

ANALYSIS OF MARKET SPACE: A PLANNING PANACEA FOR ACHIEVING SUSTAINABLE DEVELOPMENT IN SAMINAKA MARKET, KADUNA STATE, NIGERIA

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Abstract: Market is a centre of various commercial and economic activities, it provides the means for exchange of goods and services thru buying and selling. It's a key incubation point for micro, small, and medium enterprises; hence effective space use is a key ingredient in ensuring efficient operation of enterprises that operate therein. This creates decent jobs and economic growth vital for achieving the Sustainable Development Goal (SDG) eight. Therefore, the objective of the study is to analyse the market space thru reviewing the concepts, principles, and space standards of markets; and to identify the physical planning problems associated with the market and to prepare a planning proposal and recommendation to enhance efficiency. A total of 338 questionnaires were administered to the respondents who were users of the market; of which 256 representing 76% were retrieved. Structured interview was also conducted with market leaders to complement the data acquired by questionnaire. Secondary data were used like the google earth image and administrative map of Saminaka market, which were used for spatial analysis in GIS. The results revealed that the market was congested and in deplorable condition with dilapidated stalls, open refuse dumping sites, encroachments into circulations and roads, poor toilet facilities and so on. More than 50%, about 4.27 Ha out of 8.4, of the market is vacant, which has not been utilised. Therefore, recommendations via alternative concept proposal A, B, and C were further examined. Where each concept proposed rehabilitation of existing facilities and the establishment of ones needed that were hitherto non-existent, like parking space and so on. Finally, alternative concept A had the highest weight and was adopted as the best, which has a parking space at the periphery.

Keywords: Analysis, market space, urban planning, SDGs, stalls, GIS & remote sensing, jobs creation, economic growth.

1. INTRODUCTION

The Sustainable Development Goal (SDG) eight (8) emphasizes the need for creating an enabling condition and environment for decent and sustainable employment opportunities and economic growth for all [18]. One way amongst many for achieving SDG (8) is by injecting "planning panacea" into the markets' space in our communities in particular

and throughout the country as a whole [14]. Market is a key incubation point for micro, small, and medium enterprises that determine the urban centres' micro economics to a considerable extent. Effective space use is a key ingredient in ensuring efficient operation of enterprises that operate therein.

A large number of the markets in Kaduna State are not performing at their peak for so long. The study area, the Saminaka town market in Lere Local Government Area (LGA) of Kaduna State has been in a stale state for about four decades. Though, it is congested among other concerns, which causes obstruction of free and open flow of exchange of good and services that basically provide jobs and economic growth for the users and local inhabitants. Hence, the need to rebrand the market in order to serve its fundamental purpose for the present, as well as for some years to come. This can be achieved through a robust structural and physical plan for the market [2]. A plan that when invested into the market by stakeholders will resolve most if not all the problems afflicting it.

Urban planning organizes space for economic activities, safety, convenience and aesthetics [11]. Though, a great number of markets in developing world including Nigeria are performing below expectations. However, state of markets is often reviewed by appraisal or analysis of their performance periodically and regularly. Most markets are location specific, being situated within the physical environment where people visit from far and wide to gather for buying, selling, and exchange goods and services [7, 19]. Though, the use of GIS provides simple and fast solution to site location question using spatial analysis by employing in-built modules and tools for buffering, Euclidean distance, and modelling [4]. However, GIS rely on image data furnished by remote sensing, or positional data provided by traditional surveying instruments or data from modern Global Positioning System (GPS) in order to carry out site-location analysis of the type required by this study [14].

Nigeria is the 11th largest producer of maize in the world and the largest in Africa [20]. While, Kaduna State is the leading producer of maize with Saminaka as the major contributor [17]. Saminaka market is one of the biggest periodic markets for trading of maize in West Africa [6]. Despite this grand status, the market is dilapidated and out of class in comparison to the "name" it musters. The market present status was not planned inclusively to emanate its trading prowess into financial gains and wellbeing of the people living within Saminaka town and environs. Alas, the town is ranked fourth most developed urban area of the state behind Kaduna metropolis, Zaria, and Kafanchan.

The market is an eye sore, its bedeviled by paucity of drainage facilities causing flash floods during the wet season, and frequent pools of stagnated, polluted, and waste water that are tantamount to health risks and issues leading to potential health complications. Whereas, the existing circulations had been converted by traders to open market which also hinder vehicular access into the market. Moreover, there is no reserved parking space leading to congestion; low environmental quality due to poor waste management as a result of insufficient refuse dumps and evacuation system, as well as paucity of lavatories. Furthermore, there is also inadequate security personnel and facilities in the market causing breaking and entry in some of the shops and ware houses.

The sustainable development goal 8 emphasizes the need for economic growth and decent jobs and this might not be achieved when market area is faced with the aforementioned problems. It is within these stated problems that this study intended to analyse the status of Saminaka market and recommend a befitting structural and physical plan for the market so that more jobs would be generated, and economic growth and development would be achieved. Furthermore, a systematic plan has the advantage of blending with the projections for the future increase in the market size as the number of users of the market also increase, while providing alternative plan in accordance with and which satisfies the principle of urban, regional and country planning for safety, convenience, economic development and aesthetics.

There are many studies that appraised or analysed the states of markets; amongst these include; [14] conducted a research that appraised the structure of market in Aleshinloye, Ibadan, Nigeria. Direct observation and questionnaire administration were the two methods used in data acquisition. While spatial data of the market facilities were obtained using coordinates with a handheld GPS. Google Earth map and imagery of the market area were used as the secondary data. The result from the image revealed that; there were 274 structures which were either standard sized shops or smaller. The result further revealed that health care facility was lacking in the market, the market planning was poor and haphazard as many stalls were placed under high tension electric cables which was dangerous to lives and properties. While a number of hawkers encroached into the roads, pathways or circulations which increased disorder. The study recommended re-planning the market to provide the facilities that were lacking or to relocate the utilities that posed danger to the market.

In a related study, [3] analysed the market location and efficiency in Mokolo market, Yaounde, Cameroun. Semi-structured interviews with market leaders and direct observation were the two methods used in data collection. The study revealed that poor planning has greatly affected the efficiency and effectiveness of Mokolo market. The study used cartographic design techniques to present the chaotic market situation and proposed or recommended how Makolo market should be using town planning standard.

Additionally, [2] assessed market facilities and their effects on settlements close to them in Akure, Nigeria. The study used questionnaire and observation to acquire data, as well as data from the government archives. Questionnaires were administered to users and to residents adjoining the market. Descriptive statistics was employed to analyse the acquired data. Findings revealed that the market require facilities, utilities, and services such as parking spaces, firefighting equipment, proper roads and circulations, safe area for children and so on, which were either non existing or were lacking. The study further revealed traffic congestion, air pollution, roadside vehicle encroachment as some of the problems manifestation because of the absence or lack of the aforementioned. The study concluded that facilities in Akure market were inadequate and recommended that government should provide them to avoid catastrophe.

Similarly, [16] worked on understanding market and market analysis in Bangkok, Thailand. Relatively, [1] in conjunction with ILO (2006) studied rapid market appraisal in Indonesia; though the study highlighted the significance of regular market appraisal and analysis for market expansion. Therefore, this study aimed at analyzing the market in Saminaka, Kaduna State, Nigeria with the view of examining the issues and proffering planning panacea for achieving sustainable development.

2. MATERIAL AND METHODS

The study area is the market in Saminaka, the headquarters of Lere Local Government Area (LGA). It is located between Latitude 10° 39'24"N to 10° 44'8"N of the equator and Longitude 8° 6'41E' 8° 7'6'E of Greenwich Meridian. Saminaka experiences a typical tropical continental climate with distinct seasonal tegument, oscillating between cold to not too hot and humid to wet [12]. High storm intensities produces surface run-off building up a network of medium seized river system [10]. Soil and vegetation in Saminaka Area of Kaduna State is very fertile and conducive for cultivation. Most of Saminaka land has a fertile soil which encourages plant growth by providing nutrients, acting as a water holding tank, and serving as the substrate to which plants anchor their roots [9].

Saminaka market was founded in 1975. The market is a weekly market which holds every Wednesday of the week. Saminaka town is 670.50 metres above sea level and about 640 kilometres away from the Atlantic Ocean [12]. The market is bounded to the North by Hayin Nasarawa, to the South by Jos road, to the East by Nasarawa and to the West by Tudun Fulani. The total size of the market is about 8.4 hectares. The market is characterized by a relatively gentle slope terrain which tends to slope towards the western part of the area. See Figure 1. People engage in buying and selling of different farm products and other materials, such as maize which people come from various parts of the country and neighbouring countries, but despite this the market has never been planned [17].

Methodology included the sample frame which enables the researcher to determine the variables to study or survey for the purpose of study. Therefore, the sample size was determined through the use of Krejcie and Morgan pre-determined sample size table. Accordingly, a sample size of 338 was obtained from a sample frame of 2840 stalls. While, the random sampling technique was adopted for the purpose of administering the questionnaires and the collection of data.

The primary data were sourced from the administration of questionnaires to respondents who were buyers and sellers in the market. Additional data was acquired through structured interview conducted with the market leaders of various sections and through direct observation. The secondary data used include: historical background of the market, existing layout plan, existing land uses, location map, satellite image. Additional source of the secondary data was through Saminaka Market Management Company (SMMC) and Google Earth image.

The data variables used were information on mode of transport to the market, distance to the market, types of commodities traded in the market, physical characteristics of the market, sizes of the existing stalls, available facilities, utilities and services in the market, internal circulation pattern, environmental condition, among other relevant information. Data analysis was done using table, percentage, maps and plates. 338 questionnaires were administered, however 256 representing about 76% were retrieved. In addition, a hypothesis test was conducted to know the significance or otherwise

of appraisal of market for the creation of decent economic growth as opined by goal 8 of the Sustainable Development Goals (SDGs).

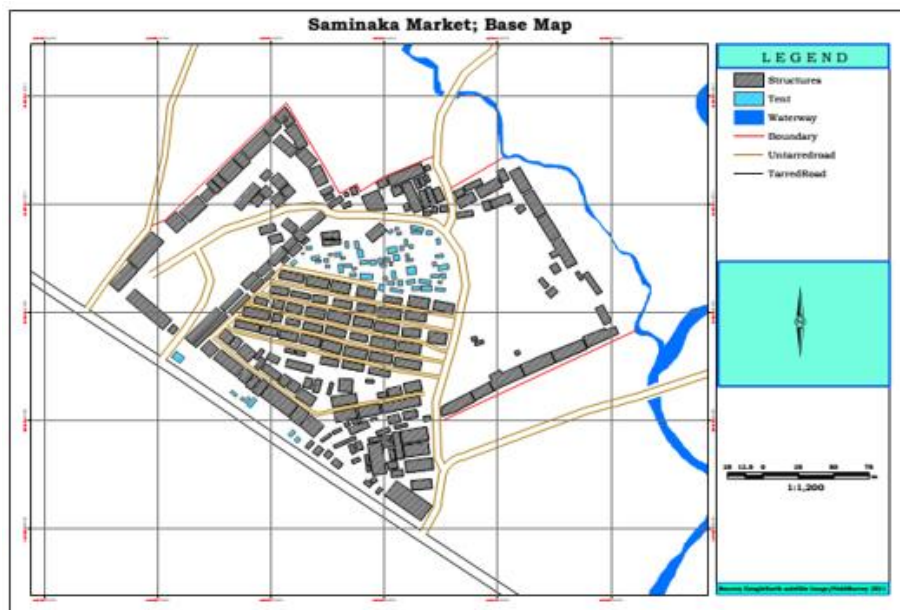


Figure 1: Saminaka Market

Source: Adapted from Google Earth, 2021

For the purpose of this study, this hypothesis was formulated: There is no significant impact of market appraisal in creating decent work/job and economic growth in Saminaka Market of Kaduna State, Nigeria.

3. RESULTS AND DISCUSSION

3.1 Characteristics of Saminaka market

The survey revealed the mode of transportation to the market consisted of bus, car, bicycle/motorcycle/tricycle, and foot. From Table 1, the users using the commercial buses to transport themselves constituted the highest percentage with 47%, while those using cycles (bi, motor and tri) made up 18%, and those who use foot constituted 23%.

Table 1: Mode of transport

Mode of transport to market	Frequency	percentage
Car	33	12.9
Bus	120	46.9
Bicycle/motorcycle/tricycle	46	18.0
Foot	57	22.3
Total	256	100

Source: Field survey, 2021

Table 2 indicated that about 18% of users were living within a kilometre to the market, while 23% were coming from distance of 1-2 kilometres; these two categories could be inhabitants of Saminaka and environs. Whereas, 52% of users travel 5 kilometres and above; which signified the importance of the market as a national or even international market icon as people visit from far and wide, north, south, east, and west to engage in trading at the market. This corroborates the study conducted by [14] where buses were found to be the major means of transportation in Aleshinloye Market, Ibadan, Nigeria.

Table 2: Distance to Market

Distance to market	Frequency
Less than 1 km	48
1-2 km	59
3-4 km	18
5 km above	131
Total	256

Source: Field survey, 2021

From Table 3, grains or cereals was the highest commodity traded at the market making up of 46%, close to a half of the responses. Unsurprisingly, Saminaka market is a leading supplier of maize not only in Nigeria, but the whole of West Africa [8]. The least commodity been traded at the market was fruits with only 2.3%. This might be attributed to their perishable nature where a large number of the producers, sell it directly in farms without necessarily taking it to the market.

Table 3: Types of commodities traded

S/no	Trade type	Number of respondents	Percentage (%)
1	Grains/cereals	118	46.1
2	Beverages	49	19.2
3	Provision store	33	12.9
4	Building materials	22	8.6
5.	Fruits	6	2.3
6.	Others	28	11
7.	Total	256	100

Source: Field survey, 2021

Others include plastics and paints and so on, made up 11% of the commodities traded in the market. This corroborates the study of [14] in Aleshinloye, Ibadan, Nigeria where different commodities from grains, building materials, provision, plastics and so on were sold. On the other hand, stall ownership in the market was either owner occupier or tenant type. Tenants made up 70% while owner occupiers had 30%. This might be attributed to the fact that the market opens once a week.

The commercial land uses consisted about 30% of the total market area [17]. The finding also revealed that there were a total number of two thousand eight hundred (2800) stalls, among which were: blocks, kiosk and temporary stall (Plate 1). 39% of the total number and these were built structures owned by the government.

Table 4 highlighted the physical characteristics of the market. This coincides with [14] work in Aleshinloye, Ibadan, Nigeria where the built shops were owned by government. The Kiosk holds 30% of the total stalls and were also built structures, but owned by private individuals, while the temporary stalls covers 31% which were mere sheds made up of wooden stakes with roofs of zinc sheet or thatch (Plate 1). The temporary stalls were regularly being encroached by hawkers. It covers 2.58 Ha equivalent of the total area covered as against the planning standard reported by [21].

Table 4: Physical characteristics of the market

S/No	Existing land use	Hectares	Percentage%
1	Commercial	2.58	30.71
2	Circulation	1.21	14.40
3	Public uses	0.43	4.04
4	Open space	4.27	50.83
5	Total	8.4	100

S/No	Size of existing stall	Frequency	Percentage
1	2-3m ²	72	28.1
2	3-4m ²	104	40.6
3	4-5m ²	80	31.3

Source: Field survey, 2021



Source: Field Survey, 2021

Plate 1: Poorly design stalls in the market

Circulation and roads analysis showed that Kaduna-Jos road is the major road that link Saminaka (market) with other states. However, there was only one road that cut across the market, though it had degraded and damaged; a cause of concern to the market users. Besides, owing to the lack of parking space in the market, it had resulted to on-street or street sides parking, which seriously impeded vehicular movement around the market. Otherwise users could only resort to the footpaths crisscrossing the market. Therefore, circulation in total made up 1.21 Ha, equivalent to 14.40% of the area covered, which was difficult to use. This corroborates with the study conducted by [2] where circulation in Akure market was identified as one of the major problems of the market.

Public facilities and services in the market were few which included: Market administrative office, place of worship, drainage and toilets. However, there existed some public facilities and services located outside the market, but in close proximity that were beneficial to the users comprising of police station, electric power transformer, commercial bank, and an unorganised parking space. This parking space covers 0.34 Ha, equivalent to 4.04% of the area. There were open spaces within the market but were underutilised.

This corroborates the study of [2], where important organs of a market were reported to include: circulation, drainages, toilets, shops and stalls, hydrants, water supply, security and so on. Moreover, The roofing and flooring of most of the shops/stalls/kiosk were in deplorable condition, where many of such roofs have rusted and leaking, while the flooring had cracked with pot holes. The small sizes of the stalls lead some traders to encroach into open spaces and circulations to display their goods.

Table 5 highlighted the toilet facilities in the market, where pit latrine dominated with 74% according to the respondents, while water closet comprised the remaining 26%, many of which were not in good working condition.

Table 5: Toilet facility type

Toilet type	Frequency	Percentage
Pit	190	74.2
Water closet	66	25.8
Total	256	100

Source: Field survey, 2021

Table 6 highlighted kinds of refuse management in the market. Organised refuse collection made up of 9.4%, while open refuse dumping comprised about 78%; indicating the unhygienic and unhealthy conditions of the market, and the risk it

posed to the health of the users. This corroborates the work of [14] where open dumping of refuse was identified as one of the problems of Aleshinloye market in Ibadan, Nigeria. Most of these poor and inefficient market characteristics reflected the work of [3] in their study of market location analysis and efficiency in Yaounde, Cameroun Republic, especially on the issues of circulations and roads which were encroached by traders while displaying their goods as well as the open dumping of refuse.

Table 6: Mode of refuse disposal

Mode	Frequency	Percentage
Organized refuse collection	24	9.4
Open dumping	200	78.1
Others	32	12.5
Total	256	100

Source: Field survey, 2021

3.2 Hypothesis Test

Hypothesis was tested using SPSS application and the results presented in Table 7. Outcome of the testing revealed that significant inverse relationship exists between appraisal of market and creation of a decent works/jobs for economic growth in Saminaka market of Kaduna State, Nigeria; as emphasize by goal 8 of the SDGs.

Table 7: Pearson Product Moment Correlation Coefficient on Impact of Appraisal of Market in Creating Decent Economic Growth in Saminaka Market of Kaduna State

S/No	Variables (N)	Respondents	Mean	SD	r	P
1	Market appraisal	256	43.2	4.1	-.632	.0001
2	Decent economic growth.	256	29.6	3.4		

Source: Field survey, 2021

The correlation r was calculated using spearman's correlation coefficient as, $r = -0.632$ and $p = 0.0001$. The p -value 0.0001 is less than 0.05 level of significance. The result indicated that the poor the appraisal of the market, the poor the decent economic growth in Saminaka market of Kaduna State, Nigeria and vice-versa. Thus, the hypothesis which states that there is no significant impact of market appraisal in creating decent economic growth in Saminaka market of Kaduna State is hereby rejected.

3.3 Evaluation of Alternative Concepts

Three alternative planning concepts were proposed: the alternative concept A (parking space at the periphery of the market), alternative concept B (parking space outside the market), and the alternative concept C (parking space within the market), see Figure 2. The 3 were assessed based on cost, functionality, compatibility, aesthetics, and accessibility. However, the alternative concept A (parking at the periphery) has the highest score, hence it was adopted (Table 8).

Table 8: Evaluation Table

S/no	Variable	Concepts					
		Alternative A		Alternative B		Alternative C	
		Weight	Score	Weight	Score	Weight	Score
1	Cost	3	15	3	15	4	20
2.	Functionality	3	16	4	12	3	12
3.	Compatibility	2	9	3	6	2	6
4.	Aesthetics	3	9	3	9	3	9
5.	Accessibility	3	16	4	12	3	12
Total		65		54		59	

Source: Vagale (2007)

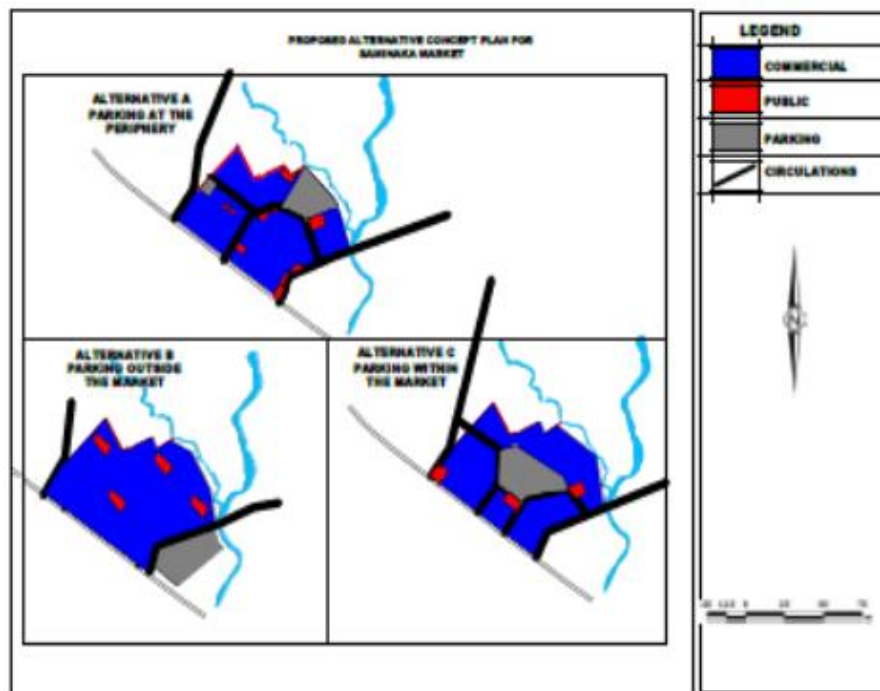


Figure 2: Proposed alternative concept plan for saminaka market

Source: GIS analysis 2021

3.3 The Proposed Design Plan for Saminaka Market

The proposed commercial area would cover 3.26 (Ha), instead of the existing area of 2.58Ha. The commercial area consisted of all the stalls in the market. Table 9 is the land area allocated to the land uses. While Table 10 represented the proposed sizes; where Table 11 represented the proposed land allocated to each type of stalls. Table 12 represented zone allocation.

Table 9: Proposed land use allocation

Land uses	Land area (ha)	Percentage (%)
Commercial	3.26	37.61
Circulation	2.1	25
Public uses	2.45	29.16
Open space	0.59	8.21
Total	8.4	100

Source: Field Survey, 2021

Table 10: Size of stalls

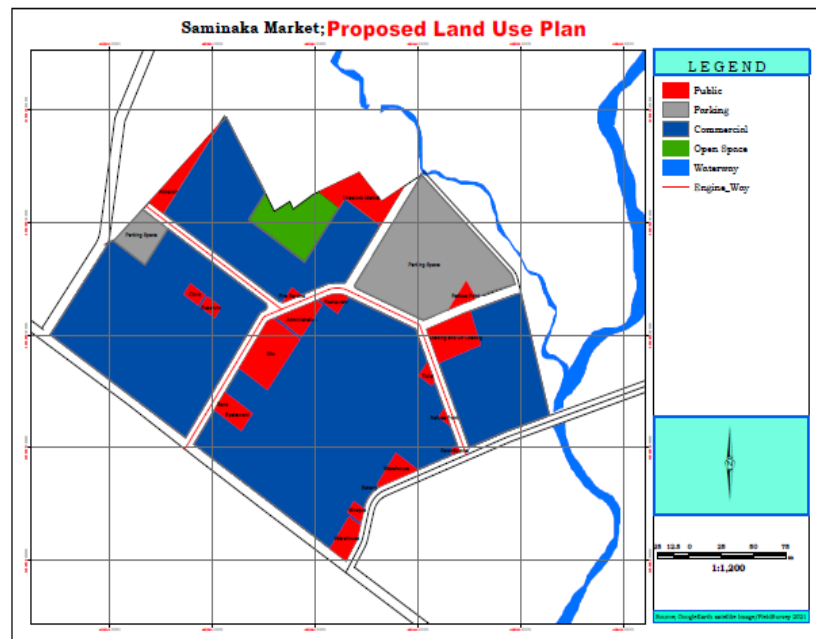
Stalls	Size	Area	Percentage (%)
Small	2 x 3	6	16
Medium	3 x 4	12	32
Large	4 x 5	20	52

Source: Adopted from FAO standard, (1999)

Table 11: Proposed land allocation for stalls

Categories	Land allocation	Percentage (%)	Categories
Small	0.52	15.95	Small
Medium	1.04	31.90	Medium
Large	1.7	52.14	Large
Total	3.26	100	Total

Source: Field Survey, 2021



Source: GIS analysis 2021

Figure 3: Proposed Land Use Plan for Saminaka Market

Table 12: Zone allocation

Zone	Area (Ha)	Percentage %	Total No of stalls
Industry	0.30	11.9	270
Electronics/ telephone	0.4	5.9	140
Building materials	0.3	8.3	196
Farming tools	0.3	7.9	185
Grains/tubers	0.36	11.9	290
Provision	0.9	20.5	483
Cosmetics	0.3	7.6	180
Leather	0.23	8.2	194
Utensils	0.23	8.3	195
Veterinary stalls	0.25	5.3	125
Fruits	0.8	4.1	96
Total	3.26	100	2354

Source: Field Survey, 2021

4. CONCLUSION/RECOMMENDATION

Many of the identified problems of the market were associated to poor planning and they include: inadequate and deteriorated circulations and roads, open refuse dumping, constricted and dilapidated shops/stalls, inadequate and unhygienic lavatories, absence of parking space, absence of motor park, stagnated and obstructed drainages, absence or lack of security personnel, absence of electric power, public facilities and many more. Therefore, a recommendation in form a proposal was presented: commercial land use area (of about 2.45Ha) should be made to include the small, medium, and large stalls as against what is in existence; Circulation and roads was proposed for easy accessibility within the market, and would cover an area of 2.1Ha. The public uses would cover an area of 1.22Ha, and which motor park, bore hole, security post, masjid (mosque), refuse dump and so on. Parking space was also proposed and would occupy area of 1.23Ha; it would be separated into sections for trailers, buses, and cars so as to ease loading and offloading of heavy-duty vehicles so as avoid mishaps to users. It is hoped that the Kaduna State Government, the private sector, and other NGOs to ensure the implement of this alternative proposal to guarantee decent jobs creation and economic growth is achieved in the Saminaka market of Kaduna State, Nigeria.

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