons for the decline of traditional indigo dyeing. Vuroma (2008) has attributed the disruption of traditional indigo dyeing globally to the production of synthetic indigo and development of hydros as reducing agent enabling the dyeing process to be relatively short unlike the traditional processes. Additionally, indigo dyeing in West Africa was affected by economic penetration of

local market by China (Ringuede, 2016). In the case of Nigeria, insecurity is also a very important factor where presently, only about 10 out of 144 dye pits of “Kofar Mata” are still functional. Based on the challenges identified in this study, the modern vat dyers may have the same fate as the traditional indigo dyers and results show that when this happens, thousands of youths will be out of the business of dyeing, calendering, and colour vending, dyed materials will become more expensive, and there will be more drug addicts and hoodlums in the society as shown in Figure 8.

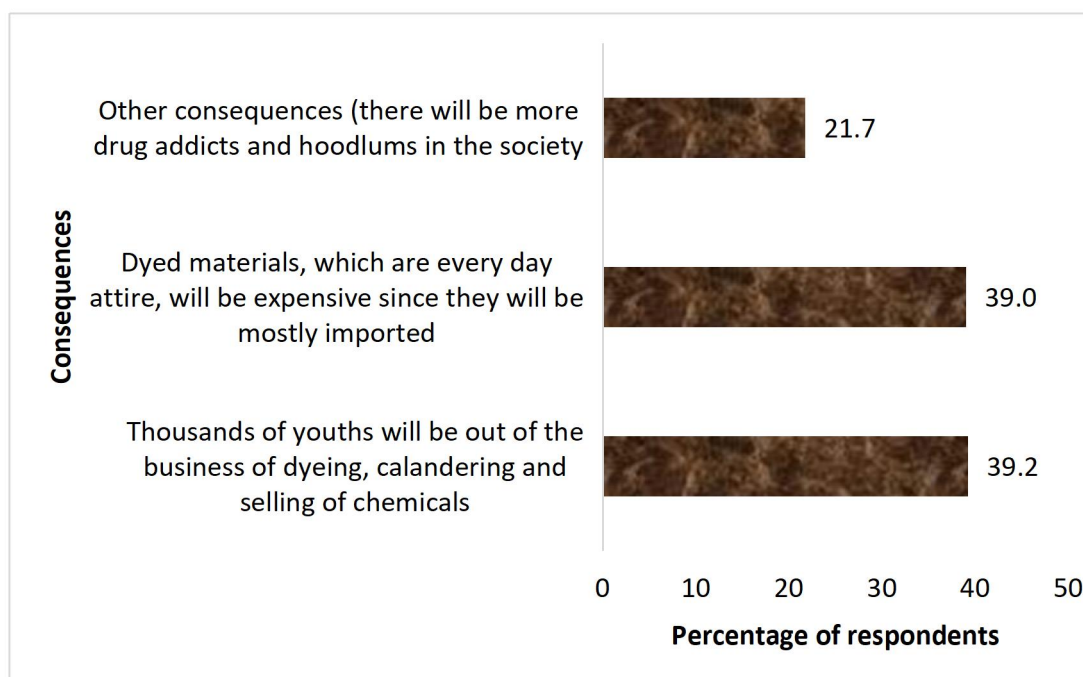


Figure 8: Consequences of the decline of the dyeing occupation

CONCLUSION

The result showed that among the challenges faced by the dyers, lack of capital, high cost of production, low patronage and competition with imported textiles were more prevalent. It was gathered that designs appealing to customers are scarce and costly when available and therefore the dyers have competitive disadvantage due to decline in local fabric production leading to overdependence on imported fabrics. Insecurity and lack of improvement on the dyeing processes can hinder the sustenance of the occupation. Majority of the dyers indicated that the dyeing occupation has flourished until it started declining in 2015 due to the Country's deteriorating economy (reducing people's purchasing power) and serious competition with Chinese textiles. Most of the dyers can dye over 20000 yards (> 18288 m) of fabric weekly before 2015 but the quantity has reduced to not more than 400 yards (not >365.76 m) at present time. The dyers need government support to revive the dyeing venture especially by improving the economy, providing security, and banning importation of coloured textiles which will otherwise subject them to the same fate as traditional indigo dyers.

The study suggests creating intervention strategies that can be implemented to sustain the dyeing occupation such as reviving textile industries thereby enabling local fabric production of fabrics and subsidizing the cost of dye and chemicals to reduce cost of production for the dyers to compete favourably. The government should tackle Boko-Haram

insurgency and banditry (ongoing) for customers coming from neighbouring African countries to return. Importation of coloured textiles should be stopped and entrepreneurship studies should be introduced into the Nigerian educational system to acquire innovations in dyeing and management skills. Furthermore, the dyers should be encouraged to become formal to be able to get capital through loans.

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REFERENCES

- Abas, S. (2014). "A comparative study of Daboya (Ghana) and Abeokuta (Nigeria) local dyeing". An un-published MSc thesis. Kwame Nkrumah University of Science and Technology, Kumasi. p40-46.
- Abdullahi, H., Sinniah, G. K, and Siong, H.C. (2019). Rapid Urban growth and land use change in Kano Metropolis, Nigeria. *International Journal of Scientific and technology Research*, 8(12), 2169-2175.
- Acquah, S., and Oduro, K. A. (2012). Traditional cloth dyeing enterprise at Ntonso: challenges and opportunities. *West African Journal of Applied Ecology*, 20(1), 25-36.
- Afolabi, A. (2015). The effect of entrepreneurship on economy growth and development in Nigeria. *International Journal of*

- Development and Economic Sustainability*, 3(2), 49-65.
- Agwu, M. O., and Emeti, C. I. (2014). Issues, challenges and prospects of small and medium scale enterprises (SMEs) in Port-Harcourt city, Nigeria. *European Journal of Sustainable Development*, 3(1), 101-114.
- Aino, K., Hirota, K., Okamoto, T., Tu, Z., Matsuyama, H., and Yumota, I. (2018). Microbial communities associated with indigo fermentation that thrive in an aerobic alkaline environment. *Frontiers in Microbiology*. 10.3389/fmicb.2008.02196.
- Alouani, I., Idrissi, M. O. B., Draoui, M., Bouatia, M. (2016). Review: from screening to application of Moroccan dyeing plants: chemical groups and botanical distribution. *International Journal of Pharmacy and Pharmaceutical Sciences*, 8(10), 21-31.
- Amubode, A. A. (2009). Strategies for economically sustainable resist dyeing industries in Abeokuta, Ogun State, Nigeria. Unpublished PhD Thesis. University of Southampton, Winchester England.
- Aremu, M. A., and Adeyemi, S. L. (2011). Small and medium scale enterprises as a survival strategy for employment generation in Nigeria. *Journal of Sustainable Development*, 4(1), 200-206.
- Asgher, M., Batool, S., Bhatti, H. N., Noreen, R., Rahman, S. U., and Asad, M. J. (2008). Laccase mediated decolourization of vat dyes by *coriolus versicolor* IBL-04. *International Biodeterioration and Biodegradation*, 62, 465-470.
- Asmah, A. E., and Sherifat, A. (2016). Deficiencies and decline of Daboya local dyeing industry in Ghana. *ADRRI Journal of Arts and Social Sciences*, 4(2), 35-50.
- Balogun, D. O., Abe, G. O., Ibrahim, A., Ibrahim, B. K., Auta, U. S., and Adgidzi, J. A. (2020). Spatial distribution of groundwater quality using GIS in Kano Metropolis, Kano State, Nigeria. *Worldwide Journal of Multidisciplinary Research and Development*, 6(5), 51-58.
- Barau, A. S. (2007). The great attractions of Kano. <http://doi.org/10.13140/RG.2.1.3958.992.2>.
- Byrne, M. (1981). Indigo dyeing: past and present. *Journal of Consumer Studies and Home Economics*, 5, 219-227.
- Clark, R. J. H., Cooksey, C. J., Daniels, M. A. M., and Withnall, R. (1993). Indigo, woad and tyrian purple: important vat dyes from antiquity to the present. *Endeavour, New series*, 17(4), 191-199.
- Eisenman, J. (2012). China-Africa trade patterns: causes and consequences. *Journal of Contemporary China*, 21(77), 793-810.
- Eneji, M. A., Onyinye, I. J., Kennedy, D. N., and Rong, S. H. (2012). Impact of foreign trade and investment on Nigeria's textile industry: the case of China. *Journal of African Studies and Development*, 4(5), 130-141.
- Ezeanya-Esiobu, C. (2019). Africa's indigenous knowledge: from education to practice. In: indigenous knowledge and education in Africa. *Frontiers in African Business Research*. Springer, Singapore. p64.
- Fatai, A. (2011). "small and medium enterprises in Nigeria: the problems and prospects". Retrieved June 18 from www.thecje.com/journal/index.php/economicsjournal/article/.../8.
- Flynn, D. (2007). Ancient indigo dye pits barely survive in Nigeria. *World News*, April 26.
- Geer, L. A., Curbow, B. A., Anna, D. H., Lees, P. S. J., and Buckley, T. J. (2006). Development of a questionnaire to assess worker knowledge, attitudes and perceptions underlying dermal exposure. *Scandinavian Journal of Work and Environmental Health*, 32(3), 209-218.
- Gilbert, K. G., and Cooke, D. T. (2001). Dyes from plants: past usage, present understanding and potential. *Plant Growth Regulation*, 34, 57-69.
- Ibrahim, A. M. (2015). Evolutionary trend, spatial distribution of, and issues associated with markets in Kano metropolis. *International Journal of Physical and Human Geography*, 3(2), 9-24.
- Igwe, P. A., Onjewu, A. E., and Nwibo, S. U. (2018). Entrepreneurship and SMEs' productivity challenges in Sub-Saharan Africa. In: Dana, L. P., Ratten, V., and Honyenuga, B. Q (Eds). *African Entrepreneurship: challenges and opportunities for doing business*.
- International Labour Organization (2014a). Safety and health at work: a vision for sustainable prevention. 24-25 August, 2014-Frankfort-Germany. p9.
- International Labour Organization (2014b). Transitioning from the informal to the

- formal economy. International Labour Conference 103rd Session 2014, Report V (1). International Labour Office, Geneva.
- Jakobson, M. (2016). An introduction to the indigo dye styles of West Africa. Heddels, September 16.
- Johnson, L. (1999). Artisan enterprise baseline survey. A UNESCO study. Aid to artisans. A case study. African Enterprise Study. Mozambique.
- June, P. B. (2000). A textile enterprise as a tool of economic development: part II. *Textile Society of American Symposium Proceedings*. 768. <http://digitalcommons.unl.edu/tsaconf/768>.
- Lakshmi, U. R., Srivatava, V. C., Mall, I. D., Lataye, D. H. (2009). Rice husk ash as an effective adsorbent: evaluation of adsorptive characteristics for indigo carmine dye. *Journal of Environmental Management*, 90, 710-720.
- Li, S., Cunningham, A. B., Fan, R., and Wang, Y. (2019). Identity blues: the ethnobotany of the indigo dyeing by Landian Yao (Lu mien) in Yunnan, Southwest China. *Journal of Ethnobiology and ethnomedicine*, 15(13), 1-14.
- Liman, M. A. (2015). A spatial analysis of industrial growth and decline in Kano metropolis, Nigeria. Unpublished PhD thesis. Ahmadu Bello University, Zaria, Nigeria.
- Mayusoh, C. (2015). The art of designing fabric pattern by tie-dyeing with natural dyes. 7th World Conference on Educational Sciences (WCES-2015), 05-07 February 2015, Novotel Athens convention centre, Greece. *Procedia Social and Behavioural Sciences*, 197, 1472-1480.
- Mcfoy, C. (2008). Dyeing: indigo dyeing in Sierra Leone. In Selin, H (Ed.). *Encyclopaedia of the History of Science, Technology and Medicine*. 2nd Edition. Springer Verlag Berlin, Heidelberg, NY. p697.
- Muhammed, M. (2015). Kano residents protest presence of Chinese textiles in their market. *The Guardian*, 14th May 2015.
- Muhammad, M., Mukhtar, M. I., and Lola, G. K. (2017). The impact of Chinese textile imperialism on Nigeria's textile industry and trade: 1960-2015. *Review of African Political Economy*. <https://doi.org/10.1080/03056244.2017.1313729>.
- Murtala, A. (2018). Kano residents lament lack of drainage system. *Vanguard*, December 24.
- Nabegu, A. B. (2016). Kano State Ministry for Environment Green House, Kano: report of a study on industrial effluent situation in Kano. *Prepra Nigeria Ltd*, Kano. p11.
- Ogbo, A., and Nwachukwu, A. C. (2012). The role of entrepreneurship in economic development: The Nigerian perspective. *European Journal of Business and Management*, 4(8), 95-105.
- Oloyede, A. M., Ogunlaja, O., and Ogunlaja, A. (2014). Sub-chronic toxicity assessment of local textile 'Adire and Kampala' (Tie and Dye) effluents on Mica (*Musmusculus*). *Research Journal of Environmental Sciences*, 8(3), 142-148.
- Owoeye, O. I. (2014). The changing images and representations of adire technology in Nigerian politics. In: Falola, T., and Abidogun, J (Eds). *Education, creativity, and economic empowerment in Africa*. Palgrave Macmillan, New York. p180.
- Park, S., Ryu, J. Y., Seo, J., and Hur, H. G. (2012). Isolation and characterization of alkaliphilic and thermotolerant bacteria that reduce insoluble indigo to soluble leuco-indigo from indigo dye vat. *Journal of Korean Society and Applied Biological Chemistry*, 55, 83-88.
- Renne, E. P. (2015). The changing contexts of Chinese-Nigerian textile production and trade, 1900-2015. *Textile*, 13(3), 212-233.
- Ringuede, A. (2016). West African indigo textiles under influences. The Fouta-Djallon wrapper and the Mauritanian melhafa. *Textile Society of American Symposium Proceedings*. 1006. <http://digitalcommons.unl.edu/tsaconf/1006>.
- Selase, G. R., Divine, V., Mawuli, Q., and Bijou, A. (2019). The decline of tie/dye and batik centres in the Ho municipality of Ghana. *American Journal of Art and Design*, 4(2), 15-21.
- Shin, Y., Son, K., and Yoo, D II. (2019). Using *saccharomyces cerevisiae* strains as biocatalyst for indigo reduction. *Fibres and Polymers*, 20(1), 80-85.
- Sonobe, T., Akoten, J., and Otsuka, K. (2011). The growth process of informal enterprises in Sub-Saharan Africa: a case study of a metalworking cluster in Nairobi. *Small Business Economics*, 36(3), 323-335.

- Soyinka, O. O., Adeniyi, F. A., Ajose, O. A. (2007). Biochemical parameters of liver function in artisans occupationally exposed to “vat dyes”. *Indian Journal of Occupational and Environmental Medicine*, 11, 76-79.
- Suleiman, A. A., Ibrahim, A., and Abdullahi, U. A. (2020). Statistical explanatory assessment of groundwater quality in Gwale, Kano State, Northwest Nigeria. *Hydrospatial Analysis*, 4(1), 1-13.
- Tanko, A. I., and Idris, H. A. (2013). Trade commerce and industries. In: Tanko, A, I., and Momale, S. B (Eds), geography of the Kano region. Adonis and Abbey publishers Ltd, Abuja, Nigeria. P. 147.
- Thurston, E. (2016). ‘the disease is unbelief’: Boko Haram’s religious and political worldview. The Brooking project on US relations with the Islamic world. An analysis paper. No. 22. p7.
- Vuorema, A. (2008). Reduction and Analysis Methods of Indigo. *Astronomica-Chemica-Physica-Mathematica*. SARJASER. A1 OSA-TOM.388, TURUN YLIOPISTO, Turku.
- Walker, A. (2012). What is Boko Haram? United States Institute of Peace, Special Report. Washington DC. p1-16.
- Weber, E. M., Seaman, V. Y., Stewart, R. N., Bird, T. J., Tatem, A. J., Makee, J. J., Bhaduri, B. L., Moehl, J. J., and Reith, A. E. (2017). Census-independent mapping in northern Nigeria. *Remote Sensing of Environment*. 10.1016/j.rse.2017.09.024.
- Yashioka, S. (2010). History of Japanese colour: traditional natural dyeing methods. *Colour: Design and Creativity*, 5(4), 1-7.
- Zhang, L., Deng, K., and Wang, Z. (2016). Research on the dyeing process of Chinese traditional plant indigo based on tianmen blue calico. *Chemical Engineering Transactions*, 55, 13-18.