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An Examination of Learning Processes in Selected Bakeries in Southwestern Nigeria

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ABSTRACT

Learning is the process of acquiring knowledge, skills and competencies to remain relevant and innovative. It is one of the essential determinants of efficiency and effectiveness of the individual and industrial economy at large. The focus of this paper is to examine the learning processes in an informal sector, specifically in selected bakeries in Southwestern Nigeria. Data were collected through questionnaire administration on owners/master bakers of 200 Bakeries. The result revealed that the predominant form of learning in the area of study is by apprenticeship which is mainly done through the transmission of tacit knowledge. Training was mostly conducted via oral instruction in Yoruba and English language. Learning outside the firm, consulting texts on baking and documentation of learning experiences by apprentices was found to occur occasionally. Level of education of apprentices was found to be related to how quickly knowledge is gained. The paper concluded that the sector may not develop at the expected pace unless more dynamic learning techniques are employed. The paper recommended industrial policy that will stimulate modern learning techniques in the sector.

Keywords: Technological Capability-accumulation, learning process, baking Industry, Southwestern Nigeria

INTRODUCTION

Technological capability (TC) has been defined as a set of functional abilities whose ultimate purpose is to develop difficult to copy organizational abilities (Panda and Ramanathan, 1996). It is a measure of the stock of knowledge, skills and competences that enables firm respond to various challenges (Efunwole, 2018). Adeoti (1997) noted that technological capability is the ability to assimilate, use, adapt and change existing technology and or advance a foreign technology through an endogenous process of learning.

Oyelaran-Oyeyinka (2004) noted that technological learning is the way by which firms acquire and build up technical knowledge and competencies. The accumulation of relevant technological capability is a vital pre-emptive means of enabling firms to achieve a competitive edge within an industry (Nelson, 1991; Duysters and Hagedoorn 2000; Kim 2000). To become competitive and catch up with modern trends, knowledge building and accumulation of technological capabilities is imperative (Figueiredo, 2002). Changes in economic contexts as a result of liberalism in trade and production coupled with advances in digital technologies altered significantly knowledge forms and of skill transfer processes (Lundvall and Johnson 1994; and Ducatel 1998).

Statement of the Research Problem

Worthy attention has been paid to the accumulation of technological capabilities in developed countries especially the formal sector (Lall, 1992; Bell and Pavitt, 1993; Kim, 1995; Kim, 1997; Dutrenit, 2000). However, considerably less attention has been paid to empirical evidence concerning learning processes in the informal sector. The informal sector employs the largest share of labour in developing countries and it is considered to be a fertile ground for growing the technological capabilities needed for economic development (Efunwole, *et al.*, 2019). The bakery sector was chosen as the area of study for several reasons. First, available literature shows that bread is one of the most consumed food items among the poor and young who constitute more than 70% of the population of Nigeria (Odinaka, 2013; Maziya-Dixon *et.al*, 2004). The National Bureau of Statistics (NBS) (2012) reported that Nigerians spent a total of ₦586,287,068,386:48 on bread between 2009 and 2010. Given the importance of this food item, it is important to investigate what it means to be a baker in the 21st century. Second, the Nigerian bakery industry is bedeviled with a lot of challenges such as lack of development infrastructure, low strategic planning capability and poor access to finance. (Akinbola *et al.*, 2013; Nigeria Industrial Revolution Plan (NIRP), 2014). These have led to poor quality of bakery products and packaging and outdated marketing strategies (Ajayi and Olawale, 2007; Ojinaka 2011 and Ohimain, 2014). A study in this sector will shed more light on the policy mechanisms and management practices that may be applicable in enhancing technological capabilities in the industry. In view of the above, the study aimed to reveal the predominant mode of learning and in the baking industry.

Learning is any process that strengthens the capabilities for generating and managing technical change (Akerle, 2003). Bell and Pavitt (1993) identified two categories of learning. The first consists of the accumulation of a set of skills through education, training and experience. This can be by hiring of skills and “learning by doing”. The second is technical change which has been further broken down by Lall (1987) into elementary learning which involves “learning-by-doing” and “learning-by-adapting”; intermediate learning which consists of “learning-by-design” and learning-by-improved design” and; advanced learning which is “learning-by-setting-up” a complete production system.

Oyeyinka-Oyelaran (2006) also identified two types of learning: non-formal and formal. He noted that the growth of small firms rely greatly on the non-formal (learning-by-doing) type, especially small African firms which are rooted in apprenticeship. The importance of learning was aptly noted by Akinbinu (2001) who reported that technological progress, innovation and economic development are correlated not with investment in science or R & D but with learning.

LITERATURE REVIEW

A Theoretical Framework for the Learning Process

The framework for the learning process has largely drawn on the work of Nonaka and Takeuchi (1995). This framework consists of four learning processes namely; external knowledge-acquisition processes, internal knowledge-acquisition processes, knowledge-socialization processes and knowledge-codification processes.

- i. *External knowledge-acquisition processes:* These are the processes by which individuals acquire tacit and/or codified knowledge from outside the company. This can be done through different processes; e.g. pulling in expertise from outside, drawing on technical assistance, overseas training, systematic channeling of externally codified knowledge, and inviting experts for talks among others.
- ii. *Internal knowledge-acquisition processes:* These are the processes by which individuals acquire tacit knowledge by performing different activities inside the company. For example, by doing daily routine activities and/or by engaging in improvements in existing processes, production techniques, organizational processes, equipment maintenance and products. The process may also take place through research activities within formal research and development (R&D) centres, plant laboratories and/or systematic experimentation across operational units and production lines.
- iii. *Knowledge-socialization processes:* These are the processes by which individuals share their tacit knowledge (mental models and technical skills). In other words, any formal and informal process by which tacit knowledge is transmitted from one individual or group of individuals to another (e.g. observation, meetings, shared problem-solving, and job rotation). Training may also work as a knowledge socialization process. For instance, during training programmes individuals from different backgrounds and experience may socialize their tacit knowledge with trainees and instructors. This framework takes into account different types of training like in-house training (course-based), on the job training (OJT), and the provision of training to other companies.
- iv. *Knowledge-codification processes:* These are the processes by which individuals' tacit knowledge (or part of it) becomes explicit. In other words, the processes by which tacit knowledge is articulated into explicit concepts in organized and accessible formats, and procedures, and becomes easier to understand. As a consequence, the process facilitates the spread of knowledge across the company (e.g. standardization of production procedures, documentation, and internal seminars). The elaboration of training modules by in-house individuals may involve both knowledge socialization and knowledge-codification processes. Thus processes (iii) and (iv) are critical for the conversion from individual into organizational learning.

Ernst *et al.* (1998) distinguished three types of learning; that is, formal learning leading to certificates, degrees and diplomas and; non-formal learning such as on-the-job training, collaboration or learning externalities, and informal training which is a lifelong process by which employees acquire values, attitudes and beliefs embedded in the organizational culture through daily experience, observation and exposure to indoctrination. According to Biggs *et al.* (1995) technological learning is enhanced when firms participate in an information-rich environment characterized by networking and training opportunities. This is especially crucial for firms that have not operated imported technology. Industrial dynamism and competitiveness depend largely on the accumulation of technological capabilities. Bell and Pavitt (1993) refer to any process that strengthens those capabilities as technological learning. Albu (1997) described technological learning as a process involving conscious effort. This is because according to Bell *et al.* (1982), studies of infant industries in the South demonstrated that learning does not occur spontaneously, and that performance can easily stagnate or decline over the long-run. Akerele (2003) defined technological learning as any process that strengthens the technological capabilities for generating and managing technical change. Firms that manage to master technology and initiate a process of incremental innovation, do so as a result of learning.

Furthermore, Biggs *et al.* (1995) underscored the elements of the process of skill acquisition in firms to include; learning by doing which refers to on-the-job skill acquisition by carrying out tasks in the production process; learning-through-training which has to do with the transmission of skills and further

improvement during periods explicitly set aside for those purposes; and learning-from-changing which entails adapting, diversifying, and improving the quality of products or production processes and introducing new products. Other elements are learning-by-evaluation through regular monitoring of changes and performances in production; learning-by-hiring by acquiring skills through consulting services and taking specialist advice outside the enterprise and; learning by searching to apply scientific research to production.

RESEARCH METHODOLOGY

The study was carried out in four selected states in Southwestern Nigeria; namely Lagos, Oyo, Osun and Ondo. The four states were purposively selected based on the preponderance of baking firms in the area (NBD, 2016). Primary data were collected using structured questionnaire, observation and interviews. The study population consisted of the registered bakeries in the Nigerian Business Directory (2016). Eighty owners/master bakers were selected in Lagos State while forty each were selected from the remaining three states making a total of two hundred (200) respondents. Efforts were made to ensure that the set of questionnaire was relevant to the research objectives of the study. The reliability and validity of the questionnaire was tested to remove ambiguities. Comments made at the pre-test stage were adequately considered to ensure relevance to the aims and objectives of this research and that the questions are easily understood. The reliability of the questionnaire was tested using Cronbach's Alpha method to assess the consistency of the entire scale. For this study, Cronbach's Alpha scores of 0.76 were obtained for the entire scale. According to Pallant (2004), reliability scores greater than 0.70 are acceptable. All questions had an alpha value above the standard guideline (0.70). This implies that the scales were suitable for analysis. These results therefore, confirmed that the instrument used for this study had satisfactory construct validity (Pallant, 2004). Data collected were analyzed using descriptive and inferential statistics.

RESULTS AND DISCUSSION

Technological Capabilities Training and Development of the Bakers

Table 1 shows how respondents learn baking, diffusion of knowledge and mode of apprenticeship. Majority (71.9%) of respondents learned baking through apprenticeship, 11.4% learned baking through vocational schools, 8.6% learned baking through family tutelage while 8.1% received training through flour millers. About 67% of the respondents learned baking for period of 2-3 years, 9.5% learned baking for a period of 5 years and above, 4.8% received training for a period of 4-5 years, 14.3% received training for a period of 1-2 years while 4.8% received training for a period of 3-4 years. Approximately 47% of the respondents learned baking through on-the-job-training for a period of 1-2 years, 19.5% learned it for a period of 4-5 years, 9.8% of respondents learned baking through apprenticeship for a period of 2-3; 8.3% of the respondents learned baking for a period of 3-4 years; 15.0% of the respondents learned baking for a period of 5 years and above. Almost half of the respondents 62.7% were paid by their masters when learning while 37.3% of the respondents were not paid. About 62% of the respondents paid their masters while learning while 37.6% did not pay to learn. In the similar vein, 60.7% of the masters were paying their apprentices as at the time of the survey while 39.3% were not paying their apprentices while learning. Meanwhile, 68.4% of respondents claimed apprentices paid to learn while 31.6% did not pay their apprentices while learning. More than three-quarters (78.0%) of respondents have worked in a bakery before, while 22.0% of the respondents never worked in bakery before. About 33% of the respondents had spent 3-5 years in the bakery industry, 22.0% each of respondents have spent between 1-3 years and more than 10 years in the industry while 12.8% had spent between 5-7 years.

Table 2 shows the language of instruction during learning how to bake. The most commonly used language of instruction was Yoruba Language (48.7%) followed by English language (42.3%). About 9% learnt baking using Pidgin English as language of instruction while those that learned baking in Igbo language constitute 0.4%. Comprehension and learning are easier when a person is instructed in his own language. This has been attested to by findings in East Asia where Japanese and Chinese students were first instructed in their own indigenous languages (Ayodele, 2004; Oluwale, 2010).

Table 1: Technological Mode of Training in the Bakery

How do you learn baking?	Frequency (N=200)	Percentage
Through family tutelage	16	8.6
Through vocational school	21	11.4
Through apprenticeship	133	71.9
Through flour millers	15	8.1
If through formal education, indicate duration of learning in years		
1-2	3	14.3
2-3	14	66.3
3-4	1	4.8
4-5	1	4.8
Above 5 Years	2	9.5
If through on-the-job learning, indicate duration of learning		
1-2	63	47.4
2-3	13	9.8
3-4	11	8.3
4-5	26	19.5
Above 5 Years	20	1.5
Did your Master pay you when learning?		
Yes	69	62.7
No	41	37.3
Did you pay your master when learning the trade?		
Yes	68	62.4
No	41	37.6
Are you paying your apprentice?		
Yes	65	60.7
No	42	39.3
Are your apprentices paying to learn?		
Yes	93	68.4
No	43	31.6
Have you work in a bakery before? (Knowledge diffusion)		
Yes	110	78.0
No	31	22.0
How many years did you spend in the bakery?		
1-3	31	22.0
3-5	46	32.6
5-7	18	12.8
7-10	15	10.6
Above 10 Years	31	22.0

About 30% of respondents always document what they have learnt, 17.7% of the respondents usually document their learning experience, and 28.6% of the respondents occasionally document their learning experience. About 13% of the respondents rarely document their experience while 10.9% of the respondents never document their experience. Approximately 18% of the respondents always consult books on baking to learn more, while 8.6% of the respondents usually consult books. About 29% of the respondents indicated that they occasionally consulted baking books for new ideas, 21.4% rarely consulted baking books while 8.6% never consulted books for learning. Almost half (46.7%) occasionally go for training to learn more, 23.1% rarely go for training outside the baking firm while 13.7% of the respondents usually go for training. 8.8% of the respondents always go for training, while 7.7% of the respondents never go for training.

Table 2: Language of training in the Bakery

Indicate language of instruction your master used to train you	Frequency (N=200)	Percentage
Yoruba	130	48.7
Igbo	1	0.4
Pidgin English	23	8.6
English	113	42.3
What language are you using to instruct your apprentices		
Yoruba	120	46.2
Pidgin English	23	8.8
English	117	45.0
How often do you document what you have learnt or experience?		
Always	52	29.7
Usually	31	17.7
Occasionally	50	28.6
Rarely	23	13.1
None at all	19	10.9
How often do you consult books? (baking manual to learn more)		
Always	34	18.2
Usually	16	8.6
Occasionally	81	43.3
Rarely	40	21.4
None at all	16	8.6
How often do you go for training to learn new baking methods?		
Always	16	8.8
Usually	25	13.7
Occasionally	85	46.7
Rarely	42	23.1
None at all	14	7.7

**Multiple dichotomy response therefore, total exceeds 200*

Table 3 reports the various factors that would aid apprenticeship learning such as age, gender, period of apprenticeship, education and language of instruction. Respondents agreed that younger apprentices learn faster especially when they are below 18 years of age. Also, respondents agreed that male apprentices learn faster but partially agreed with the fact that female apprentices learn faster. This implies that male apprentices learn faster than female apprentices. This may be related to the physically demanding aspects of the job as women may not be as physiologically capable as men in handling physically strenuous tasks. Respondents agreed to the fact that staying longer during apprenticeship training means being more skilled at baking.

Considering the level of education of the apprentices, respondents strongly disagreed that apprentices with primary school education learn faster than those with formal education. They however partially agreed to the fact that NCE apprentices learnt faster than technical college apprentices, and Polytechnic apprentices learnt faster than NCE apprentices but agreed that University apprentices learnt faster than Polytechnic apprentices. This finding is in conformity with Frazer, (2002) that more educated workers in Africa tend to be more productive apprentices. Also, respondents were of the view that using indigenous languages aids leaning. This has been attested to by findings in East Asia where Japanese and Chinese students were first instructed in their own indigenous languages (Ayodele, 2004). As noted by

Ayodele (2004), in virtually all advanced countries of the World (e.g., Japan, USA, Britain, France and Germany) children are first and foremost educated in their mother tongue. Furthermore, Ugboh (2004) affirmed that farmers learn better when indigenous languages are used for teaching and learning. However, there is a limit to knowledge accumulated through learning-by-doing. Johannessen and Olaisen (2001) found that tacit knowledge is bounded by negative feedback, because, while it promotes continuous improvements, it hardly leads to innovation. “Thus tacit knowledge promotes continuous improvements only to a certain level, and then declines” (Oyelaran-oyeyinka, 2004).

CONCLUSION

The aim of this paper was to examine the learning process in selected bakeries in Southwestern Nigeria. The result showed that apprenticeships’ mode of learning is the predominant method employed in the baking industry. Also, there is a common practice in the industry where apprentices were paid by master bakers during the period of learning. Findings also revealed that the adoption of indigenous languages aids faster learning in the industry. It was also discovered that there is a strong relationship between educational qualifications of the learner and rate of learning. Records keeping and documentation of learning activities in the industry is very poor. Another area as revealed by the finding of this paper is that apprentices occasionally consulted books to learn new things. Little wonder the industry is not moving at the pace expected with the modern technology and inventions in the developed countries. Training and re-training is an opportunity to expand the knowledge base of employees. External training exposure in the industry is below expectation.

Recommendations

In order to enhance effective learning processes in the industry, the following policy recommendations may be necessary;

1. Establishment of standard Baking schools either by government or through Public Private Partnership (PPP) will reduce the prevalence apprenticeship mode of learning which cannot lead to any meaningful innovation. This will afford the bakers to learn both theoretical and practical aspects of baking. It is believed that it will increase the pool of practitioners as well as their skills and expertise
2. There is need for higher institutions, especially the Universities and Polytechnics to foster strong linkages with the bakers by way of formalizing training activities.

Table 3: Factors that aid learning

S/N	Description	Undecided	Strongly Disagree	Disagree	Partially Agree	Agree	Strongly Agree	N	Median	Perception
1	Younger apprentices learn faster – below 18 Yrs	(5) 2.7%	(13) 6.9%	(38) 20.2%	(19) 10.1%	(41) 21.8%	(72) 38.3%	188	94.5	Agree
2	Male Apprentices learn faster	(5) 2.6%	(4) 2.1%	(17) 8.9%	(29) 15.1%	(69) 35.9%	(68) 35.4%	192	96.5	Agree
3	Female Apprentices learn Faster	(6) 3.2%	(14) 7.4%	(51) 27.0%	(44) 23.3%	(36) 19.0%	(38) 20.1%	189	94.5	Partially Agree
4	Staying longer means knowing better	(4) 2.1%	(18) 9.5%	(15) 7.9%	(33) 17.4%	(60) 31.6%	(60) 31.6%	190	96.5	Agree
5	Staying shorter means knowing less	(6) 3.1%	(24) 12.5%	(34) 17.7%	(26) 13.5%	(63) 32.8%	(39) 20.3%	192	96.5	Agree
6	No formal education extends learning period	(5) 2.7%	(18) 9.7%	(47) 25.4%	(45) 24.3%	(33) 17.8%	(37) 20.0%	185	92.5	Partially Agree
7	Primary school leavers learn faster than people with formal education	(11) 6.0%	(50) 27.2%	(47) 25.5%	(29) 15.8%	(16) 8.7%	(31) 16.8%	184	92.5	Disagree
8	JSS3 apprentices learn faster than primary school leavers	(11) 6.0%	(30) 16.3%	(38) 20.7%	(34) 18.5%	(38) 20.7%	(33) 17.9%	184	92.5	Partially Agree
9	SS3/WASCE holders learn faster than JSS3	(13) 7.1%	(12) 6.5%	(25) 13.6%	(57) 31.0%	(48) 26.1%	(29) 15.8%	184	92.5	Partially Agree
10	Technical college apprentices learn faster than SS3/WASCE	(11) 6.0%	(23) 12.5%	(30) 16.3%	(55) 29.9%	(43) 23.4%	(22) 12.0%	184	92.5	Partially Agree
11	NDE apprentices learn faster than Technical college apprentices	(12) 6.6%	(25) 13.7%	(31) 16.9%	(57) 31.1%	(28) 15.3%	(30) 16.4%	183	91.5	Partially Agree
12	NCE apprentices learn faster than technical college apprentices	(13) 7.1%	(25) 13.6%	(38) 20.7%	(52) 28.3%	(31) 16.8%	(25) 13.6%	184	92.5	Partially Agree
13	Polytechnic apprentices learn faster than NCE apprentices	(8) 4.3%	(26) 13.9%	(29) 15.5%	(53) 28.3%	(42) 22.5%	(29) 15.5%	187	93.5	Partially Agree
14	University apprentices learn faster than polytechnic apprentices	(9) 5.0%	(21) 11.7%	(29) 16.1%	(40) 22.2%	(40) 22.2%	(41) 22.8%	180	90.5	Agree
15	Using indigenous languages aids leaning	(9) 4.8%	(16) 8.5%	(35) 18.5%	(27) 14.3%	(52) 27.5%	(50) 26.5%	188	94.5	Agree
16	Using English languages aids leaning	(7) 3.8%	(18) 9.7%	(30) 16.1%	(50) 26.9%	(49) 26.3%	(32) 17.2%	186	93.5	Partially Agree
17	Using Pidgin languages aids leaning	(9) 4.9%	(18) 9.8%	(34) 18.5%	(45) 24.5%	(47) 25.5%	(31) 16.8%	184	92.5	Partially Agree

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