Original Research Article

ASSESSMENT OF TECHNOLOGICAL CAPABILITIES OF THE INFORMAL FOODSERVICE OPERATORS IN OYO STATE.

ABSTRACTS

The technological capacity of informal foodservice operators in some Local Government in Oyo State was studied. The informal foodservice operators (IFOs) carry a larger part of food service providers that have contact with people on daily basis. The model of Garvin, 1981 was adapted for the study and mixed study approach. A structured questionnaire that includes both close and open-ended questions was used to elicit information from the participants of the study. The data collected was analysed and it showed that the technological capacity of the informal foodservice operators in studied areas in Oyo State was fairly high. The informal foodservice operators have low investment capacity, production capacity and high marketing capacity. The ability to use technological capacity to their advantage was lacking due to lack of funds and training. Their high marketing and innovation capacity showed that if there are funds and training, they will improve their investment and production capacity. Government should formulate policy that will encourage growth of the informal foodservice operators to ensure that wholesome food is served within the system.

Keywords: Production, Innovation, Marketing, Food, Technological capability.

INTRODUCTION

Technological capability (TC) is described as the ability to select acceptable technologies for a given job, learn and adapt technologies in internal contexts, and enhance new technologies, processes, and products through local innovations (Leo *et al*., 2021). Technology has an impact on every aspect of the foodservice industry, from the cash register to the processing operations. It is transforming the way people do business in the foodservice industry (Martin-Rios *et al*., 2018). The application of technology has resulted in advancements in the food service system's processing, marketing, and coordinating operations. For example, gas cooker has replaced the use of firewood to a large extent; fruits portions are now neatly wrapped in polythene/take away and are no longer exposed, foods are now being microwaved in restaurants; foods prepared are displayed in glass or wired net cupboards with continuous warming technique. These show that the operators possess some attributes relating to technological capability which has not been properly investigated (Taiwo *et al*., 2002; Walsh *et al*., 2020).

The primary goal of using technology in this system is to raise revenue, alter operations, enhance customer experience, lower expenses, and, as a result, increase profit. The introduction of new technologies posed issues for the system, so businesses must keep up

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with the current developments and take advantage of them (Tidd and Bessant, 2020). To stay competitive, a foodservice company must broaden the breadth of its usage of modern technology to streamline operations. As a result, an assessment of the industry's technological capabilities is required (Kanyan *et al*., 2015). Technological capacity is thought to contain the skills, knowledge, experience, institutional structure, and relationships required to originate and manage technological change (Tidd and Bessant, 2020). Governments and international bodies (such as the Codex Alimentarius Commission) are in charge of establishing food safety standards. It is critical that all governments set similar safety regulations so that all customers are protected to the same extent (Omojokun, 2013).

All food producers, whether formal or informal, are treated similarly by using the same safety requirements, and customers are notified of their rights under the law. When it comes to defining safety standards, the government must enable business, research, and the general public to contribute data and suggestions. Standards and standards should be adaptable enough to accommodate the changing demands of technology. Simultaneously, the government should implement restrictions that ensure actual and meaningful security gains, rather than regulations that just accomplish the stated effect (Brouwer *et al*., 2021). The government is responsible for overseeing and enforcing food safety regulations. When strict requirements are imposed, the government's demand for resources to implement such rules frequently grows. The standard should be carefully developed, considering the expense of implementing the relevant organization's training and equipment (Omojokun 2013).

FAO (2007) reached an agreement on improving the composition, accessibility, and quality of food in the foodservice sector, raising awareness of the sector's relevance to overall food security, national health, environmental preservation, and the present need for action. Food safety regulators and inspectors must demonstrate that their food safety monitoring methods and procedures are successful to the public. To keep up with the increasing speed of technology, commerce, and the issues that come with it, all food security stakeholders must remain aware and adapt to the changing environment. This study is aimed at investigating the technological capability of informal foodservice operators in some Local Government Area in Oyo State.

RESEARCH DESIGN

The mixed study approach was employed for this study. The design included both the qualitative and quantitative approaches. The quantitative approach was by survey method which involves the use of structured questionnaire. The structured questionnaire included both close and open-ended questions. The qualitative approach includes the use of personal observational checklist which was used to assess general cleanliness and operations of the informal IFOs within the study area.

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THE STUDY AREA

The study area is Oyo State, Nigeria. Oyo State falls within the southwest geopolitical zone of Nigeria covering Ekiti, Lagos, Ogun, Ondo, and Osun States. Oyo State is situated 703.6 kilometres south-west of Abuja, Nigeria's capital city, and 232.7 kilometres south of Lagos, Nigeria's commercial capital. Oyo State is the largest state by population in Nigeria's south-west geopolitical region, with a total area of 28,454 km2. Kwara State borders the state to the north, Osun State to the east, Ogun State to the south, and the Republic of Benin to the west. (Figure 1 below for the map of Oyo state) and specific local government areas studied are indicated in Table1.

Figure 1. Map of Oyo State (Source: Muse, 2010)

TABLE 1: STUDY AREA

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Senatorial district	LGA Urban Area	LGA Rural Area
Oyo Central	Oluyole	Atiba
Oyo North	Ogbomoso south	Kajola
Oyo South	Ibadan northeast	Ibarapa

Oyo State has 33 local government areas and three senatorial districts out of the 774 locals government areas that constitute the Federal Republic of Nigeria. The state has a population of about 4.5 million people, the majority of whom are Yoruba. However, within the state, there are sub-ethnic groups with distinct dialects. Ibadan, Ibarapa, Oyo, Oke-Ogun, and Ogbomoso are the five broad groups that make up the people of Oyo State. The popular food menu includes a*mala, ewedu* and bean stew (also called *gbegiri).* People's choice of food depends both on culture, locality, and levels of modernization in terms of the area they are located (Berger and van Helvoirt, 2018). The tradition of eating-out, as well as changes in socioeconomic status, are important factors influencing the foodservice system and operations. It is particularly strong in Nigeria, where both Muslims in the north and Yoruba in the west have a long-standing tradition of snacking and consuming fruits (Akinlade, 2016).

POPULATION, SAMPLING TECHNIQUES AND SAMPLE SIZE

The population of the study includes all operators, health inspectors and two (2) consumer each from the stationary operators selected from the three (3) senatorial districts within Oyo state. It was selected using stratified sampling technique and purposive sampling method was used to select six (6) local government with urban and rural area, the operators are categorized into three namely, stationary, semi-mobile and mobile who operate in busy area such as marketplaces, motor parks, roadsides, and those with structures where they operate their business.

3.0 RESULTS AND DISCUSSIONS

3.1 INVESTMENT CAPABILITY

The investment capability in terms of present worth of the business is shown in Table 2a which indicates that 14.2 % of the IFOs invested less than N50,000 in their businesses: out of which mobile operators was the majority (11.2%) followed by semi mobile operators, only very few stationary (1.1%) operators invested that low. Those who invested between N51,000 and N100,000 were about 18.3% out of which mobile operators were higher (11.8%) and the semi mobile and stationary were 3.6% and 2.9% respectively. The IFOs that invested between N101,000 and N200,000 were 17.8% with majority of them operating in the mobile category also, while 5.9% and 4.7% of them were semi-mobile and stationary. About 17.2% of them could invest between N200,000 and N300,000 out of which 11.2% and 5.9% of them belong to stationary and semi mobile categories of the IFOs respectively.

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No mobile operator could invest up to this amount, this could be because they are limited to what they can carry around and most of this equipment may require electrical source that are not mobile. The IFOs who invested between N301,000 and N500,000 were 14.8% of those sampled with no mobile operators belonging to this category, while 7.1% and 7.8% were stationary and semi mobile respectively. About 17.8% of IFOs invested above N500,000 in their business with none in the mobile categories 9.5% and 8.2% were stationary and semi mobile respectively.

About 30.2%, 24.8% and 11.8% of the total IFOs surveyed their fund from Coop society, family, and friends, and from personal savings respectively only about 4.7% were grants by government through programme like “trader moni”. Only 8.9% of them were able to source fund from the banks in form of loan. The inability of the other to get loan may be due to unawareness and unavailability of collateral for those loans. This result is similar to earlier findings Oluwale *et al*., (2013), Efunwole (2018) and Ilori *et al*., (2017) for the operators in the automobile repair sector, bakery firms and palm kernel oil processing firms in the southwestern region of Nigeria respectively. For the stationary operators about 47.1% had food warmers, 21.5% had either fridge or freezer, 15.7% had microwave oven, the safety facilities available in their shops are just availability non slippery floor that is, 41.1%.

TABLE 2A INVESTMENT CAPABILITY OF INFORMAL FOODSERVICE OPERATORS

Investment capability criteria					
				Frequency	**Percentage**
Category	**Stationary**	**Semi Mobile**	**Mobile**		
Present Worth of Business (×₦1000)					
5 – 50	2	13	23	38	22.5
51 – 100	5	11	15	31	18.3
101 – 200	19	8	9	33	19.5
201 – 300	7	09	-	15	8.9
300 – 500	19	6	-	25	14.8
Above 500	21	6	-	27	15.9
Total	**73**	**53**	**47**	**169**	**100.0**
Source of Capital					
Personal Savings	7	8	5	20	11.8
Friends and family	14	13	11	42	24.8
Coop Society	18	19	18	51	30.2
Money Lenders	2	5	7	14	8.3
Bank Loan	6	6	3	15	8.9
Government Institution	5	1	2	8	4.7
Others e.g. *aajo* or *esusu*	2	4	2	8	4.7
Total	**54**	**56**	**48**	**169**	**100.0**

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Facilities available in Shop (Stationary operators)					
Fridge and freezer	11	-	-	11	21.5
Microwave oven	8	-	-	8	15.7
Continuous warming System	5	-	-	5	9.8
Food warmers	24	-	-	24	47.1
Blenders	9	-	-	9	17.6
Others	6	-	-	6	7.8
Total	**53**			**53**	**100.0**
Safety facilities available in Shop (Stationary operators)					
Fire extinguishers	8	-	-	8	11.8
First aid box	Nil	-	-	Nil	Nil
Non slippery floor	21	-	-	21	41.1
Proper drainage system	12	-	-	12	23.5
Total	**53**	**-**	**-**	**53**	**100.0**

Source: Author's survey, (2020)

Table 2b shows the rating of the investment capability variables by the IFOs. Ability to identify profitable food business was rated 4.1 in a Likert scale of 1 to 5, with 1 representing nil and 5 representing very high this implies that the informal foodservice operators had high ability identify profitable business. Similarly, their ability to carry out feasibility study before investing in the business was fairly high (2.9), ability to procure necessary materials and equipment for their business was also rated very low. This may also be as a result of their low ability to raise enough fund for their business. This finding is in line with the report of Oluwafemi and Adeagbo (2018) on the analysis of marketing research and feasibility skills in Oyo State.

TABLE 2B RATING OF INVESTMENT CAPABILITY LEVEL OF THE IFOS IN THE STUDY AREA

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	1	2	3	4	5	Mean	SS
Investment capability						**2.78**	**1.12**
Ability to identify a profitable business	4(2.4)	9(5.3)	17(10.1)	82(48.5)	57(33.7)	4.06	0.93
Ability to carry out feasibility study	32(18.9)	39(23.1)	32(19.9)	37(21.9)	29(17.2)	2.95	1.37
Ability to procure the materials & equipment needed for good quality meal	70(41.4)	82(48.5)	10(5.9)	6(3.6)	1(0.6)	1.73	1.00
Ability to raise enough working capital	47(27.8)	48(28.4)	51(30.2)	10(5.9)	13(7.7)	2.37	1.17

Source: Author's survey, (2020)
1- Nil, 2 – Low, 3 - Fairly high, 4 – High, 5 - Very high, SS- standard deviation

3.2 INNOVATION CAPABILITY

Table 3a shows the innovation capability of the IFOs surveyed which indicates that 75% of the stationary IFOs introduced new method of meal preparation at their operation site for example brooms are used for the preparation of *ewedu* and now blender is being used. This makes it neater and faster to prepare, also electric motor grinder was used to mill boiled yam for *iyan*, gas cooker has been the trend to save cost and energy. In the same vein 72% and 66% of the semi mobile and mobile operators introduced new method respectively.

Table 3a Innovation capability of the IFOs

Type of innovation capability	**Stationary (%)**	**Semi-mobile (%)**	**Mobile (%)**	**Mean**
	N-53	**N-65**	**N-51**	
Introduction of new method of meal preparation	75.0	72.0	66.7	71.0
Development of new process	30.3	21.5	64.7	38.8
Acquisition of new technology	66.1	55.3	50.9	57.4
Organizational innovation	54.7	56.0	70.5	60.4
Marketing innovation	43.3	32.3	47.1	40.9

Source: Author's survey, (2020)

About 30% of the stationary developed a new process such as mixing and formulation for chin chin and cake production, also product like *sharwama* is recently developed processed food while 21.5% and 64.5% developed a new process respectively which may be due to

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their level of education. Also, 66% in the stationary category of the IFOs acquired new technology of meal preparation through trainings, workshop, and from their competitor while 55.3% and 50% acquired any form of new technology from the semi-mobile and mobile IFOs respectively. This new technology include ability to operate microwave oven, fridge, and gas cooker (Table 3b). About 70.5% of the mobile IFOs had organizational innovation which include change in positioning of employee that serve meals to customers while 56% and 54.7% had organizational innovation in the stationary and semi mobile category respectively. The IFOs survey had some marketing innovation in place to retain their customers this include price discount and promotional activities. About 43.3%, 32.3% and 47.1% used this marketing innovation respectively. This finding is similar to the report of Dada (2016) on the analysis of technological innovation among the small and medium sized food and beverage enterprises in Southwest of Nigeria.

3.3 PRODUCTION CAPABILITY

Table 4 shows the results of the production capability of the foodservice operators in the selected LGAs. Ability to purchase good quality food raw materials for their production was rated 3.39. this shows that the IFOs had high ability to purchase the required raw materials for production. These raw materials include raw foods such as yam tubers, plantain, yam flour, cassava flour, rice, beans, and other ingredient such as pepper, onion, tomatoes condiments amongst others. The inventory management of these raw food by the IFOs was rated 3.36. some of these raw foods are highly perishable, from the result of the interview conducted, the highly perishable food items such as tomatoes and pepper usually kept in the freezer or fridge to extend their shelf life.

Table 3b Examples of different Innovation observed at operation site

Innovation Capability Category	Stationary (n- 51)	%	Semi-Mobile (n- 53)	%	Mobile (n-65)	%
Product Innovation						
New product e.g. *sharwama,* jollof and fried rice	36	70.5	39	73.5	12	18.5
Presentation of menu	15	29.4	18	33.9	13	20.0
Process Innovation						
Method of meal preparation	11	21.5	18	33.9	14	21.5
Addition of new ingredients	15	29.4	22	41.5	8	12.3
Change in style of service	26	50.9	13	24.5	15	23.1
Organizational						

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Innovation						
Setting of the dining environment	12	23.5	13		11	16.9
Method of serving customers	10	19.6	09		13	20.0
Positioning workers	07	13.7	08	15.1	12	17.4
Marketing Innovation						
Inclusion of promotional activities	-		-		-	
Use handbills and banners	-		-		12	
Use of bonus to loyal customers	12		11		-	
Price variations	11		10		12	

Source: Author's survey, (2020)

- Total is different because of multiple answers

TABLE 4: PRODUCTION CAPABILITY OF THE IFOs

	1	2	3	4	5	**Mean**
Production Capacity						**3.36**
Ability to purchase good quality food raw material for production	5(3.0)	47(27.8)	37(21.9)	37(21.9)	43(25.4)	3.39
Inventory management of raw food items	3(1.8)	47(27.8)	39(23.1)	45(26.6)	35(20.7)	3.366
Quality management during production	6(3.6)	50(29.6)	40(23.7)	39(23.1)	34(20.1)	3.266
Production of good quality food to satisfy the consumers	8(4.7)	45(26.6)	36(21.3)	35(20.7)	45(26.6)	3.378
Ability to produce enough volume of food to meet demands	6(3.6)	41(24.3)	46(27.2)	33(19.5)	43(25.4)	3.39

Source: Author's survey, (2020)

1= Low 2= Fairly high 3 = High 4= Very high 5=Extremely high SD- standard deviation

Ability to manage the quality of their food during preparation was high 3.26. the interview conducted showed that they did not have quality control facilities, however they used tacit knowledge to arrive at the correct combination of raw materials for production. During production they also use the knowledge to arrive at current attributes such as aroma, taste,

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colour, and texture amongst others that is required of a good quality meal. The IFOs were also able to produce enough volume of food 3.38 to meet customer's demand especially at the peak periods of their production. This shows that the production capability of the IFOs in the selected LGA in Oyo state was high (3.4), and this similar to findings of Ilori *et al*. (2017) that palm kernel oil processing producer have high production capability. Figure 2 indicate that 38% of the IFOs surveyed had high knowledge of how to operate equipment such as microwave oven, to ensure safety of food produced.

3.4: LINKAGE CAPABILITY

Table 5 shows the results of the linkage capability of the IFOs in the selected LGA in Oyo state. The linkage of the foodservice system with their customer was rated 4.3. This implies that the linkage is strong. They enjoy high patronage of customers, probably because of their output which were of high quality as earlier reported in their study (Anyasor, 2021). Similarly, the food service operators have strong linkage (4.0) with raw food materials sellers. Some of them, from interview, had dedicated raw food seller who supplied the raw foods regularly to them. Their linkage with other competitors was fully strong. Similarly, their linkage with knowledge institutions such as research institutes and educational institutions was fairly weak. However, their linkage with government regulatory agent (food health inspectors) was high. This implies that the health inspector frequently interacts with them in terms of inspection and giving advice on the need to operate under hygienic and safe environment. There is low level of their linkage with knowledge institutions could be due to their level of education and awareness. There was a strong linkage between the IFOs and their professional association (3.5) this may be probably compulsory for all of them to belong to the association, this was supported by the report of (Hummel, 2017) that noted that informal workers organized better when in groups.

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Table 5: Linkage capability of the IFOs

	1	2	3	4	5	**Mean**	**SD**
Linkage Capability						**3.384**	**1.123**
Linkage with customers	3(3.4)	7(5.3)	18(10.1)	85(48.5)	59(33.7)	4.3	0.8

Linkage materials sellers	30(18.9)	38(23.1)	34(19.9)	36(21.9)	27(17.2)	4.0	1.1
Linkage with other competitors	71(41.4)	67(48.5)	21(5.9)	18(3.6)	6(0.6)	2.7	1.0
Linkage with knowledge institutions	45(24.8)	42(28.4)	41(30.2)	15(5.9)	23(7.7)	2.17	1.1
Linkage with government health inspectors	49(25.8)	37(21.4)	51(25.2)	14(4.9)	14(8.7)	3.0	1.5
Linkage with foodservice associations	37(27.8)	43(28.4)	51(30.2)	10(5.9)	11(5.7)	3.5	1.1

Source: Author's Survey, (2020)

1= weak, 2= fairly strong, 3 = strong, 4= very strong, 5= extremely strong. SS- standard deviation

3.5 MARKETING CAPABILITY

Table 6 indicate the marketing capability rating of the IFOs, which show that their knowledge of prices charged by other competitor is little (2.07), in the same vein their knowledge of price charged by their competitor in the formal sector for example Mr. Biggs was also little (2.08). The IFOs had a very adequate knowledge (3.61) of price of raw materials need for the preparation meals sold hence they can cost their output appropriately this supported by the report of Oluwale *et al*., (2013) and Efunwole *et al*., (2019). Their knowledge of consumer need was also, adequate (3.06), thereby making their overall mean rating of marketing capability as adequate.

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Table 6 Marketing Capability rating of the Informal IFOs.

Marketing capability.	1	2	3	4	**Mean-2.65**
Knowledge of prices charged	62(36.7)	51(30.2)	46(27.2)	10(5.9)	2.07

by other competitors					
Knowledge of prices charged by your competitors (formal)	60(35.5)	57(33.7)	44(26.0)	8(4.7)	2.08
Knowledge of raw materials prices.	4(2.3)	10(5.9)	123(72.8)	32(18.9)	3.61
Knowledge of consumer need	10(5.9)	21(12.4)	106(62.7)	32(18.9)	3.04

Source: Author's survey (2020)

1-None 2- little 3-adequate 4-very adequate

CONCLUSION

The technological capacity of the informal foodservice operators in some Local Government Area of Oyo state shows a low trend. The informal IFOs have low investment capability, production capability, and high marketing, innovation capability which could be due to their weak interactions with the knowledge institutions. These challenges need urgent attention from the state government and private finance organization by coordinating and making fund available for this sector (Informal foodservice operator) in the State.

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