



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

JEL: Q00, Q01, P25, R10

Afolabi Francis Fatusin¹, Gbenga John Oladehinde²

¹Adekunle Ajasin University
²Obafemi Awolowo University
Nigeria

IMPLICATION OF ICT USE ON PRODUCTIVITY AND REGIONAL DEVELOPMENT PLANNING AMONG SMALL SCALE ENTERPRISES IN ONDO STATE

One of the reasons often cited for underdevelopment of African cities and regions is low application of smart technology to improve means of production. This often led to inefficiency which is ultimately reflected in space. This paper investigated the level of ICT usage among small scale manufacturing enterprises in Ondo State. The study also investigated intra-regional variations in use of smart technologies in the industrial subsector and compared same across the three regions of the state. A sample of 352 enterprises was taken from three senatorial regions and nine settlements which were purposively sampled and interviewed using questionnaire. The production and operational system of these firms were observed. The data collected were analysed using descriptive and inferential methods. The study established that proportion of ICT users concentrated more in Ondo Central 45.7% than Ondo south (28.7%) and Ondo north (25.6%). It was also discovered that formal small scale enterprises made more use of ICT products, compared with those in the informal sector. Moreover ICT use among enterprises were urban biased as 91.2% of enterprises in this category were located in major towns of Akure, Okitipupa and Ikare, 8.1% in minor towns of Obaile, Ode Aye and Ugbe, with villages of Aponmu Iboropa and Ikoya being relatively insignificant (0.8%). The study established that enterprises that made use of smart technologies tend to be more efficient in terms of production and marketing especially in identification of new markets, networking, subcontracting, security and other linkage benefits. Also, regional industrial development entails not only quantitative growth of industries, but an industry that embrace a new opportunities in innovation, and technology especially in management, record keeping, production, decision making etc.

Key words: *ICT usage, small scale enterprises, regional development, Ondo State, Nigeria, developing country.*

Introduction and review of literature. Industrial development entails not only quantitative growth of industries, but an industry that embraces new opportunities in innovation, and technology especially Information and Communication Technology (ICT) in management, record keeping, production, decision making and marketing of their products. While scholars agreed on the indispensability of small and medium scale industries in economic development of any developing country especially in the African continent, efforts at encouraging their growth and development have concentrated on improving access to finance, creating industrial site and service schemes, granting them tax holidays and training to improve their skills. Little or no efforts were focused on exposing them to information and communication technology to improve their management, linkage to other complementary small enterprises and

technology for increased growth and development.

It is on record that all these efforts have impacted very little on the development of this industrial sub sector. For example, according to Fatusin (2012) measurable aspects of the country industrial development relates to the fact that while there was a steady increase in factory outputs in Nigeria from 1964 to 1980, industrial development started to decline from 1991 till date. The small and medium industries experienced the highest mortality. It employed less than 10% of labour force (even with the addition of informal sector and contributed only 20% to the Gross Domestic Product (GDP). This contrast sharply with the situation in countries such as USA and Israel where the small scale industrial sector employs between 55–53% of the workforce and contributes up to 50% to the Gross Domestic Product.

One of the strategies of improving growth in these countries is the application of ICT in production and marketing especially in identification of new markets, identification of new source of raw materials, shipping and other logistics, networking, subcontracting, security and other linkage benefits especially in volatile areas. Unfortunately while many countries such as India, the Republic of Korea, Taiwan and China have created enabling environments to ensure that SMEs are well positioned to capture these emerging business opportunities, same cannot be said of Nigeria and many other countries in Africa where many studies have revealed low level of ICT penetration even though in recent times Nigeria has been declared the fastest growing ICT market in Africa with 43.98 million internet users. This represents 29.5% of the entire Nigerian population (Ayo et al., 2011).

In spite of this encouraging growth however, many sectors have not really benefited from ICT usage like others despite its potentials. The extent of use or non use of ICT products and its implication in the growth of enterprises in Ondo state of Nigeria and its regional development implication is the subject of this paper.

Small Scale Industries. The European Union Report (2005) adopted the concept of threshold in defining small, medium and micro enterprises. The report classified a medium scale industry as enterprises, which employ between 50–249 people, a turnover of 50 million pounds and balance sheet of 43 million pounds. A small scale industry according to this report, comprise of enterprises which employ between 10–49 persons and whose turnover threshold and balance sheet is about 10 million pounds. In USA, a small-scale industry is one that is independently owned and operated with a capital base of not more than 5 million dollars. In the Far East, the average turnover of a small-scale industry must not exceed 3 million dollars.

In the Philippines, small enterprises have been defined as enterprises having between 10 to 99 workers. In Sierra Leone, Liedholm and Chutta (1986) defined small scale industries as those employing less than 50 persons. Capital was not taken into consideration here because of inflationary tendencies.

In Nigeria for example according to the Omisakin (1999) the Central Bank of Nigeria states that in the area of commercial banks, small scale industries are those with annual turnover not exceeding N5 million. The Nigerian industrial development Bank (NIDB) now Bank of Industry defines as small scale, industries with project

cost (investment and working capital) not exceeding N3.0 million. Moreover the National Economic Reconstruction Fund (Nerfund) defined small-scale industries as those with fixed assets other than land but inclusive of the cost of new investment as not exceeding N10 million. In the Federal Ministry of Commerce and Industry's guidelines to the Nigerian Bank for Commerce and Industries (NBCI) in 1981/82, small scale enterprises are those with total investment cost not more than N500, 000 (excluding cost of land but including working capital). However, the NBCI, in its agreement with the World Bank, over the same period, defined small scale enterprises as one with project cost not exceeding N300, 000 and with cost per job created not more than ₦7,500. Yet some states and institutions in Nigeria have reduced the capital base for the industry to as low as 150 thousand naira and 250 thousand naira respectively (Olayiwola and Adeleye, 2005). These various definitions are provided to know the extent of confusion and disagreement as to what a small enterprise is.

At the 1987 National Conference on Small Scale Industries and the Development of Nigeria, Prof. Dotun Philips of NISER observed as follows: "There is an urgent need to articulate a really dynamic and culturally relevant definition of what constitutes small scale enterprise in Nigeria, particularly for the purpose of eligibility for preferential treatment by government. Such a definition should focus not only, as for now, on the level of employment, initial investment and turnover, but should also emphasized capital/output ratio, capital/labour ratio, degree of utilization of genuinely local resources, utilization of appropriate technology and location in either urban or rural centres".

Even if it is possible to arrive at an acceptable definition of small scale enterprise, which will be very useful for the administration of laws and regulation that apply to some establishments, such an exact definition might not be appropriate for all purposes because of continuity and dynamism that exist in size and characteristics of firms. For the purpose of this study, formal small scale industry is defined as a productive enterprise adopting automated or labour intensive mode of production, which employs maximum of 30 workers and whose capital outlay is not more than N 3 million (BOI Report, 2005). This definition has been arrived at for the following reasons: Bank of Industry Report of 2003, being the latest classification of industries in Nigeria. Moreover the use of other classification other than that of Nigeria may not be applicable, since different countries have their own basis of classification.

Informal, cottage or micro SSI on the other hand are enterprises conducted near place of abode, heavily dependent on local craft, employ only self with or without apprentices, more often than not, the proprietor is uneducated or poorly educated, and so does not adopt modern management principles. Examples of such firms include tailoring, soap making, furniture making, and blacksmithing enterprises. The basis of identification of these types of enterprises is provided by the UNDP (2002), which defined informal enterprises as enterprises with one to four employees/apprentices.

Information and Communication Technology (ICT) and its Use in Small Scale

Industries. A number of researchers have conceptualized Information Technology (IT) in different ways (Frenzel, 1999; Bjork, 1999; Marghlani, 1987). For example, While Frenzel (1999) conceptualized information technology as the term that describes an organizations computing and communications infrastructures, including computer systems, telecommunication, networks and multimedia software and hardware. Bjork (1999) see it as the use of electronic machines and programmes for the processing, storage, transfer and presentation of information. It however, encompasses many technologies such as computers, software, networks and even telephone and fax machines. One of the purposes of IT is to facilitate the exchange and management of information within an organisation. Information Technology has the capacity to electronically input, process, store, output, transmit and receive data and information including text, graphics, sound and video, as well as the ability to control machines of all kinds electronically (Information Technology Association of America, 2003). Information technology include computers, networks, satellite communications, radio, robotics, mobile communications, cable television, videotext, electronic mail (E-mail) automated office equipment and electronic games. All these technologies can facilitate communication; processing and transferring of information from one organisation to the other.

Information Communication and Technology (ICT) has the hallmark of modern day computer (i.e. speed, accuracy efficiency and productivity) which made it to be useful among small scale industries. It also has the capability and versatility to impact and improve every sections or unit of small scale industries in Nigeria.

Importance or role of ICTs according to Agboola (2013) cannot be underestimated. It can play an important role in addressing poor marketing condition. It has the potential role in improving the decision making made by proprietors. Many studies have affirmed the roles of ICT development, deployment and use in strengthening enterprises and particularly small scale enterprises. Buhalis, (2003) remarked that the application of ICT in businesses causes fundamental changes that can provide powerful strategic and tactical tools for organizations if properly applied and used. This could have great impact in promoting and strengthening SMEs competitiveness. Other studies by Ashrafi and Murtaza (2008), Brynjolfsson and Yang (1996), Baldwin et al. (2003), Love et al. (2004), Ritches and Brindley (2005) and Kujoro et al. (2013) confirm the positive effect of information and communication technologies (ICT) on firm performance in terms of productivity, profitability, market value and market share. Lymer (1997) and Olatunji (2015) stressed that ICT implementation in the organization which includes SMEs has the potential to reduce costs and increase productivity level. According to them small firms might find cost-effectiveness as a motivating factor to use Internet commerce for improving communication with trading partners and consumers.

Many other studies have however revealed low use of ICT and its infrastructure among these categories of enterprises While Akomea-Bonsu et al. (2012) believe ICTs can improve efficiency and increase productivity by different ways including, improving efficiency in resource allocation, reducing transaction costs, and technical

improvement, leading to the outward shifting of the production function, Wolf, (2001) found that in most African countries, small and medium enterprises (SME) account for a significant share of production and employment and is therefore directly connected to poverty alleviation but are challenged by the globalization of production and the shift in the importance of various determinants of competitiveness.

The purpose of the article is to investigate the level of ICT usage among small scale manufacturing enterprises in Ondo State, to study intra-regional variations in use of smart technologies in the industrial subsector and compare same across the three regions of the state.

Results and discussion. Ondo State lies between latitudes 5°45' and 7°52'N and longitudes 4°20' and 6° 05'E. Its land area is about 15,500 square kilometres. The State is bounded on the east by Edo and Delta states, on the west by Ogun and Osun States, on the north by Ekiti and Kogi States and to the south by the Bight of Benin and the Atlantic Ocean (see fig. 1). The apex of the administrative structure is the state headquarters, Akure. Prior to the carving out of Ekiti State from Ondo State there were twenty-six Local Government Areas (LGAs). Fourteen of these remained in Ondo State, and from these, additional four LGAs were created.

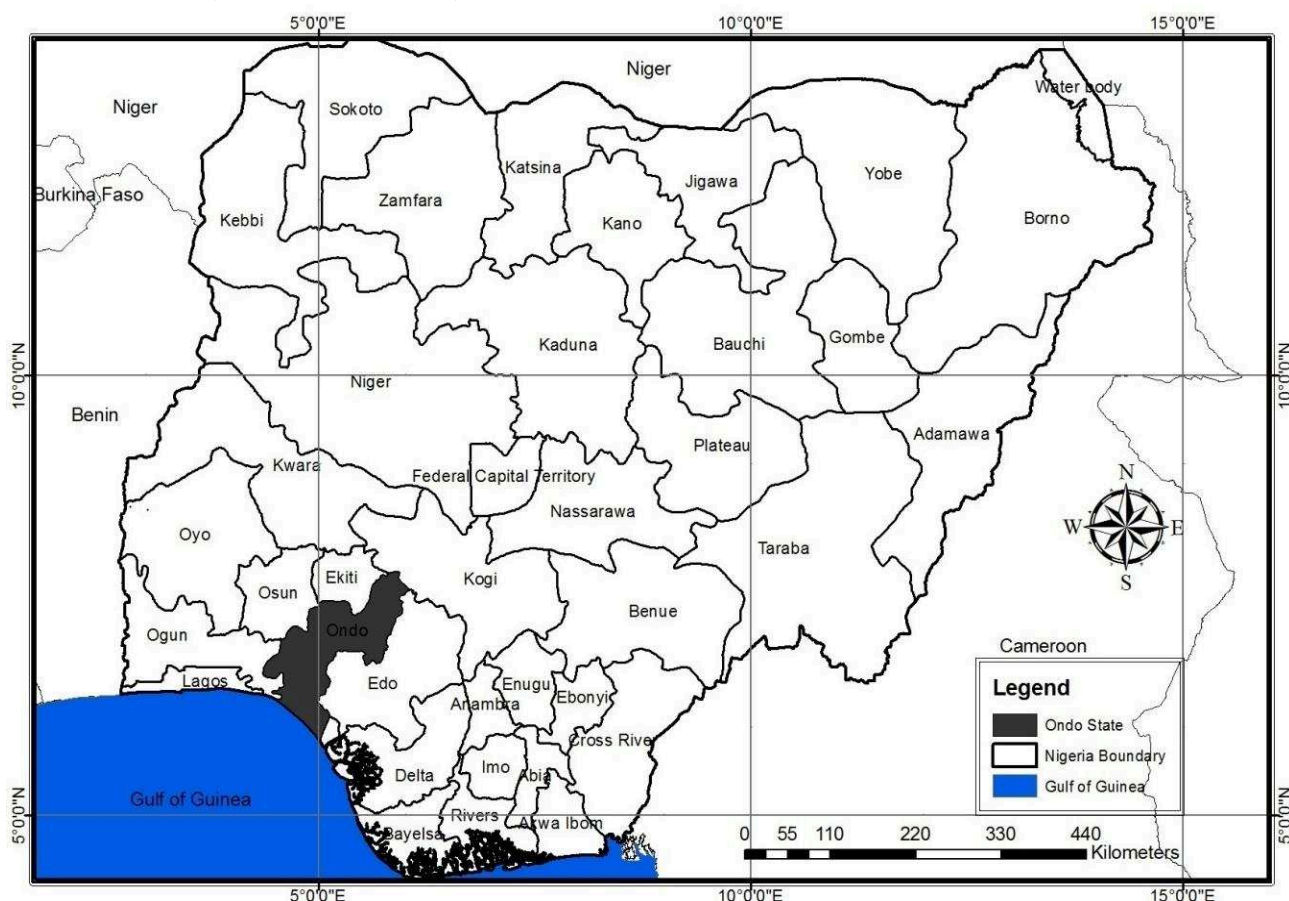


Fig. 1. Map of Nigeria showing Ondo State

Source: Ondo State Ministry of Land and Housing (2017).

Currently, there are eighteen LGAs in Ondo State. An important aspect of the administrative set-up of Ondo State is the recognition of four subordinate area authorities. These are areas having some recognised autonomy within their LGAs.

Besides, Ondo State is carved into 18 Local Government Areas and three Senatorial Districts or regions. Ondo state boasts of agriculture based economy, but small scale industries, especially informal industrial enterprises have grown lately.

In order to make the study representative of the entire state, three (3) local government areas were selected. These local government areas include Okitipupa, Akure south and Akoko South west. Three settlements were selected in each local government area. This makes the total of nine settlements (Akure, Ikare, Okitipupa, Ugbe, Obaile, Ode-Aye, Iboropa, Aponmu and Ikoya) (see fig. 2). The sample frame covered all the small scale industries (formal and informal) in the selected local government area. There were 3520 small scale industries in the study area. The sample size was 352. This constitutes 10% of the entire sample frame. Questionnaires were administered on proprietors of small scale industries. Small scale industries in each town were first identified and numbered during reconnaissance survey. Secondary data were obtained from the documentary sources. Descriptive (i.e. tables, pie charts and bar graphs) and inferential (i.e. Chi-square) statistics were employed for data analysis.

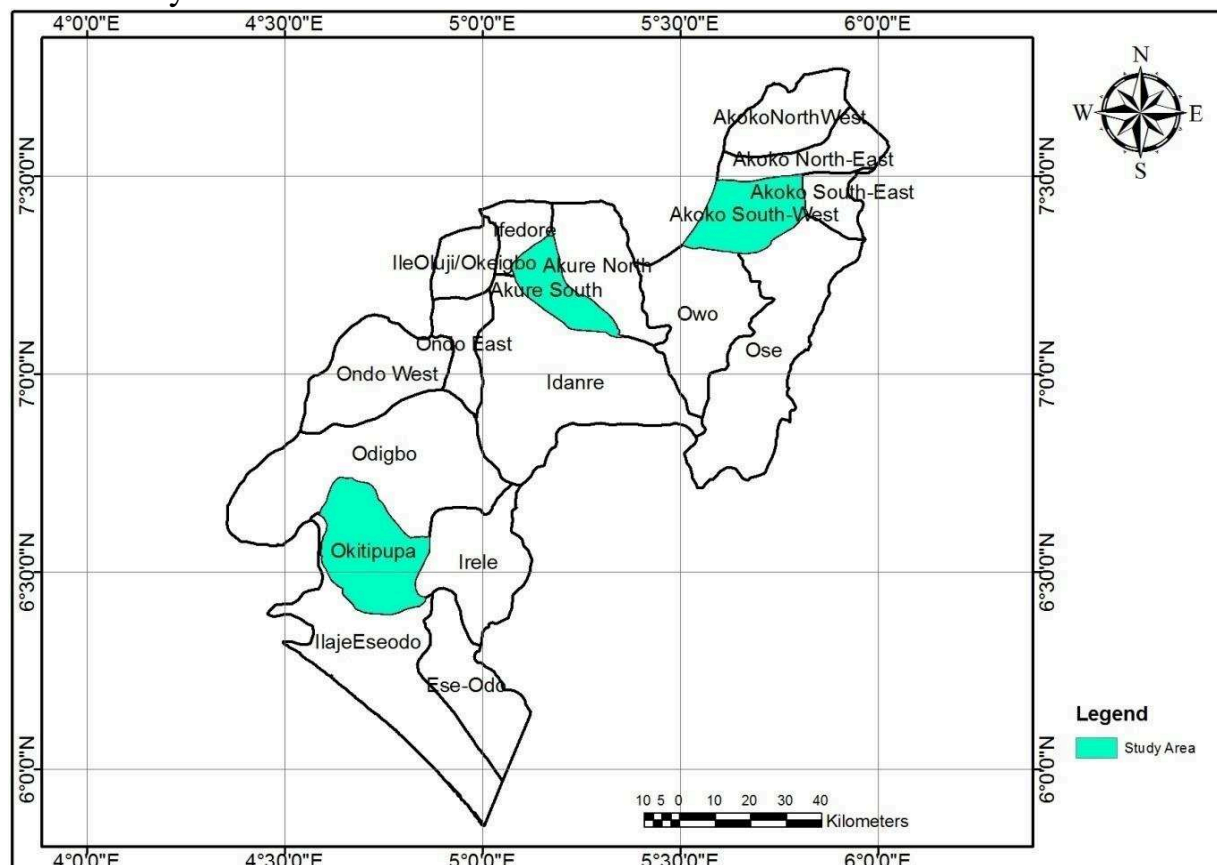


Fig. 2. Map of Ondo State showing the study area

Source: Ondo State Ministry of Land and Housing (2017).

The generated field data were analyzed using frequency distribution, percentages, tables and chi-square.

Inter Settlements' Variation in ICT Usage among Small Scale Industries. Industrial concentration of enterprises using ICT products and solution was investigated among the nine selected settlements – Akure, Ikare, Okitipupa, Ugbe,

Obaile, Ode-Aye, Iboropa, Aponmu and Ikoya. The study found out that Akure accounted for 35.6% (126) of all the 352 industries sampled. This was followed by Ikare with 24.1% (85) of the industries, Okitipupa with 23.0% (81), Ode Aye with 5.1% (18), Ugbe with 3.4% (12), Ikoya with 3.1% (11), Oba-Ile with 2.9% (10). Iboropa and Aponmu both had 5 firms each or 1.4% of all the sampled enterprises (Table 1).

Table 1

Urbanization and Use of ICT Products and Solution

Classes of settlement	Settlements in each category	No. of industries	% of industries
Major urban area	Akure	125	35.6
	Okitipupa	81	23.0
	Ikare	85	24.1
	Total	291	82.7
Minor urban area	Ode Aye	18	5.1
	Ugbe	12	3.4
	Obaile	10	2.9
	Total	40	11.4
Villages	Iboropa	5	1.4
	Aponmu	5	1.4
	Ikoya	11	3.1
	Total	21	5.9

Source: Fieldwork, 2017.

The locational patterns of the industries were further analysed among the three classes of settlements in which the nine settlements belong – major urban area, minor urban area and villages. The table revealed that 82.7% of the industries were concentrated in major urban area, 11.4% of the industries were concentrated in minor urban area while 5.9% of the industries were concentrated in villages. This implied that small scale industries concentrated more in major urban centers such as Akure, Okitipupa and Ikare than any other centers in the study area.

Major Use of ICT among Proprietors of Industries. Table 2 shows the major use of IT products among proprietors of small scale industries. The table revealed that most of the proprietors (33.8%) used telephone product than any IT products in the study area. About 26.1% and 22.4% of the proprietors used computer and internet respectively, while 8.8%, 5.1% and 3.1% represented the proprietors that used fax/telex, videoconferencing and satellite system respectively. However, variations exist in this structure. For example, within the category of industries that used computer product, 57.9% were under consumer industry, 19.5% under industrial raw material, 20.5% under metal goods industry and 56.5% were under agro industry. Also within the category of industries that used internet, 5.3% were under consumer industry, 23% under industrial raw material, 25% under metal goods industry, 45.7% under capital goods industry, 44.4% under high tech industry and 45.8% were under food industries. Same for the category of industries that used telephone, 5.3% were under consumer industry, 13.8% under industrial raw material, 54.5% under metal goods industry, 43.5% under agro industries, 51.4% under capital goods industries,

27.8% under high tech industries and 29.2% were under food industries.

Furthermore, the category of industries that used fax/telex includes industrial raw material (26.4%), capital goods industries (2.9%), high tech industries (5.6%) and food industries (25%). There also existed some variation among industries that used videoconferencing. This varies from 5.3%, 6.9% and 16.7% among consumer industries, industrial raw materials and high tech industries respectively. In the last category of industries that used satellite system, 26.3%, 10.3% and 5.6% were accounted for consumer industries, industrial raw material and high tech industries respectively. It can be observed generally that higher percentage of the proprietors prefer to use telephone than any other IT products; this can be as a result of affordability of the product.

Table 2

IT Products usage among Proprietors of Industries

Indicators		Small Scale Industries (SSI)							Total
		Consumer industry	Industrial raw material	Metal goods industry	Agro industry	capital goods industry	High tech industry	Food industry	
Computer	Count	22	17	18	35	0	0	0	92
	%	57.9%	19.5%	20.5%	56.5%	0.0%	0.0%	0.0%	26.1%
Internet	Count	2	20	22	0	16	8	11	79
	%	5.3%	23.0%	25.0%	0.0%	45.7%	44.4%	45.8%	22.4%
Telephone	Count	2	12	48	27	18	5	7	119
	%	5.3%	13.8%	54.5%	43.5%	51.4%	27.8%	29.2%	33.8%
Fax/Telex	Count	0	23	0	0	1	1	6	31
	%	0.0%	26.4%	0.0%	0.0%	2.9%	5.6%	25.0%	8.8%
Video conferencing	Count	2	6	0	0	0	3	0	11
	%	5.3%	6.9%	0.0%	0.0%	0.0%	16.7%	0.0%	3.1%
Satellite system	Count	10	9	0	0	0	1	0	20
	%	26.3%	10.3%	0.0%	0.0%	0.0%	5.6%	0.0%	5.7%
Total	Count	38	87	88	62	35	18	24	352
	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: author fieldwork (2017).

Regional Variation of ICT usage across Classification of Industries. Table 3a shows the variation of IT products usage across the classified industries (informal and formal industries). Analysis in the table revealed that more than one third of the proprietors used telephone (38.7%) in the informal industries; other IT products such as computer (19.2%), internet (11.7%), fax/telex (6.9%), satellite system (5.4%) and videoconferencing (2.3%) in their order of ranking were used in the same category. On the other hand, internet (40.8%) was commonly used within formal industries; this was followed by computer (30.2%), telephone (25.4%), fax/telex (9.9%) videoconferencing (3.6%) and satellite system (5.9%).

General summary across the study area revealed that telephone (33.8%) was commonly used across the study area, followed by computer (26.1%), internet (22.4%), fax/telex (8.8%), satellite system (5.7%) while videoconferencing were accounted for 3.1%. This finding is in consonance with Eze et al's (2015) assertion

on the fact that most of the proprietors can afford telephone more than any other products in the study area.

Further analysis also revealed that out of 63.1% of formal sector, about 63.1% used IT products while 36.9% does not use it. Also within the category of informal sector (36.9%), about 36.9% used IT products while 37% does not use it. This implies that formal small scale industries made use of IT products than informal sector.

Table 3a

Variation of IT product across the classified industries

Indicators		Classified Industries		Total
		Formal	Informal	
Computer	Count	67	25	92
	%	30.2%	19.2%	26.1%
Internet	Count	53	26	79
	%	40.8%	11.7%	22.4%
Telephone	Count	86	33	119
	%	25.4%	38.7%	33.8%
Fax/Telex	Count	9	22	31
	%	9.9%	6.9%	8.8%
Videoconferencing	Count	8	3	11
	%	3.6%	2.3%	3.1%
Satellite system	Count	13	7	20
	%	5.9%	5.4%	5.7%
Total	Count	222	130	352
	%	100.0%	100.0%	100.0%

ICT Usage between formal and informal small scale industries				
Indicators		Usage		Total
		Yes	No	
Formal	Count	118	104	222
	%	63.1%	63.0%	63.1%
Informal	Count	69	61	130
	%	36.9%	37.0%	36.9%
Total	Count	187	165	352
	%	100.0%	100.0%	100.0%

Source: author fieldwork (2017).

Table 3b shows the inter-regional variation of small scale industrial sectors that use IT products. The table revealed that 33.8% of the proprietors used telephone product than any other IT products in the study area. This however varied from 34.4% in Ondo north, 34.2% in Ondo central and 32.7% in Ondo south. This is closely followed by proprietors that used computer (26.1%) with variation from 26.7% in Ondo north, 26.7% in Ondo central and 24.8% in Ondo south. About 22.4% of the proprietors also used internet where there was an observed variation of 22.2% in Ondo north, 21.7% in Ondo central and 23.4% in Ondo south. The least IT products that were used in the study area include fax/telex (8.8%), satellite system (5.7%) and videoconferencing (3.1%). It can be observed that telephone, internet and computer were highly used across the regions in Ondo State.

General summary shows that ICT users concentrated more in Ondo Central (45.7%) than Ondo south (28.7%) and Ondo north (25.6%). This shows that IT products were highly used in Ondo central than any other regions. This can be as a result of high concentration of SSI industries in Ondo central than any other region in the study area.

Table 3b

Inter-Regional Variation of Small Scale Industrial Sectors that Use ICT

Indicators		Senatorial			Total
		Ondo North	Ondo Central	Ondo South	
Computer	Count	24	43	25	92
	%	26.7%	26.7%	24.8%	26.1%
Internet	Count	20	35	24	79
	%	22.2%	21.7%	23.8%	22.4%
Telephone	Count	31	55	33	119
	%	34.4%	34.2%	32.7%	33.8%
Fax/Telex	Count	8	14	9	31
	%	8.9%	8.7%	8.9%	8.8%
Videoconferencing	Count	3	5	3	11
	%	3.3%	3.1%	3.0%	3.1%
Satellite system	Count	4	9	7	20
	%	4.4%	5.6%	6.9%	5.7%
Total	Count	90	161	101	352
	%	25.6%	45.7%	28.7%	100.0%

Source: author fieldwork (2017).

Table 3c shows the area of efficiency as a result of ICT usage among the classified industries in the study area. General summary in the study area revealed that out of 352 enterprises about 22.4% (79) of the enterprises used ICT for marketing their products, 20.5% (72) used it for networking with other industries, 19% (67) used it for improving production while 17.9% (63) used ICT for improving turnover rate. Also 9.4% (33) used ICT for security purposes, 6% (21) used it for other associated linkage benefits while 17 (4.8%) used ICT for subcontracting. This implied that most of the enterprises that used ICT were more efficient in the area of marketing, networking and improving turnover. This has in-turn made the enterprises to derive certain economics from improvement in marketing, networking with other industries, improvement in production and turnover. Apart from this finding, specific area of efficiency varies from one category of industries to the other. For example, while 47.4%, 34.2%, 10.5% and 7.9% used ICT for networking, marketing, other associated linkage benefits and improving production respectively within consumer product industries, 31%, 25.3%, 18.4%, 13.8%, 10.3% and 1.1% used ICT for networking, marketing, improving turnover rate, improving production, security purposes and other associated linkage benefits respectively within industrial raw material. It can be observed that most of enterprises in consumer product and raw material industries used ICT for networking with other enterprises. Although 26.1%, 23.9%, 18.2%, 10.2%, 9.1%, 6.8% and 5.7% used ICT for improving production, turnover, networking marketing, security, other associated linkage benefits and

subcontracting respectively within metal goods industries, 22.6%, 22.6%, 14.5%, 14.5%, 11.3%, 11.3% and 3.2% used ICT for improving production, turnover, security, subcontracting, marketing, other associated linkage benefits and networking respectively within agro product industries. It can be deduced that majority of the metal goods and agro product industries used ICT for improving turnover and production. Moreover, ICT was efficiently used in the area of marketing within capital goods and high tech products industries while it was used in improving production in food industries. This implies that there is improvement in regional development as a result of ICT.

Table 3c

Major Use of ICT among Proprietors of Industries

Indicators		Small Scale Industries (SSI)							Total
		Consumer product	Industrial raw material	Metal goods	Agro product	capital good	High tech products	Food	
Networking with other enterprises	Count	18	27	16	2	8	0	1	72
	%	47.4%	31.0%	18.2%	3.2%	22.9%	0.0%	4.2%	20.5%
Improvement in Marketing	Count	13	22	9	7	14	10	4	79
	%	34.2%	25.3%	10.2%	11.3%	40.0%	55.6%	16.7%	22.4%
Other Associated Linkage Benefits	Count	4	1	6	7	0	3	0	21
	%	10.5%	1.1%	6.8%	11.3%	0.0%	16.7%	0.0%	6.0%
Subcontracting	Count	0	0	5	9	0	1	2	17
	%	0.0%	0.0%	5.7%	14.5%	0.0%	5.6%	8.3%	4.8%
Security	Count	0	9	8	9	1	0	6	33
	%	0.0%	10.3%	9.1%	14.5%	2.9%	0.0%	25.0%	9.4%
Improvement in turnover	Count	0	16	21	14	6	2	4	63
	%	0.0%	18.4%	23.9%	22.6%	17.1%	11.1%	16.7%	17.9%
Improvement in production	Count	3	12	23	14	6	2	7	67
	%	7.9%	13.8%	26.1%	22.6%	17.1%	11.1%	29.2%	19.0%
Total	Count	38	87	88	62	35	18	24	352
	%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: author fieldwork (2017).

Workers' income and turnover rate before and after the adoption of ICT. Table 4 shows income level of the workers before and after the adoption of ICT. Before the adoption of ICT, more than half of the workers (59.1%) earned below N20,000 per month. Next to this is 28.1% of the respondents who earn between N20,001 – N40,000 per month. While a meager number representing 8.2%, 1.1% and 3.1% of the total respondents earned between 40,001 – 60,000, 60,001 – 80,000 and above 80,001 respectively. This implies that the majority of the respondents in the study area are predominantly low income earners – as over half of the workers earned less than N20,000 as their monthly income.

Further analysis of income of workers after the adoption of ICT shows that majority of the workers (85.2%) earn above 20,001 while 14.8% earn below 20,000 per month. It can be observed that there is an increase in the workers income after ICT adoption. However, the increase in workers' income is not farfetched from high

level of ICT efficiency among the enterprises. The significant relationship between the use of ICT and income of workers was further established by Chi-square results ($\chi^2 = 19.43$; $p < 0.05$) which indicated a significant relationship between the use of ICT and income of workers.

Table 4

Income of workers before and after adoption of ICT

Indicators		IT Products Usage	
		Before ICT Adoption	After ICT Adoption
Below 20,000	Count	208	52
	%	59.1%	14.8%
20,001–40,000	Count	100	79
	%	28.4%	22.4%
40,001–60,000	Count	29	100
	%	8.2%	28.4%
60,001–80,000	Count	4	59
	%	1.1%	16.8%
80,001 and above	Count	11	62
	%	3.1%	17.6%
Total	Count	352	352
	%	100%	100.0%

Source: author fieldwork (2017).

Table 5 shows turnover rate of enterprises before and after the adoption of ICT. Before the adoption of ICT, more than half of the firms (61.1%) earn below 100,000 in a year. This was followed by 28.7% and 8.5% of the firms that earn between N100,001 – N500,000 and N500,001 – N1,000,000 respectively, while 1.7% of the firms earn above 1,000,000 in a year. This implies that most of the firms earn below N100,000 before the adoption of ICT in the study area. However, after the adoption of ICT, more than one-third of the firms earn between N100,001 – N500,000.

Table 5

Turnover growth rate before and after adoption of ICT

Indicators		IT Products Usage	
		Before ICT Adoption	After ICT Adoption
Below 100000	Count	215	86
	%	61.1%	24.4%
100001–500000	Count	101	121
	%	28.7%	34.4%
500001–1000000	Count	30	91
	%	8.5%	25.9%
Above 1000001	Count	6	53
	%	1.7%	15.1%
Total	Count	352	352
	%	100.0%	100%

Source: author fieldwork (2017).

The was followed by 25.9% and 24.4% of the firms that earn between N500,001 – 1,000,000 and below N100,000, while 15.1% of the firms earn above N1,000,001 in a year. It can be observed that majority of the firms (75.4%) earn above N100,000

per year after the adoption of ICT in the study area. The significant difference between the use of ICT and turnover growth rate was further established by Chi-square results ($\chi^2 = 18.19$; $p < 0.05$) which indicated a significant relationship between the use of ICT and turnover growth rate. The use of ICT has increased the pace and save time used in production and increased output to meet the demand of customers to the firms.

Conclusions. The study examined the implication of ICT usage on productivity and regional development planning among small scale industries in Ondo State, Nigeria. The study aimed at investigating the level of ICT usage among small scale industries in Ondo state. It also evaluated the intra-regional variations in the use of smart technologies in the industrial subsector and compared it across the three regions of the state. The study revealed that IT products was efficiently used in Ondo central than any other regions, this was not far-fetched from high concentration of SSI industries in Ondo central than any other region. The use of IT products was more efficient among ICT users in terms of production, waste management, marketing, networking, subcontracting, security and other linkage benefit. The study also established that formal small scale enterprises made use of ICT products than informal sector. It was also established that most of the SSI used telephone product than any IT products in the study area.

Moreover, the study showed that ICT usage has improve the income of the workers and turnover rate of small scale enterprises after the adoption of ICT in the study area. Also, the use of ICT has positively influenced the firms' turnover rate ever since the introduction of ICT in the production process.

The study concluded that regional industrial development should not only entail quantitative growth of industries, but an industry that will embrace a new opportunities in innovation, and technology especially in management, record keeping, production, decision making etc. The study also concluded that ICT usage has significant implication on production and regional development of small scale industries in the study area.

References

1. Arikawe, A. (1985), The equity Principle and Central Plan Allocation in the manufacturing Sector: The Nigerian Third National Development Plan. *Nigerian Journal of Economic and Social Studies*, vol. 2, no. 1, pp. 61–89.
2. Akomea-Bonsu, C. and Sampong, F. (2012), The impact of Information and Communication Technologies (ICT) on Small and Medium Scale Enterprises (SMEs) in the Kumasi Metropolis, Ghana, West Africa. *European Journal of Business and Management*, vol. 4, no. 20, pp. 152–158.
3. Applah, M. K. and Opare, D. (2016), The Drivers and Challenges of ICT usages among SMEs in Ghana. *The International Journal of Business and Management*, vol. 4, no. 4, pp. 473–479.
4. Applah, M. K., Anin-Agyel, J. and Manu, E. P. (2016), Electronic Commerce adoption among SMEs in Ghana: Manifestation from Wa-Municipality. *The International Journal of Business and Management*, vol. 4, no. 4, pp. 480–484.

5. Chen, K. C. and Hamdan, M. (2014), An Exploratory Study of Information Technology Adoption by SMEs in Brunei Darussalam. *World Journal of Social Sciences*, vol. 4, no. 2, pp. 186–196.
6. European Union Report (2005), Definition of Micro Small and Medium-Sized Enterprises. Commission Recommendation of 3rd April, 1996 Concerning The Definition of Small and Medium-Sized Enterprises. *Official Journal* L107, 30.04.1996.
7. Eze, N. M., Ayigbe, S. F., Eberechi, O. O. and Jordan, N. (2015), Information and Communication Technology Applications in small and Medium scale enterprises (SMEs) funding in Nigeria: an Impact assessment. *International Journal of Finance and Accounting*, vol. 4, no. 5, pp. 293–303. <https://doi.org/10.5923/j.ijfa.20150405.07>.
8. Kuyoro, S., Awodele, O., Alao, O. and Omotunde, A. A. (2013), ICT solution to Small and Medium Scale Enterprises (SMEs) in Nigeria. *International Journal of Computer and Information Technology*, vol. 2, is. 4, pp. 785–789.
9. Liedholm, C. and Chuta, E. (1985), *Employment and Growth in Small Scale Industry. Empirical Evidence*. Macmillan Press, UK.
10. Olatunji, O. (2015), *The Impact of Information Communication Technology on Small and Medium Scale Enterprise Productivity in Nigeria*. Business Economics and Tourism, Vaasa University of Applied Sciences, Finland.
11. Olayiwola, L. and Adeleye, O. (2005), Rural Development and Agro-Industrial Promotion in Nigeria: Concepts, Strategies and Challenges. *Journal of Social Sciences*, vol. 11, no. 2, pp. 91–96.
12. Olayiwola, L. and Fatusin, A. (2011), An analysis of Distributional pattern and Locational factors of Small Scale Industries in Akoko Region of Ondo State. *Tropical Journal of Built Environment*, vol. 1, no. 1, pp. 107–129.
13. Omisakin, I. S. (1999), *Factors Influencing Success and Failures of Enterprises in the Informal Sector*. Nigerian Institute of Social and Economic Research, Ibadan, Nigeria.
14. Rufai, A. I. (2014), The Impact of Communication Technologies on the Performance of Smes in a Developing Economy: Nigeria as a Case Study. *The Electronic Journal of Information Systems in Developing Countries*, vol. 65, no. 7, pp. 1–22.

[How to cite this article? Як цитувати цю статтю?](#)

Стиль – ДСТУ:

Fatusin A. F., Oladehinde G. J. Implication of ICT use on productivity and regional development planning among small scale enterprises in Ondo state. *Agricultural and Resource Economics: International Scientific E-Journal*. 2018. Vol. 4. No. 1. Pp. 5–19. URL: www.are-journal.com.

Style – Harvard:

Fatusin, A. F. and Oladehinde, G. J. (2018), Implication of ICT use on productivity and regional development planning among small scale enterprises in Ondo state. *Agricultural and Resource Economics: International Scientific E-Journal*, [Online], vol. 4, no. 1, pp. 5–19, available at: www.are-journal.com.