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Space Utilisation and Cassava Processing Industries Workers' Productivity in Oke-Ogun Region of Oyo State

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Abstract
Food security in different regions of the world is affected by various factors. However, little was said on guaranteeing food security through space utilisation in the agro-based industries such as the cassava processing industry (CPI). Thus, the aim of this paper is space utilisation and cassava processing industries workers' productivity in Oke-Ogun region of Oyo state. A multi-stage sampling and systematic random techniques were used to select five Local Government Areas (LGAs) out of 10 in the Oke-Ogun region with the highest cassava production and processing industries. A sample size of 400 cassava processing industries was considered. Nearest Neighbour Analysis and a factorial ANOVA statistic at $p \leq 0.05$were used in the analysis. The result revealed that land size of 15m x 22.4m (336.0m^2) which accounted for 45.7% of the selected CPIs was not adequate considering the activities involved in cassava processing. The space utilisation affected rates of production resulting in the dispersal of the cassava processing industries (Z-score = 5.498103). Therefore, there is the necessity of incorporating physical planning principles into cassava processing facility design. It was recommended that minimum of 3 metres must be observed between a row of fryers; minimum of 2 metres between a fryer and the other; and every fryer should have his/her small oven outside the industry. Space utilisation within the cassava processing industries was a challenge to achieving food security in the Oke-Ogun region.

Keywords: Food security, Space utilisation, Cassava processing, Industries and Oke-Ogun region

1.0 Introduction

The cassava processing industry is a vital sector in many developing economies, providing livelihoods for millions of people worldwide (FAO, 2018). However, the industry's productivity is often hampered by various factors, including inefficient workspace design (Muchiri & McNair, 2016). Space utilisation, in particular, plays a critical role in determining worker productivity, as it affects the ease of movement, accessibility of tools and equipment, and overall work environment (Dul & Neumann, 2009).

According to James et al. (2012), cassava roots are bulky, costly to carry and likely to rot within a few days of harvesting. It was confirmed by many scholars such as Adebayo & Akinpelu (2015), and Oyediran & Oyediran (2020) that cassava tubers contain cyanide; and roots provide an ideal raw material for many food products such as *fùfú, gaàrí,* flour and starch. Notwithstanding these qualities, cassava roots cannot be consumed in whatever form without processing them. Oyediran & Oyediran (2020) establish the activities in the cassava processing to include off-loading the cassava tubers from the delivery vehicles at the processing industry, peeling and washing of the peeled tubers, grating roots into mash, de-watering and fermenting mash into wet cake, sieving wet cake into grits and roasting grits into gaàrí, bagging and storing

the gaàrí under a hygiene-compliance environment. All these activities require adequate spaces for their operation within each industry.

Research has shown that well-designed workspaces can improve worker productivity, reduce errors, and enhance job satisfaction (Robertson & Winsler, 2013). Conversely, poorly designed workspaces can lead to decreased productivity, increased injuries, and worker dissatisfaction (Hignett & McAtamney, 2000). Despite the importance of space utilisation in industrial settings, there is limited research on its impact on worker productivity in the cassava processing industry. This study aims to investigate the relationship between space utilisation and worker productivity in the cassava processing industry, in Oke-Ogun region of Oyo state. Specifically, it seeks to identify the key factors influencing space utilisation and explore strategies to improve workspace design and enhance cassava processing industry workers' productivity in the region. The objectives are to: determine the spatial distribution of cassava processing industries in Oke-Ogun region; examine the size of the industry in Metres Square; assess the standard space required and observed space in relation to the activity; investigate comfortability with the working environment and reaction by the workers; and examine the impact of working environment and coping strategies. Thus, the paper is sectioned into 5, which include: introduction, literature review, methodology, findings and discussion, and recommendations and conclusion.

2.0 Literature Review

This section discusses relevant literatures under the conceptual, theoretical and empirical review subheadings. The conceptual and theoretical frameworks are herein presented according.

2.1 Conceptual Review

The concepts of space and cassava processing are hereby discussed in the succeeding subsections.

2.1.1 Concept of Space

Space refers to the physical area or environment where activities, operations, or processes take place (Hignett & McAtamney, 2000). According to Robertson & Winsler (2013), in industrial settings, space can significantly impact worker productivity, safety, and overall efficiency. The authors submit that the key aspects of space include the workspace design such as layout, ergonomics, and organisation of workstations. In addition, adequate allocation of space for tasks, equipment, and movement, and environmental factors such as lighting, ventilation, noise levels, and temperature control. Effective space utilization can enhance worker comfort, reduce errors, and improve productivity.

Relating this concept to this study, cassava processing industry layout and location should follow all the space standards that guide both the intra- and inter- space uses. The intra-space includes the space within the working places such as the drying, frying, milling, store, sieving, peeling and pressing areas. If these areas really follow specified space standards, good working environment will be guaranteed. The inter-space include access (road networking) to the site, location of the cassava processing industries and impacts on the adjoining uses. It is noteworthy that the adoption of space standards in locating and designing cassava processing industries creates a balanced industrial system. Therefore, this study considers space available, space requirement and space relationship with a focus on food security and cassava processing industry in the Oke-Ogun region of Oyo state.

2.1.2 Concept of Cassava Processing

Cassava processing involves transforming cassava roots into various products, such as: flour, starch, gaàrí, fùfú, starch, ethanol, animal feed (Oyediran, 2024). The traditional method of processing cassava roots in Nigeria is using a knife to peel the roots, washing them, and then applying several processes to produce the desired end products (Ekpa, Adeola, Mukhtar, & Ekpa, 2016). According to Ajibade & Adetuji (2012), cassava has a high potential for products diversification and its processing offers the best opportunity for linkages between the agricultural and non-agricultural sectors. The processing stages typically include peeling and washing, grating or crushing, fermentation, drying/frying. Cassava processing is a vital industry in many tropical countries, providing employment and income opportunities (Adebayo & Akinpelu, 2015).

2.2 Theoretical Framework

The Ergonomics Theory was adopted as suitable to anchor and serves as a theoretical support for the research. It is discussed as follows:

2.2.1 Ergonomics Theory

Ergonomics theory, also known as human factors engineering, aims at designing workspaces, equipment, and processes to fit the needs of workers, safety, enhancing productivity, and comfort (Dul & Neumann, 2009; Robertson & Winsler, 2013). It was propounded or coined by Wojciesh Jastrzebowski in 1857, and explored the relationship between human work and efficiency (Dul & Neumann, 2009). The benefits of this theory are to increase job satisfaction, improve productivity, and injury prevention. It can be said that by applying ergonomics principles, cassava processing industries will create safer, more efficient, and more comfortable workspaces, ultimately enhancing productivity and worker well-being.

2.3 Empirical Review on the Space Utilisation and Workers' Productivity

Haynes (2008) in his article titled "the impact of office layout on productivity", adopted a qualitative research to achieve his aim. This involves reviewing of literature on the linkage between office layout and the affected office occupiers' productivity; and the open-plan versus cellular office debate. Haynes (2008)'s findings showed that the connection among the office user work patterns, office layout, and productivity is not clearly established. He concluded by stating that the behavioural and social relationship should be considered in the office environment, if workers will be productive.

Indriyati (2015) conducts a research on the architecture and behavior in environmental psychology with a focus on space performance to meet the workers' needs in terms of work productivity and satisfaction. This author carried out on how the physical and psychological condition of space affected workers' productivity; and coping cooping behavior in their spaces of work. Indriyati (2015) uses staff of the university in Jakarta, Indonesia as subjects of the study. His methods involved post occupancy evaluation, interview and observation of the existing work conditions. His findings revealed that work productivity was influenced by both the physical and psychological performances. He concluded by recommending space adjustments as a means of securing productive work environment.

Housman & Minor (2016) conduct a research on: workplace design: the good, the bad, and the productive. The method employed included sampling of the performance of nearly 3,000 workers, with a large technology, in physical space and time. The distance between a worker and the other (radius) was measured; distance in terms of time and function were compared to establish their productivity, quality exhibition, and effectiveness. Housman & Minor (2016) find out that spillover is persistent and reducing in the physical distance (enough space) between 2 employees. In addition to their finding, they realised that pairing of workers in

physical space improved their performance by some 15%. It was concluded by these authors that workplace space design is a resource that creates a greater effective, productive and efficient organisation.

Despite the importance of space utilisation in industrial settings, there is limited research on how spatial arrangements in cassava processing industries specifically affect workers' productivity. As some studies have examined the general impact of work environment and space design on productivity in manufacturing industries, few have focused on the cassava processing industries in Nigeria, especially in the Oke-Ogun region of Oyo State. Thus, this research work is carried out to fill this identified gap.

2.5 Study Area

The Oke-Ogun region (Figure 1) is in Oyo state, Nigeria. The most value-based industries in this type of region as established by Rajkumar (2013) are the agro-based ones. The tendency for guaranteeing food security through cassava processing industry in region is very high because of some critical factors such as the abundance of fertile land for cassava production, livestock to consume the cassava peel-off, cheap labour, favourable climatic condition and large domestic and international markets (Daud, Amao, Ganiyu & Adeniyi, 2015). The region serves as the food basket of the state and about 70km from Ibadan, the capital of the State (Adebajo, Bolarinwa & Omotayo, 2015).

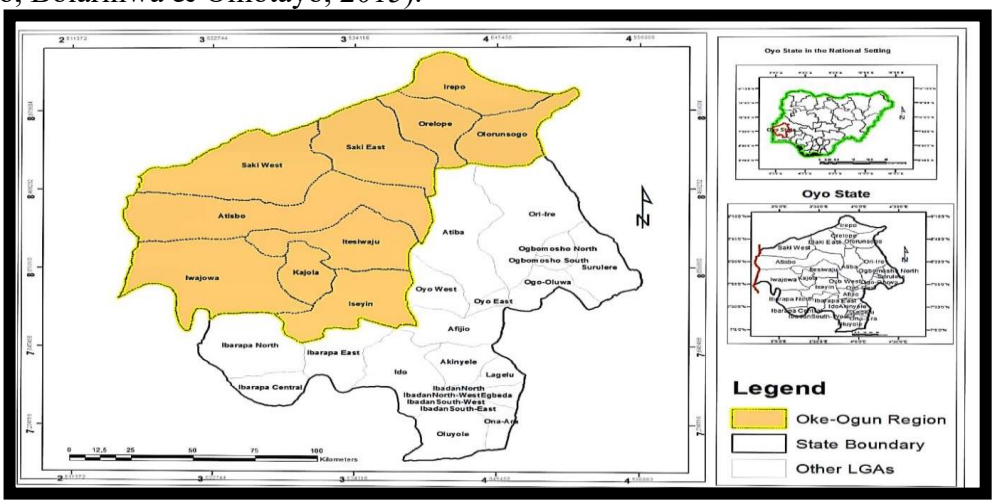

Figure 1: The Oke-Ogun Region within Oyo State Context
Source: Iseyin Central Zonal Town Planning Office, 2018

3.0 Methodology

This study adopted a mixed-methods approach to investigate the relationship between space utilisation and workers' productivity in cassava processing industries in the Oke-Ogun region of Oyo State. The research combined both primary and secondary data sources. The primary data were gathered through questionnaire administration, Focus Group Discussion, and observation checklists. A pre-tested structured questionnaire was administered to 400 respondents, including both workers and owners of cassava processing industries. The respondents were selected from a total sample frame of 3,015 (Cassava Processing Associations Register, 2021). Moreover, FDGs were conducted with six participants from each of the five selected Local Government Areas (LGAs)—Iseyin, Atisbo, Iwajowa, Kajola, and Itesiwaju. These groups were deliberately diversified by gender, age, occupation, and role in cassava processing to ensure a broad range of perspectives. In addition, an observation checklist was employed to assess compliance with key planning standards, including plot size, setbacks, accessibility, ventilation, and air quality in the selected cassava processing industries.

A multi-stage sampling procedure was adopted to select the sample for this study. First, five LGAs with the highest concentrations of cassava production and processing industries were purposively selected. From these, 15 communities were randomly chosen using systematic random sampling from a list of 62 communities. A total of 1,111 cassava processing industries were selected for the study, representing approximately 37% of the total number of industries in the region. A sample size of 400 respondents was selected from this pool, which aligns with Glenn's (2003) assertion that a minimum sample size of 400 is adequate for a population of 100,000 or more. Secondary data were sourced from literature review, government publications, and reports from relevant agencies, particularly focusing on policy recommendations related to space utilisation, cassava processing industries, and food security.

Descriptive and inferential statistics were used to analyse the data from the questionnaires. Descriptive statistics provided a summary of the data (e.g., frequencies, means), while inferential statistics was employed to test the hypothesis. Specifically, a Two-way analysis of variance for production rate per month (kg) as a function of physical work environment was used. Additionally, Geographical Information System (GIS) was utilised to map spatial distribution patterns of the cassava processing industries and analyse their proximity to essential infrastructure (e.g., roads, markets). The qualitative data from FGDs and open-ended questionnaire responses were analysed through narrative analysis to identify themes and insights regarding the perceptions of stakeholders on space utilisation and productivity. Ethical issues were carefully addressed throughout the study. Informed consent was obtained from all participants, ensuring their voluntary participation. Respondents' privacy was respected, and the confidentiality of their data was maintained throughout the research process. The study also adhered to ethical guidelines in the design of research instruments and data collection.

4.0 Results and Discussion

4.1 The Spatial Distribution of Cassava Processing Industries in Oke-Ogun Region

The pattern of the distribution of cassava processing industries within the Oke-Ogun region was tested using the nearest neighbour analysis. The result as presented in Figure 2 shows that cassava processing industries distribution was dispersed all over the region as the nearest neighbour index (1.8) was greater than 1. Given the Z-score of 5.49810284276564, there is less than 1% likelihood that this dispersed. When the nearest neighbour ratio is less than 1, the dataset is said to exhibit clustering behavior. When it is equal to 1, then the distribution is said to be random and when it is greater than 1, the distribution tends towards dispersion. In this case, the nearest neighbour ratio is greater than 1. Therefore, the cassava processing industries distribution in Oke-Ogun region is dispersed. The implication was that the distribution would not promote division of labour, sharing of facilities and ideas or enjoy economies of scale which will not allow for increased of improved production all of which will not enhancing food security.

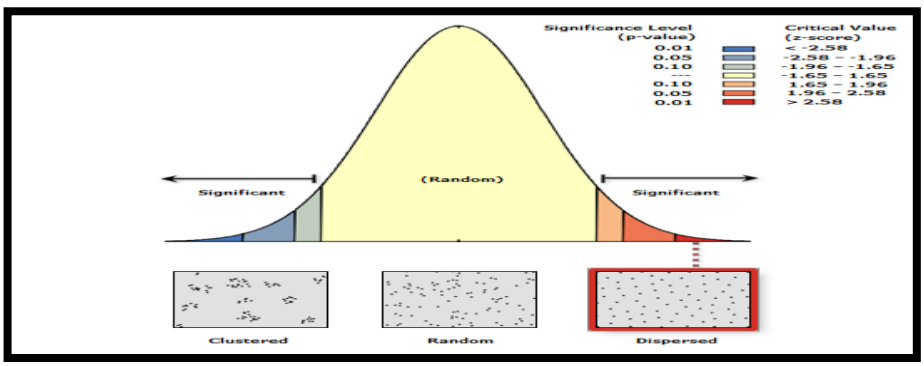

Figure 2: The Nearest Neighbour Analysis Result
Source: Author's Analysis, 2021

4.2 Size of the Industry in Metres Square

The results of the analysis as contained in Table 2 revealed that a large number (45.7%) of the cassava processing industry had 15m x 22.4m (333.76.0m^2) and a small number (5.3%) operated on 3m x 3m (9.0m^2) size of land. It should be noted that those that claimed to operate on 9.0m^2 and 14.4m^2 were *fùfú* and *láfún* processors. It was observed that the size of the industries producing *fùfú* under study was most inadequate as presented in Table 2. This is so in Iseyin, Itesiwaju and Atisbo as majority of the workers (Peelers and Sievers) worked in the sun (Plate 1) due to limited space and clumsiness of processing activities. Similar situations were noticed in Kajola and Iwajowa LGAs as the size of the land could not accommodate the number of the workers and thus peelers worked under nearby trees. Sizes of the industries were less than UNIDO standards reported by Abayomi (2015) that a standard cassava processing industry should have a land size of at least 917.0m^2. Thus, cassava processing was given about 1/3rd of the acquired space to work. This working condition may affect the productivity and health of workers. A fryer testified to this and said:

> During the dry seasons when the weather becomes hot, our production rate is always less than that of the rainy season. This is because every place within the industry will be hotter and we did not use to work well under this condition else one suffocates or slumps (FGD, 17-12-2021, 1:43 p. m.).

Table 1: Size of the industry in metres square and processing output

Size in m^2	Frequency	Percentage	Processing Output per day	Remarks
3m x 3m (9.0m^2)	59	5.3	2 Head-pans	Space Not Adequate
3.6m x 4m (14.4m^2)	118	10.6	3-4 head-pans	Space Not Adequate
15m x 15m (225.0m^2)	372	33.5	6 Head-pans	Space Not Adequate
15m x 22.4m (330.0m^2)	508	45.7	7 Head-pans	Space Not Adequate
30m x 30m (900m^2)	54	4.9	10 bags	Almost Adequate
Total	1,111	100.0		

Source: Field work, 2021

4.3 Standard Space Required and the Observed Space in Relation to the Activity

A standard space for every activity in an industry boosts workers' efficiency, effectiveness and productivity and as found in this study may indirectly affects food supply. To determine the adequacy of space within cassava processing industry in the Oke-Ogun region of Oyo state, existing space standards were used to assess the provisions made by the subject industry owners and presented in Table 2. The assessment revealed that despite the availability of land in the Oke-Ogun region, none of the recommended/expected space standards was adequately observed. This could be attributed to ignorance of the industry owners that space (within and outside the industry) contributes to workers' productivity and reduces the supply of processed cassava products (food).

Table 2: Standard space required and the observed space in relation to the activity

Activity	Standard Space Required	Observed	Remark
Peeling Area/Shed	10m X 10m (100m^2)	8m X 11.2m	Not Adequate
Grating and dewatering	10m X 14m (140m^2)	6m X 10.6m	Not Adequate
Frying	10m X 13m (130m^2)	8.3m X 10.6m	Not Adequate
Sieving Area	16m X 16m (256m^2)	None	

Bagging and Storage	6m X 14m (84m^2)	6m X 11.2m	Not Adequate
Office	6m X 14m (84m^2)	None	
Wash Tank	7m X 4m X 0.4m (11.2m^3)	None	
Wet Area	10m X 14m (140m^2)	None	

Source: Abayomi (2015) and Author's Construct (2021)

4.4 Comfortability with the Working Environment and Reaction by the Workers

Comfortability of workers with the working environment increases productivity. Figure 3 shows that majority (82.0%) of the respondents were not comfortable with their working environment, while 18.0% claimed to be comfortable. A fryer among those that claimed not to be comfortable expressed that: "It is not easy for someone to be on the same spot for almost 8 hours because of access restriction within the industry. In addition, overheating and smoke from the firewood are real problems" (FGD, 17-12-2021, 2:45 p. m.). Additionally, a peeler also declared that: "Whenever we have cassava, we are always in the sun peeling cassava" (FGD, 17-12-2021, 2:50 p. m.). It should be noted that a poor and uncomfortable working environment is negatively affecting cassava products production in the industry which is in consonance with Abrey & Smallwood (2014) submission.

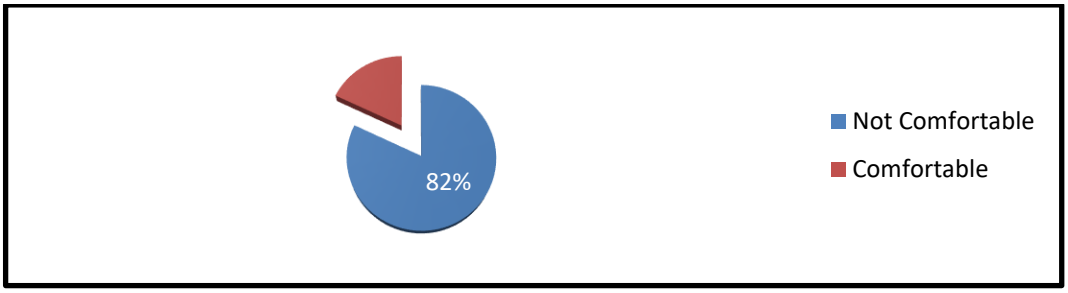

Figure 3: Comfortability with the working environment
Source: Field work, 2021

People have various ways to react to unfavourable conditions most especially working environment. This may be harsh, moderate or soft/simple. Figure 4 presents the reaction of cassava processors to the unfavourable condition of their working environment. Two-thirds (66.1%) of the respondents claimed to be frustrated with their working environment and reacted to it as thus; 17.9% of them through anger; 15.7% through stress; and 0.2 of the respondents through happiness. All these reactions can affect workers' productivity and lead to psychological problem (Sarode and Shirsath, 2014).

With how cassava processing had affected the respondents' health, a fryer expressed that: "There are many times I experienced some form of respiratory problems, headaches, and, fatigue, which in the long periods reduced my productivity" (FGD, 17-12-2021, 2:35 p. m.). This declaration is an evidence that there are some challenges that are associated with working under unfavourable environment. In another vein, majority (73.2%) of the respondents claimed that poor working environment had affected their health. An operator submitted that: "The noise generated from the grating machine I used every day has affected my hearing and made me not to be able to have silent communication as I always thought they were not hearing me" (FGD, 17-12-2021, 2:40 p. m.).

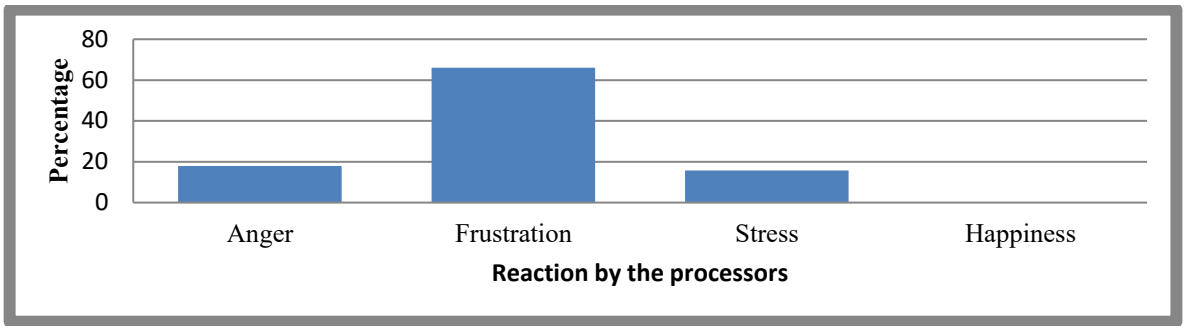

Figure 4: Reaction to the unfavourable work environment
Source: Field work, 2021

4.5 Impact of the Working Environment and Coping Strategies

The working environment is one of the factors that contribute to high productivity. The respondents were asked whether their working conditions contributed to stress from cassava processing activities or not. Majority (94.0%) of the respondents established that their working environment contributed a lot, while 6.0% submitted that it did not. The reason for the respondents not finding the activities stressful could be attributed to the limited time that they spent in the industry.

Respondents were asked how they coped with the stress accompanying the processing activities. Table 3 presents that majority (80.0%) of the respondents submitted that they took drugs (pain relievers many times) after closing from the work every day; 11.6% of them closed earlier so that they would leave the environment on time; 5.0% called for help/assistance from co-workers; 2.3% skipped a day; and 1.1% adopted spiritual means (prayers) and sleeping. Taking drugs every day after closing could be dangerous to their health as these drugs have their side effects. Further discussions with those that adopted taking drugs every day revealed that they would have withdrawn from the job but there were no other sources of livelihood that were as reliable and profitable as cassava processing, at least everybody has access to food. It could be deduced that all these measures/strategies affect the sustainability of food security within the region as the health of the workers in the future is not safe.

Table 3: Coping strategies for stress from cassava processing activities

Adopted Coping Strategy	Frequency	Percentage
Taking pain relieving drugs after closing everyday	889	80.0
Closing earlier	129	11.6
Skipping a day	25	2.3
Calling for assistance from co-workers	56	5.0
Others (prayers and sleeping)	12	1.1
Total	1,111	100.0

Source: Field work, 2021

The study went further to determine the difference in the production rate per month for workers with varied physical work environment. To test whether or not there exist any differences in the production rate per month for workers with varying physical work environment such as: *Comfortability with working environment*, *contribution to production stress by the working environment*, *assessment of air quality* and *assessment of ventilation*, Factorial ANOVA was conducted. Results on Table 4 reveals that production rate per month are significantly different with the workers' *comfortability with working environment* [$F_{(1,1101)}$=13.57], *assessment of air quality*[$F_{(4,1101)}$=185.30]and *assessment of ventilation* [$F_{(1,1101)}$= 394.00] $p<0.001$. The table also shows that there was a significant interaction between the effects of *assessment of air quality* and *assessment of ventilation* on production rate per month, $F_{(1,1101)}$= 101.72, $p<0.001$.

Also, the results of the Levene's Test of equality of error variances[a,b] were presented in Table 4.

Table 4: Two-way analysis of variance for production rate per month (kg) as a function of physical work environment

Variable and Source	*df*	*Mean Squared*	*F*	*Partial Eta squared*
Production Rate per month				
Are you comfortable with the working environment?	1	41377561.66	13.57*	0.012
Air quality of the environment	4	565144587.50	185.30*	0.402
Ventilation of the environment	1	1201760925.00	394.00*	0.264
Air quality of the environment*Ventilation of the environment	1	310231339.40	101.72*	0.085
Error	1101	3049820.32		

*p< 0.001

Source: Field work, 2021

The Two-Way Analysis of Variance tested the production rate (kg) per month as a function of comfortability with working environment, contribution to production stress by the working environment, assessment of air quality and assessment of ventilation.

4.6 General Assessment of the Cassava Processing Industry by the Workers and Discussion

A factor is not enough to assess cassava processing industry in Oke-Ogun region. Therefore, factors were grouped into physical and work events. Table 5 reveals that majority (51.1%) of the respondents claimed that the rewards from cassava processing industries in the Oke-Ogun region was very adequate and just 0.1% submitted that the rewards were very adequate. It could be deduced from this that workers were being rewarded greatly for their services. Also, 74.6% of the respondents established that ventilation in their workplace was adequate and 1.2% claimed it was not.

The reason for adequate ventilation could be attributed to the fact that all the processing except grating and storing were done in the open areas under sheds. It should be noted in Table 5 that 64.8% of the respondents attested that the natural surroundings of cassava processing industries were moderate. This could be attributed to the fact that trees, farms and fisheries were not tampered with. In addition, 42.9% of the respondents submitted that their performance was not adequate due to their workplace environment.

Findings presented in Table 5 also show that 88.0%, 59.0%, and 53.2% of the respondents claimed respectively that space interaction, privacy and moving about were very inadequate. It could be deduced from Table 5 that cassava processing jobs may be economically viable, work environment has adequate ventilation and natural resources but job performance may not be adequate. This could be attributed to the fact that other factors such as accessibility within the industry, air quality, comfort, noise and temperature are absent. In summary, inadequate space (land) utilisation can affect the workers' performances/outputs and lead to shortage in food production.

Table 5: Assessment of the cassava processing industry by the workers

Factors	Very Adequate	Adequate	Moderate	Not Adequate	Very Inadequate	Total
Physical Factor					Percentage	

Air quality	0.1	1.2	52.7	15.0	31.1	100
Air circulation	7.2	32.2	60.2	0.1	0.3	100
Ventilation	19.7	74.6	5.7	0.0	0.0	100
Natural surroundings	23.1	12.1	64.8	0.0	0.0	100
Visual quality	11.8	25.1	57.2	5.9	0.0	100
Furniture	13.6	29.3	15.9	41.2	0.0	100
		Working Events				
Daily work type	11.8	59.4	28.8	0.0	0.0	100
Space interaction	0.0	0.0	5.9	6.0	88.0	100
Social interaction	24.8	57.2	18.1	0.0	0.0	100
Noise	6.1	21.5	13.0	24.2	35.2	100
Privacy	0.0	0.0	6.0	29.0	59.0	100
Moving about	6.1	11.8	19.0	9.9	53.2	100
Rewards	51.1	36.7	12.2	0.0	0.0	100
Output/Performance	11.9	17.4	27.8	42.9	0.0	100

Source: Field work, 2021

All findings pointed to the fact that space allocated to the various activities were inadequate and was affecting household food security. The peeling area of 3.6m by 3.0m which was expected to accommodate a minimum of 6 peelers might be inadequate for this type of job. In addition, research results and observation from the workspace/environment survey showed that workplace environment had direct impacts on workers' productivity, comfort, health and safety, workers' concentration on the works, job satisfaction and morale. Important factors in the work environment that should be considered include factory space building design, workplace layout, workstation set-up, equipment design and quality, ventilation, temperature, lighting, noise, vibration, radiation and air. It could be said that an increase in productivity level is a function of a conducive working environment for the workers.

5. Conclusion and Recommendations

Value additions to local cassava through processing is important to reduce the bulkiness of fresh tubers, minimise post-harvest losses, increase shelf life, stabilise product prices and facilitate easy transportation from farm to table or/and markets (local or urban). Notwithstanding, it is evident from this study that space (land) utilisation in terms of inadequate land availability for the industry, nonconformity with the space standards and poor space relationship, poses a serious threat to the cassava processing industries in achieving food security in the Oke-Ogun region of Oyo state. It is believed that if the recommendations are strictly adhered to, space utilization in cassava processing industry within the region and other regions with the same endowment will facilitate food security.

For space utilisation in the cassava processing industries to guarantee food security in the Oke-Ogun region, it is recommended that:

i. The distribution of the cassava processing industries should be clustered to promote division of labour, sharing of facilities and ideas thereby facilitate food security.

ii. A cassava processing industry should have a land size of at least 917.0m^2, considering their activities.

iii. Recommended Town Planning requirements must be met by the owners of the industry before commencement of the processing operation.

iv. Improved working environment is recommended, as this contributed to the productivity rate. Workers should see their working place/space as their own offices and be comfortable.

v. Frequent taking of pain-relieving drugs (analgesics) after work every day may cause kidney damage or failure, stomach ulcers, respiratory depression and other effects (Oyediran, 2024). Therefore, they should stop the habit.

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