

USER SATISFACTION WITH SPACE FLEXIBILITY IN OFFICES OF SELECTED TERTIARY INSTITUTIONS IN NIGER STATE, NIGERIA

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The design of office buildings and other buildings in tertiary institutions have mainly been determined by the management of the institutions with little or no input from the end users. It is expected of any building design that the building suits the needs of the users and not the users adapting to the building. The nature of work and facilities being used by the staff has also changed with the adoption of ICT facilities. The most significant change that has affected the office design is the increase in staff population in many tertiary institutions, which has increased the number of shared offices and an increase in number of staff per office. It can be observed that despite these changes in office use and capacities, there has not been any change in the design of newer offices. The problem therefore is that users of offices are finding it increasingly difficult to perform their duties conveniently due to the degree of adaptation they could adjust to within the building. The aim of this research is to examine the user satisfaction with the flexibility of offices spaces. The research method adopted is mixed method with the use of structured questionnaire and observation schedule. The data would be analysed using SPSS software and the results transferred to Microsoft Excel. The results will show that the users of offices in tertiary institutions are not satisfied with the office spaces. It will also reveal that space flexibility will improve user satisfaction with office. The paper will conclude that to achieve space flexibility in offices there is need to group functions properly.

Keywords: flexibility, office space, satisfaction

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INTRODUCTION

The office is ranked second behind the home where any gainfully employed person spend the most time of the day (Schweizer et al., 2007; Leech, Nelson, Burnet, Aaron, and Razenne, 2002). In Nigeria, an average of eight hours of a working day which represents a third of the day is spent by government workers in their offices. It is usually a thing of joy when people get employed as this offers a new sense of responsibility to the worker. In many establishments the management of such institutions always seek to make provision of office accommodation for the new employee. These offices are allocated to new staff and are expected to serve them throughout their stay with the establishment while allocation of offices is based on career progression. The office environment where the workers function is of significant importance because it can affect their general wellbeing and comfort. According to Adedeji and Fadamiro (2012), the internal and external aspects of the workplace environment affects the workers level of comfort (visual comfort, spatial arrangement, security and overall workstation comfort). It is therefore important to ensure that offices provided for the users' suit their basic needs and desires. This is achieved through a design process that allows for information regarding them be collated and used in the design parameters. The need for flexibility of the office space is of importance because the occupants and their requirements vary, however a general range could be provided to accommodate their needs. The present practice of office provision that makes use of solid block as partitioning restricts the flexibility possibilities for the occupants hence the need to examine their level of satisfaction.

DESIGN PROCESS IN OFFICE PROVISION IN NIGERIA

It is common design practice in the design of tertiary institution buildings in Nigeria that office design is often discussed with the management team of the establishment as client and the architect(s) usually produces a design that is presented to the management team for approval. This practice is in accordance with the design process described by Adedayo (2013) which showed that prospective users of buildings are not often included in the process as shown in figure 1.0a. The figure though represents a housing process is applicable to the practice of office design because there is no provision within the loop to accommodate the office users. The usual practice is that the architect assumes the spatial need of the users, segregates based on rank of employees and hence produce a design that suits the ranking system.

The comfort of the end users are never sought so the users are forced to adapt to the offices provided and oftentimes this can affect their level of productivity. According to Vischer and Fischer (2005), the aim of any building design is to achieve high level of user comfort, in order to achieve this, there is always the need to evaluate what users consider as comfortable enough for them. This should be reflected in the design of new office buildings. In the design of tertiary institutions buildings in Nigeria

and Niger State in particular, the assumption is that lecturers are simply involved in research and teaching regardless of their Departments and Specializations, while other staff simply carryout administrative work with no specialization. It is hence common to find that the office designs are usually the same regardless of the faculty, while the usual difference is the choice of form and attention accorded to the size of space provided. The nature of activity nor the manner in which it is expected to be carried out within the offices space are never examined in detail with the view of making it flexible. It is common to find shared offices in many institutions because the cost of providing building structures to accommodate the workers is usually high, this is supported by McCoy (2005), when it stated that the cost of building ranks second to the worker's salary.

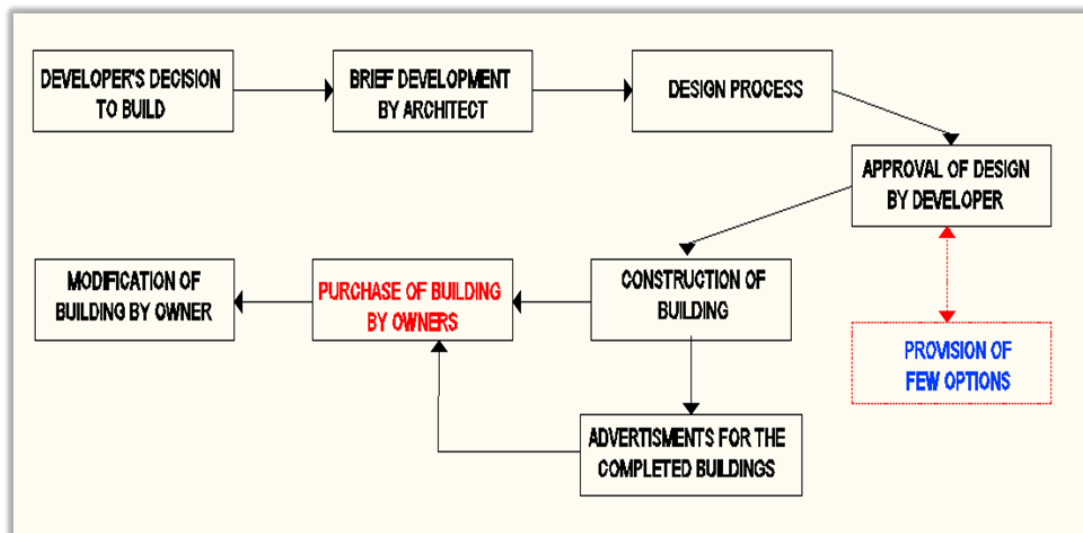


Fig. 1.0a Schematic representation of mass housing process provision in Nigeria
Source: Adedayo (2013)

In the development of tertiary institutions in Nigeria particularly those owned by the Government, the institutions usually commence activities from a temporary site while the construction of the permanent site is on-going. It can be understood when the buildings at the temporary site do not offer the require satisfaction to the end users because they are adapted buildings, however the same should not be the case for the purpose built offices. While it might be difficult to attend to every workers' satisfaction in terms of office needs, there is however the need to offer the satisfaction of flexible spaces within the defined space provided. According to Wheeler (2006) "Workplace design should enable clients to do their jobs easily, remain flexible so end users can adjust the space according to their particular work style and be adaptable so that it can work well into the future." The research is based on this quotation as it shows that the performance of the user of an office space is usually affected by their perception adequacy and flexibility the space offers. The manner by which office users in the 21st century work has changed over the years based on

the introduction and dependency on new forms of technology. There is therefore the need to examine the perception of users to flexibility offered within their office. In doing this a Post Occupancy Evaluation method is considered best, because according to Meir, Garb, Jiao and Cicelsky (2009), the information obtained from the current users of a building will assist in the development of new buildings. The aim of this paper therefore is to examine the perception of office owners with respect to the flexibility of the office space. The research is based on the findings of interactions with the different Officers in-charge of the Physical Planning Unit of the different institutions, which can be summarised as:

1. The office building designs and construction of tertiary institutions in Niger State do not have any input from the end-user.
2. The designs of the office buildings are done based on the assumption that all workers will perform their duties in the same manner.

It can be seen from these assumptions that these assumptions if found to hold in any institution, can affect the overall satisfaction of the office owners because they usually have different needs and aspirations as stated by Hofman and Halman (2006) that users of buildings usually have different expectations from the building they occupy irrespective of whether it is a house or office building. The issue of office flexibility is important because office users have different approaches towards performing similar task particularly in tertiary institutions where the individual workers strive to create an identity for themselves.

PUBLIC BUILDING OFFICE TYPES

Tertiary institutions can be considered as public buildings owing to the fact the general public can have access to it and it is a place where different people can come and transact business. There are several variations of office designs provided by architects that are done to suit the needs of the organization, however these offices can be grouped based on open-office system, enclosed office system or combination of both. According to Danielsson and Bodin, (2008) the usual traditional offices we see are occupied by one or two person(s) and it is usually created with use of enclosed walls and has all that is considered necessary to perform their duty. This might not be the case because what is considered necessary is based on what the management of the establishment thinks. The enclosed walls are usually of solid materials and in Nigeria the materials are usually sandcrete blocks. There are however defined restrictions on the available space within such office and the type of furniture used in such enclosed office are often restrictive. The open-office on its own part offers a wide range of adaptation and it is dependent on the external walling which serves as its form of enclosure. Brennan, Chugh, and Kline, (2002) were of the view that open office have varied range base on their design complexity and that the office users were separated with the arrangement of their furniture especially their desks.

According to Sanders and McCormick (1993) the office arrangement can be separated with the use of plants, cabinets or moveable low screens. Charles, Danforth, Veitch, Zwierchowski, Johnson, and Pero, (2004) said “Open-plan office refers to an office space divided into relatively small cubicles/workstations by partitions (also known as screens or panels) and modular furniture.” In examining some office complexes in Nigeria the open offices are usually defined with the use of tables and they are arranged in geometric manner. Usually many establishments practice a combination of both forms of office designs with the enclosed office reserved for the staff that are higher in rank within the establishment organogram and the staff on lower ranks are kept in large shared offices. The issue of privacy and security are often achieved in the enclosed offices while the same cannot be said of the open office system. The issue of flexibility of the spaces in traditional office design is usually not the focus of the architects working on such schemes. The tertiary institutions office buildings are also treated as public buildings by the architects and it is therefore common to find a combination of both types of office system design. The issue of flexibility is also treated as secondary as attention is often focussed on privacy, security and distinction of staff.

OFFICE TYPES IN TERTIARY INSTITUTIONS IN NIGER STATE

There is often no significant difference between the office buildings found in Government Ministries and Agencies when compared with those found in the Universities in Nigeria. The focus oftentimes is based on aesthetic values of the buildings and the costs of such buildings. It is expected that university workers find a way of performing their duties properly, hence open offices are usually never different likewise the traditionally enclosed offices. According to Campus Planning Office (2013) document, the office spaces in the university should be such that it caters for academic and administrative work to be undertaken by those concerned adequately. This implies that there are differences in the requirements for various offices within the university and that the general approach towards office design should not be employed here. In many institutions found in Nigeria, majority of the workers usually make do with what is available and this affects their performance. A good environment is believed to be very important for workers' productivity of which lecturers are included (Naseem, Sheikh, and Malik, 2011 and Newsham, Brand, Donnelly, Veitch, J., Aries, and Charles, 2009).

A common practice with the allocation of offices within institutions in Niger State is one that is based on the hierarchy of staff based on their rank, with the highest ranking staff (professors) getting the supposed best office space. It is common place to find the junior lecturers being allocated open offices or shared offices with high population, this practice is blamed on the inadequacy office space. According to Oyetunji (2013), Mike (2010) and Myerson and Bichard (2010) lecturers in open offices do not find these

spaces appropriate for their work, this is due to distractions from others and high volume of traffic visitors into the offices. Ajala (2012) is of the view that lecturers require office spaces that allow them to concentrate and improve their productivity and this is usually found in enclosed offices. The same scenario is found with the non-academic staff offices in these institutions. The cost of providing this type of office is often given as the reason why open offices are given to the junior academic/non-academic staff. The problem with this approach is that the junior staff will eventually advance in their careers and hence also need similar office spaces allocated to the senior officers. This helps to bring to fore the need for flexibility of the office spaces provided so that as workers in tertiary institutions progress career wise the office could be adjusted to suit the current needs. In order to achieve this there is need to ensure that space flexibility is already included in the design of such spaces from its inception. The design, construction and choice of building materials in majority of the tertiary institutions in Niger State do not allow for flexibility of the office spaces.

OVERVIEW OF OFFICE SPACE FLEXIBILITY

It is generally assumed that to achieve space flexibility the preferred option in terms of office design is the open-plan office type. According to Charles, et al (2004), organisations in an attempt to reduce space costs and provide flexibility usually adopt the open-plan office system. The factors responsible for organisation gravitating towards space flexibility differ based on the organisation vision and mission, however, Gilbert, E. (1996), Nawawi, A., Khalil, N. (2008) opined that the need to develop competitive advantage and improve productivity is key towards adoption of flexibility. In tertiary institutions in Nigeria, the factor responsible for the type of flexibility offered is due to the nature of the design of the office space and the growing demand for office spaces. Table 1.0 shows the nature of the type of office provided and table 2.0 shows the average number of users per office in some of the selected institutions:

Table 1.0: Type of Office Occupied based on Category of Staff

Category of Staff	Type of Office Occupied				Total
	Purpose built	Partioned office	Open Office	Others	
Academic	51	60	13	2	126
Non-Academic	53	20	30	0	103
Others	1	1	3	1	6
Sub-Total	105	81	46	3	235

Source: Authors' fieldwork, 2014

A key benefit of space flexibility is the opportunity of achieving space efficiency which suits the management of the establishment. According to

a Space Management Group (2006) document, there are three factors considered in determination of efficiency of a space:

1. The quantity of space, generally calculated in terms of floor area though occasionally volume may also be relevant
2. The number of users, potential and actual
3. The amount of time the space is used.

These factors also play a role on the general wellbeing of the users of the office space and this is often evident through the method by which they seek to arrange furniture within the office towards achieving maximum productivity. The materials used in achieving flexibility in offices include; furniture, panels, demountable materials and railings. In achieving flexibility in office, facility managers usually focus on what would yield productivity for the establishment and never from the users' point of view.

Table 2.0: Number of Occupants per Office based on Category of Staff

Category of Staff	Occupants of Office				Total
	1 person	2 people	3 people	4 people and above	
Academic	36	42	23	17	118
Non-Academic	15	25	25	35	100
Others	0	1	0	4	5
Sub-Total	51	68	48	56	223

Source: Authors' fieldwork, 2014

The essence of seeking users' view in terms of flexibility is due to the fact that they are the beneficiaries of the building. The method of allocation of office spaces in many tertiary institutions in Nigeria can be said to be unsustainable given the fact that the rate of office provision does not correspond to the rate of promotion of staff nor the employment rate in the institutions. It would therefore be important to seek ways of ensuring that the current spaces are flexible enough to meet the aspirations of the office users as they progress. This provides the base for evaluating the perception of flexibility in offices as this would assist in ensuring that key issues are tackled at the design stage by the people involved in office management in the tertiary institution.

RESEARCH METHOD

A post occupancy evaluation method was adopted for the research as this gives a view of the users' opinion of the subject matter under investigation. According to Adedeji and Fadamiro (2012) Post Occupancy Evaluation (POE) has generally been accepted as method of obtaining opinion of users in the built environment especially where it relates to perception studies. According to Zimmerman and Martin (2001), more specifically POE tests generic and specific aspects of the planning and detailed design of facility buildings. It also tests their impact on building users with respect to

several parameters such as: health and safety, security, indoor environment quality and functions.

Niger state in Nigeria was selected because it has a wide variety of tertiary institutions which are spread across the State, hence giving a mix blend of respondents for the study based on diverse cultural backgrounds. A questionnaire was developed and administered to the respondents selected from five tertiary institutions out of a study population of 13 tertiary institutions and it was done on the basis of staff population. A total of 500 copies of questionnaire was administered with 238 copies returned giving a 47.6% return rate. The selection of respondents within the institutions was spread amongst the Academic and Non-academic staff using a Stratified Random sampling method. The category of staff selected was because they formed the bulk of people to be considered in the design of office buildings. Ten research assistants were selected from the Masters students of the Department of Architecture, Federal University of Technology Minna and they were distributed amongst the five institutions to administer. The data was collated, sorted out based on the institutions and entered in SPSS for analysis purposes while the results are presented in tables and charts. Pictures of some selected office interiors are presented as plates to explain further the issues within the discussion of results. The calculation of the rating of selected perception questions was based on the Likert scale with the view of establishing a finite decision upon which the recommendations of the research would be based.

Table 2.1: Institutions Studied

Name of Institution
Zungeru Polytechnic
Ibrahim Badamosi Babangida University
Fed. Uni. of Tech. Minna
Federal Polytechnic Bida
College of Nursing Bida

Source: Authors' fieldwork, 2014

RESULTS AND DISCUSSION

The results show that the perception of the users vary widely in terms of office space and flexibility when examined individually with respect to the institutions however when combined and viewed together it gives an average perception of the measurement. The Likert scale measurement is discussed in the first part of this section while selected specific cases are discussed subsequently.

Likert Scale Measurement of Space and Flexibility Perception

A weighted scoring of 1-4 was apportioned to the different options for choice for the respondents based of their perception of the variable being measured. The scoring of the options are stated below;

Very Dissatisfied 1

Dissatisfied	2
Satisfied	3
Very Satisfied	4

Table 3.0 shows that majority of the respondents are spread within the satisfied and dissatisfied section of the scale of measurement. The number of respondents in each section is multiplied by the weighted score allocated to it, the calculation for this is shown in table 4.0 and the total score across the rows are added up and presented as the total at the end of the table.

Table 3.0: Number of respondents per opinion on Satisfaction with office space and flexibility measured

Measured Variable	Very Dissatisfied (X1)	Dissatisfied (X2)	Satisfied (X3)	Very Satisfied (X4)	Total
Rating of Office size	31	92	100	15	238
Rating of sitting options in Office	17	129	79	12	237
Rating of Circulation space in Office	8	145	71	14	238
Rating of position of Fittings in Office	31	104	89	14	238
Rating of privacy level in Office	38	97	77	22	234
Rating of Visitor's space in Office	46	105	77	7	235
Rating of position of ICT facility in Office	64	112	53	8	237
Rating of Interference with physical space in Office	29	96	98	12	235
Rating of flexibility of Office space	35	118	76	9	238
Rating of flexibility of office building	16	120	94	6	236
Rating of flexibility of Chief Executive Officer's Office	9	59	100	65	233

Source: Author's fieldwork, 2014

It can be observed from table 5.0 that majority of the respondents are dissatisfied with the office spaces provided for them and they also consider the Chief Executive Officer's (CEO) office as being the best office in terms of flexibility. The view can be understood based on the fact that attention is often placed on this officer's office. This trend is repeated as the category of staff offices is considered with the Dean's office better than the Head of Department and the Professors office. However it can be explained why these officer's offices are better than others but the requirements by the other officers does not necessarily mean they seek to have same type of office as those of the CEO. In some case cases the officers simply require larger spaces if they must share offices while others require conveniences within the office. There is therefore need to examine the relationship between selected variables within the study population.

Table 4.0: Sum of respondents' responses on Satisfaction with office space and flexibility

Measured Variable	Very Dissatisfied (X1)	Dissatisfied (X2)	Satisfied (X3)	Very Satisfied (X4)	Total
Rating of Office size	31	184	300	60	575
Rating of sitting options in Office	17	258	237	48	560
Rating of Circulation space in Office	8	290	213	56	567
Rating of position of Fittings in Office	31	208	267	56	562
Rating of privacy level in Office	38	194	231	88	551
Rating of Visitor's space in Office	46	210	231	28	515
Rating of position of ICT facility in Office	64	224	159	32	479
Rating of Interference with physical space in Office	29	192	294	48	563
Rating of flexibility of Office space	35	236	228	36	535
Rating of flexibility of office building	16	240	282	24	562
Rating of flexibility of Chief Executive Officer's Office	9	118	300	260	687

Source: Author's fieldwork, 2014

The interpretation of the results obtained based on the Likert scale calculation is based on the range of scale stated as follows:

1.0	-	1.49	Very Dissatisfied
1.5	-	2.49	Dissatisfied
2.5	-	3.49	Satisfied
	>	3.5	Very Satisfied

Table 5.0: Respondents' opinion on Satisfaction with office space and flexibility interpretation

Measured Variable	Sum	Mean	Interpretation
Rating of Office size	575	2.42	Dissatisfied
Rating of sitting options in Office	560	2.36	Dissatisfied
Rating of Circulation space in Office	567	2.38	Dissatisfied
Rating of position of Fittings in Office	562	2.36	Dissatisfied
Rating of privacy level in Office	551	2.35	Dissatisfied
Rating of Visitor's space in Office	515	2.19	Dissatisfied
Rating of position of ICT facility in Office	479	2.02	Dissatisfied
Rating of Interference with physical space in Office	563	2.40	Dissatisfied
Rating of flexibility of Office space	535	2.24	Dissatisfied
Rating of flexibility of office building	562	2.38	Dissatisfied
Rating of flexibility of Chief Executive Officer's Office	687	2.95	Satisfied

Source: Author's fieldwork, 2014

Flexibility of Office Rating Based on Category of Staff

Usually there are two major categories of staff in any tertiary institution in Nigeria (academic and Non-academic). They usually require different kind of office spaces however this hardly is the case when the buildings in these institutions are being designed. The only difference is usually the office of the management staff that vary from others, it is therefore not a problem for the facility managers in the institutions to allocate the offices to anybody without any modification regardless of the duty the person is expected to perform. In figure 1.0 it can be observed that the percentage of respondents that were dissatisfied with their office space is slightly higher in the academic staff category. This can be understood because majority of the academic staff interviewed usually consult with group of students within the office and the space is often inadequate. They also complained of inadequate space for storage and circulation within the office. In the case of the non-academic staff, their lack of satisfaction has to do with the circulation space and the permanent position of furniture they are restricted to due to the rotational policy of the institutions. The academic staff also complained of inability to rearrange the office to hold small group discussion with colleagues or students within the office. In many cases the possibility for the use of projector within the office is quite difficult given the layout of the office particularly in shared offices. The percentage that considered the option as satisfactory were those at the higher cadre of category of staff based on the fact that many have larger office spaces and were often one or two person maximum per office.

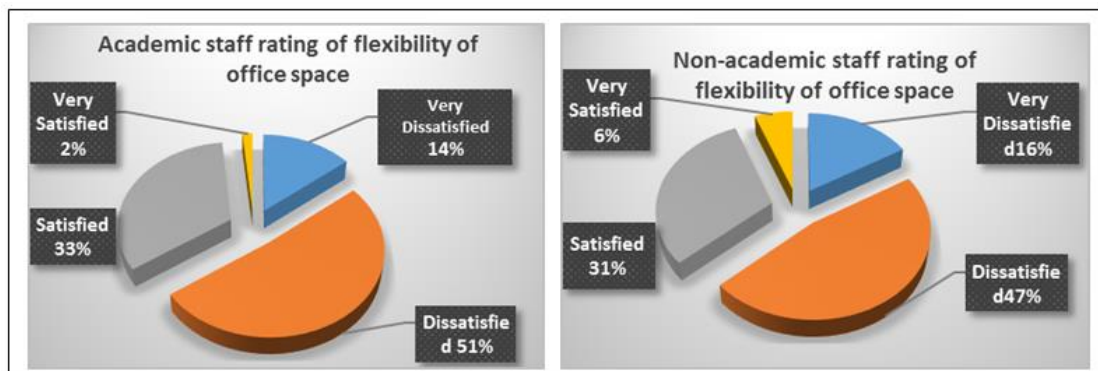


Figure 1.0: Distribution of staff with level of satisfaction with flexibility of space.
Source: Authors' fieldwork (2014)

Flexibility of Office Rating Based on Occupation of Office

The cost of providing infrastructure in tertiary institutions in Nigeria is quite high and hence the slow rate of infrastructural provision in these institutions, however there is a growing staff population in these institutions through employment. It is common to find many institutions encouraging shared office system so as to accommodate the new members of staff. In some institutions the creation of new departments are not

followed with the provision of new infrastructures rather they share existing office spaces and in some cases the existing offices are partitioned. In figure 2.0, there is little difference in the percentage that were dissatisfied with the flexibility of their office space with 66% of those in shared offices dissatisfied while 63% was the case in the single office occupation. The key reason for the high level of dissatisfaction with the officers occupying single offices was the small space available for them that ranged between 9m² to 16m² this affected the arrangement possibilities within the office. In the case of shared office, the 34% that were satisfied with the flexibility were those who were often two per office and usually had larger office space. This was the case in offices occupied by senior lecturers and above at the universities who had office spaces of about 36m² and where either two or three per office had just a single table each. There were case where senior Non-academic staff were accommodated in offices that were 2.4m wide hence flexibility could be said to be non-existent even though they were alone in the office. This accounted for some of the percentage of dissatisfaction from those who occupied single offices. This figure 2.0 goes to show that flexibility is not just the requirement of those in shared offices but it also affects those in single occupied offices.

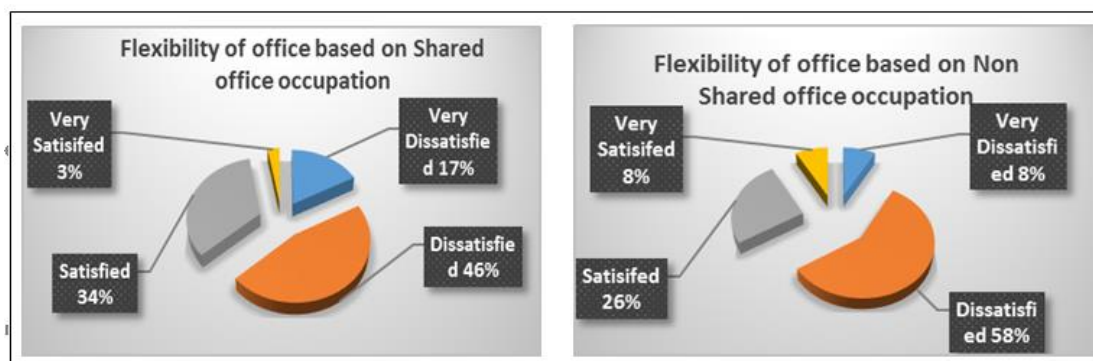


Figure 2.0: Satisfaction with flexibility of office space based on office occupation.
Source: Authors' fieldwork (2014)

Perception of Privacy rating in office based on Number of people per office

Privacy is a major concern in many office visited during the course of the research and many respondents claimed that they usually locked their lockers whenever they were leaving the office particularly those in shared offices. The reason many gave for this action was the need to avoid invasion of their privacy from office colleague going through their desk. In many cases where respondents had shared offices they complained about their inability to hold any private discussion within the office especially when another colleague was around and to counter this problem they usually go outside the office to the corridor or lobby. In figure 3.0 there is

significant increase in the percentage of respondents that were dissatisfied with the level of privacy as the number of people per office increased. In the case of those that were dissatisfied in single person occupation of office, they complained about the partition material used to separate their office from the others as it offered visual barrier only and not sound barrier. The essence of privacy is quite important in tertiary institution office because there are often many cases where students want to come for counselling on issues that they would not want other officers to hear. In an attempt towards achieving significant amount of privacy many office occupants usually seek to take the advantage of locating their desks at the far corners of the office. In some partitioned offices the partitioning walls do not get to the ceiling level hence creating a means of interference during discussions.

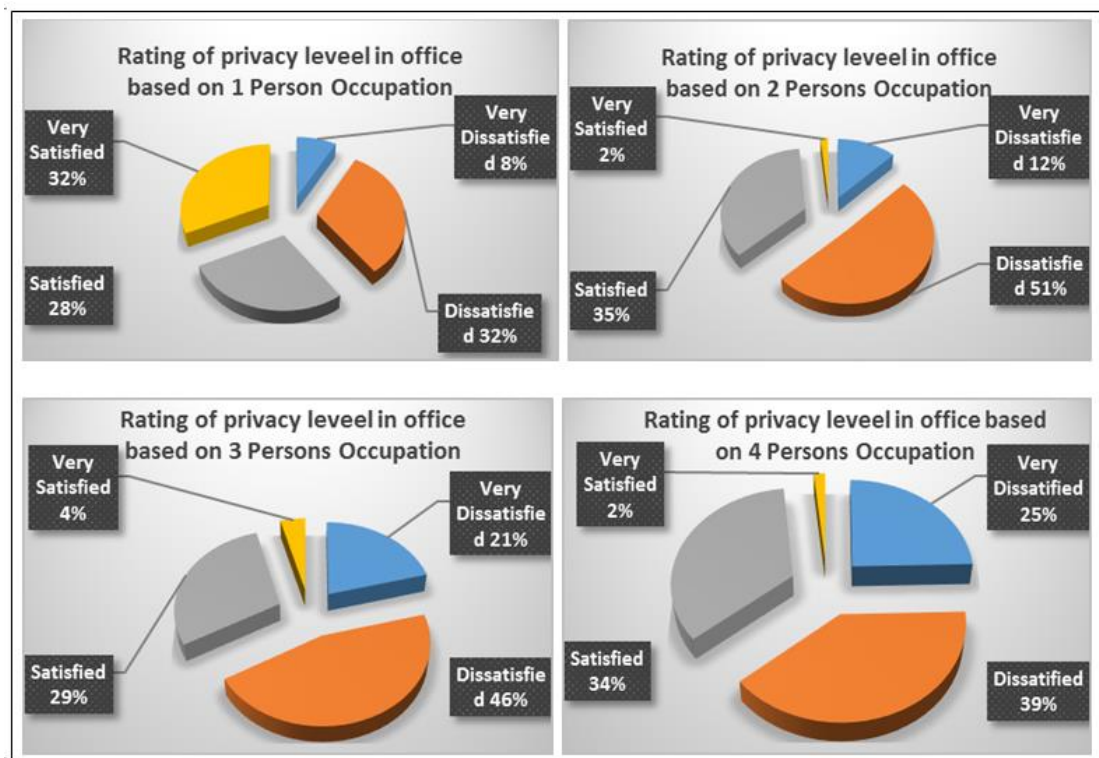


Figure 3.0: Satisfaction with privacy level of office space based on number of persons per office. Source: Authors' fieldwork (2014)

CONCLUSION

The need for office space in many tertiary institutions in Niger state is quite high and government cannot meet this need, however the management of these institutions should begin to consider the need to provide spaces that meet the need of the users. An important factor that should be considered in office provision by architects and the approving

management of institutions is that of office flexibility. This should be done based on what the office users consider as requirement for flexibility. During the course of the research many younger officers considered the senior officers of the institutions as having better office spaces and hope that someday they would get similar offices, however going by the current rate of infrastructural development this dream is unrealistic. The good option is for management to begin to examine how they could make the current available office spaces flexible enough to allow for acceptance by the current occupiers such that they would be satisfied with the office hence reducing the demand for newer offices on the account of dissatisfaction of the current one. The architects involved in office design for tertiary institutions should begin to consider the principle of space flexibility so that the buildings would fit the needs of the users as it changes over the course of their employment. In conclusion it is apparent that any staff not satisfied with his or her office would most likely not be productive which in turn affects the overall vision of the establishment. It is therefore recommended that staff should be allowed to make inputs in design of office spaces and the arrangement of the existing offices. In cases of shared offices, it is recommended that rather than have staff of the same level share office, it might be better to have a mix of cadre share offices as this would affect their space requirement. The use of non-transparent partitions would enhance privacy while the use of demountable fittings would enhance flexibility. It is important to consider office space flexibility in tertiary institutions given the changing mode of conducting duties in tertiary institutions given the influence of technology.

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