Assessment of the Impact of Circulation Design on Guests' Satisfaction with Hotel facilities in Port Harcourt, Nigeria

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Abstract
As is true for all service industries, achieving customer satisfaction is a critical component of the success of hotel business. Therefore, this study investigated the impact of guests' satisfaction with circulation design overall satisfaction with hotel facilities in Port Harcourt, Nigeria. It was motivated by the dearth of published empirical literature on this subject from the Nigerian perspective. A questionnaire survey involving 103 guests drawn from three hotels was conducted between December 2015 and January 2016 in the study area. The data were analyzed using descriptive statistics, factor and categorical regression analyses. The result reveals that the guests were more satisfied with internal circulation than external circulation in the hotels. The main sources of dissatisfaction were poor usage of signage to direct pedestrian and vehicular traffic; the lack of pedestrian walkways; and poor access to outdoor recreational facilities within the premises of the hotels. The respondents understood the 35 variables used in assessing guests' satisfaction with circulation in the hotels from five different dimensions of satisfaction with the location of circulation elements and ancillary facilities; satisfaction with access to ancillary facilities; satisfaction with access to circulation elements; satisfaction with the size and shape of circulation elements; and satisfaction with the use of signage and landscaping elements. However, satisfaction with the location of circulation elements and ancillary facilities, access to ancillary facilities and circulation elements; and the use of signage and landscaping elements emerged as the strongest predictors of satisfaction with hotel facilities. The study implies that to ensure improved customer satisfaction with hotel facilities, adequate attention should be given to the use of signage to direct human and vehicular traffic, provision of pedestrian walkways, and access to outdoor recreational facilities.

Keywords: Customer Satisfaction, Hotel facilities, Circulation design, Survey, Port Harcourt

Introduction
The increasing competition in the hospitality and tourism industry globally has resulted in many hotel companies facing the challenges of how best to attract and retain customers. Like any other service-oriented industry, achieving customer satisfaction is a critical component of the hotel industry because improved satisfaction can lead to better customer experience and loyalty [1]. Hence, there is a consensus among researchers and authors that service quality, customer satisfaction, and customer loyalty are major factors for a success in hotel business [2]. Based on this understanding, researchers and practitioners in the hotel industry are constantly seeking ways to improving customer experience and satisfaction with hotel facilities and services.

Hotels generally provide a wide range of facilities and services to different kinds of visitors and guests [3]. However, one of the main issues of concern when planning, designing and constructing hotel facilities is how to achieve a harmonious relationship between the various functional spaces and good interconnectivity of spaces within and around the buildings by using the different kinds of circulation elements [4]. This means that the design of circulation routes within and around hotel buildings is very important in differentiating spaces and giving form and shape to the buildings. It was on this premise that Elottol and Bahauddin [5] noted that in the design of hotels, the location, the size and the amount of circulation elements are very essential in ensuring stress-free movement of the large volume of visitors within and around the building envelope. This implies that circulation constitutes a key feature of hotel facilities that can influence guests' overall satisfaction with hotel facilities and services.

The growing complexities of human needs coupled with advancement in technology have contributed to constant changes in what guests and visitors request from hotel operators. To meet these needs and remain in business, it is important for practitioners to understand the different aspects of hotel development, management and operations that can make significant contributions to achieving improved satisfaction of guests and customers. The review of existing literature reveals that most of the existing studies on satisfaction with hotels are focused primarily on satisfaction with services (see for examples [1 and 2] and only few studies have examined the importance of hotel facilities and their contribution to the satisfaction of guests [6]. Moreover, there is a dearth of empirical studies on guests' satisfaction with the design of circulation in hotels and its relationship with overall satisfaction with hotel facilities and services. This has contributed to obscuring our understanding of the aspects of circulation design that contributes mostly to predicting satisfaction with hotel facilities.

In view of the foregoing, the aim of this research was to investigate the impact of guests' satisfaction with circulation on their overall satisfaction with hotel facilities in Port

Harcourt, Nigeria. This research was guided by three key research questions. These are:

(i)   To what extent are guests satisfied with the circulation and facilities in hotels in Port Harcourt?

(ii)   What are the dimensions of satisfaction with circulation evaluation by guests in the hotel sampled; and

(iii)   Which aspects of satisfaction with circulation contribute mostly to predicting guests' overall satisfaction with hotel facilities in the study area?

This research contributes to knowledge by identifying the aspects of circulation design guests are most satisfied with in hotels. It also improves understanding of how guests understand satisfaction with circulation; and which aspects of circulation design impact most on guests' satisfaction with hotel facilities. Findings of this study are expected to inform architects, planners and hotel operators who are concerned about better ways for achieving functionality and efficiency of hotel buildings and their surroundings in Nigeria. The remaining part of the paper is divided into four main parts. These are the review of literature, research methods, study findings, discussions and conclusion and recommendations.

Review of Literature
The Concept of Users Satisfaction

Over the years, users' satisfaction has become an important area of research for academics in different disciplines. This is probably due to the importance of such studies in marketing of goods and services [7]. The quality of a service rendered affects user satisfaction and this could either be a negative or positive effect on customer patronage and loyalty [8 and 9]. In the published literature, user satisfaction has been defined in several ways (see for examples [1 and 10]. In this study, user satisfaction is defined as the assessment of the extent to which hotel guests are happy with circulation in hotel buildings and surrounding spaces based on their experiences and interaction with the hotel environment. This definition implies that satisfaction is a measure of the extent to which the features of goods and/or services meet users' needs, expectations, and aspirations after a consumption experience.

The role of user satisfaction studies in the design, development, production and provision of goods and services in the different industrial sectors cannot be over emphasized. This may help to explain why various studies [10, 11 and 12] have investigated the various determinants of satisfaction. In the the hospitality industry that thrives on user satsification, numerous studies [including, 9 13, 14, 15 and 16] have examined the various features that enhance users satsification with hotel services. Form these studies it is known that amongst several factors, staff behaviour, cleanliness, room qualities and value, timeliness, safety and security have significant impact of guest' satisfaction with hotel services. A study by Lai [17] revealed that user satisfaction is based on safety and comfort and once these expectations were met there was an increase in satisfaction levels by customers and visitors. This implies that issues of satiafaction with hotels services and facilities are related to guests/visitors' levels of safety and comfort as well as value for money.

Users' Satisfaction with Circulation Design

In architecture, circulation refers to the movement of people and goods into, through and around buildings or facilities [18]. Hence, circulation design is a critical aspect of planning of hotel buildings and associated facilities. There are majorly two types of circulation identified in the literature. These are external circulation and internal circulation [19, 20 and 21]. According to Black [19] and Elottol & Bahauddin [21], internal circulation include all floors of a building that link up spaces both vertically and horizontally and comprises circulation elements such as corridors, entrances, elevators, lobbies, stairways, ramps and escalators. On the other hand external circulation comprises both pedestrian and vehicular circulation and has features such as walkways, bridges, carparks and vehicular drop offs [19 and 21]. There are also vertical and horizontal circulations, which according to Bitgood [22], constitute the key components of circulation space that affects visitors' movement within buildings.

The existing studies show that user satisfaction with circulation is based on the location of the various circulation elements within and around buildings[23]. Knutson [14] and Barsky & Labagh [15] specifically found that location and circulation are two factors that influenced guests' sataisfction with hotel services. Other studies [21 and 22] have examined the relationship between users' satisfaction and building circulation. These studies are focused on the challenges posed by improper circulation routes and configurations on the end users of buildings. Elottol & Bahauddin[21] specifically pointed out that if building circulation routes were inadequately designed, users would be faced with the following options to find their way: 1) asking for help 2) observing the actions of others 3) self exploration i. e. navigating through the building without awareness of direction. As a result, there is a low perception of functional spaces and facilities within and around the buildings. This submission appears to be conssitent with the submission by [24] suggesting that convenience of circulation was a key factor in hotel user satisfaction as this enables users to understand internal layout and are able to orientate themselves independently to various facilities without having to ask for directions from staff members.

From the studies reviewed here it is evident that users' satisfaction with circulation is affected by the location and design of circulation elements as well as user's access and level of comfort with the use of these circulation elements within and around a facility. It is also evident that poorly designed circulation elements and network can lead to frustration and by extension dissatsification of the users. Therefore circulation can neither have a positive nor negative impact on users' satisfaction with the entire building of facility.

Based on the insight gained from the review of literature, a conceptual framework of the study was developed. As shown in Figure 1, the framework views circulation as comprising mainly external and internal circulation. The framework proposes that there is a direct relationship between satisfaction with external and internal circulation elements, and that the extent to which guests and customers are satisfied with hotel facilities is a function of their level of satisfaction with external and internal circulation elements and their personal

profiles. It presents the personal profiles of guests/customers as intervening variables in investigating the impact of satisfaction of the design of circulation elements and satisfaction with hotel facilities.
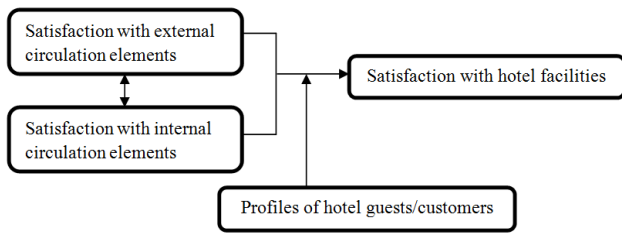

Figure 1: Conceptual framework of the Study

Research Methods

As stated in the introduction section of this paper, the goal of this study was to investigate the impact of guests' satisfaction with circulation on their overall satisfaction with hotel facilities using selected hotels in Port Harcourt, Nigeria. This study is part of the ongoing research designed to study guest's satisfaction with the design of hotel facilities in major cities in Nigeria. The data reported in this paper were derived from a survey of guests/customers in hotels located in the oil rich city of Port Harcourt, South-south Nigeria. The target was four and five-star hotels in this city. Preliminary investigations by the researchers revealed that at the time of the survey, there were four 4-star and one 5-star hotels in Port Harcourt. Consequently, two 4-star hotels; namely, Novotel and Swiss Mabisel International, representing 50% of the 4-star hotels and the only 5-star hotel in the city: Hotel Presidential were purposively selected for this research.

The questionnaire that assisted in the data collection was designed by the researchers and had two sections. Section 1 had questions on the personal profiles of the respondents, while Section 2 was used in gathering data on the guests' satisfaction with 35 items related to the internal and external circulation and facilities in the hotels. The 35 items selected were based on the various circulation elements found in hotels as identified in the literature (see [18, 19 and 21]. The guests were asked to rate their levels of satisfaction with the different circulation elements in the selected hotels based on a five-point Likert Scale ranging from "1" for Very Dissatisfied, "2" for Dissatisfied, "3" for Neutral, "4" for Satisfied to "5" for Very Satisfied. They were also requested to rate their overall satisfaction with the internal and external circulation elements and the facilities in the hotels sampled.

The survey was conducted between December 2015 and January 2016. The questionnaire was administered by hand to randomly selected guests found at the time the researchers visited the selected hotels. Of the 150 questionnaires distributed, 103 valid questionnaires representing about 68. 7% of the distributed questionnaires were retrieved. The data were analyzed using the SPSS software package Version 20. Three types of analyses were conducted. The first was simple descriptive statistics, which was used to calculate the proportion and percentage of different variables used in describing the profiles of the respondents in the survey and the mean satisfaction scores (MSS) on the different circulation elements investigated.

The second analysis conducted was exploratory factor analysis using principal component analysis and Varimax rotation method. The satisfaction scores for each of the 35 variables used in investigating satisfaction with circulation as provided by the 103 participants were subjected to factor analysis. This analysis was used to identify the different dimensions of guests' satisfaction with circulation in the hotels sampled. It also helped in dealing with the multi-collinearity issue that would exist by virtue of any form of intrercorrelations among the 35 variables describing satisfaction with circulation in the survey. We used the factors extracted from this particular analysis in the multiple regression analysis.

The third type of analysis carried out was multiple regression analysis. Going by the fact that the dataset used in this research are categorical, nominal, ordinal and numerical/interval in nature, Categorical Regression Analysis with optimal scaling technique also known as CATREG in SPSS was used. It helped the researchers to examine the variance explained by R^2 and to identify and assess the impact of the factors extracted from the exploratory factor analysis and participants' profile on satisfaction with overall hotel facilities. CATREG is a special variant of regression that is very useful in dealing with a combination of nominal/ categorical, ordinal and interval-level independent variables and the sample size is relatively small [25 and 26]. One unique feature of this analysis is that the optimal scaling feature of CATREG helps to circumvent the challenges associated with the use of standard regression analyses in dealing with categorical/ nominal and numerical/ interval-ratio variables. According to Hussain *et al.* [27], the optimal scaling feature helps to convert categorical/nominal and ordinal variables into numerical/ interval-ratio variables; and thus serve researchers the rigour of dummy coding of categorical/nominal variables.

In carrying out the CATREG, the seven variables used in describing the profiles of the participants in the research were assigned the following numerical values: Sex (1 = Male, 2 = Female), Age Group (0 = No Response, 1 = 20 years-25years, 2 = 26-30 years, 3 = Above 30 years; Highest educational qualification (0 = No response, 1 = O level, 2 = National Diploma/ Higher National Diploma, 3 = Bachelor Degree, 4 = Master and above); Frequency of visit (1 = Not Frequent, 2 = Frequent; 3 = Very frequent); Type of Room Lodged in (1 = Single; 2 = Double; 3 = En-Suite). Others are the Length of stay in the hotel (1 = less than a week; 2 = One Week; 3 = More than One week) and Mode of transportation to the hotel (1 = Hired cab, 2 = Personal car, 3 = Foot). The implication of this is that these variables were measured as continuous variables because the numeric values assigned to them are unordered categories recognized as nominal values in the CATREG analysis. The dependent variable used was the score for "*Satisfaction with Hotel Facilities*" while the seven variables describing the profiles of the respondents and the factor scores of the five factors extracted from the exploratory factor analysis were the independent variables. This translated to 12 independent variables investigated in our model.

In order to assess the reliability of the questionnaire instrument in measuring the guests' satisfaction with circulation in the hotels, Cronbach alpha coefficient test was conducted on the 35 items used in assessing satisfaction with circulation elements. The test produced Cronbach alpha value of 0. 898, which is more than 0. 7 recommended in [28]suggesting that the scale of measurement used in assessing satisfaction with circulation in the survey is reliable.

Study Findings

Profiles of the Respondents

Table 1 is a summary of the personal profiles of the respondents in the survey. It is evident from the data in Table 1 that the majority of the respondents were male, above 30 years of age, and highly educated persons.

Table1: Profiles of the Respondents

Profile of Respondents	N = 103	%
Sex		
Male	54	52. 4
Female	49	47. 6
Age in years		
20-25	15	14. 6
26-30	34	33. 0
Above 30	54	52. 4
Highest Educational Qualifications		
O-level / A-level	17	16. 5
OND/ HND	19	18. 4
Bachelor degree	53	51. 5
Master and above	14	13. 6
Frequency of Patronage of Hotel		
Not frequent	47	46. 0
Frequent	38	37. 0
Very frequent	18	18. 0
Type of Room Lodged in		
Single	65	63. 1
Double	33	32. 0
En-Suite	18	4. 9
Duration of Stay in the Hotel		
Less than a week	60	58. 3
One week	29	28. 2
More than one week	14	13. 6
Mode of Transportation to the Hotel		
Hired cab	86	83. 5
Personal Vehicle	15	14. 6
By foot	2	1. 9

The result also shows that a majority (55%) of those who participated in the research were frequent guests in the hotels sampled, around 63% lodged in single rooms and about 58% were lodging in the respective hotels for less than one week. The result showing that most of the respondents in the survey were frequent guests in the hotels is an indicator that those who participated in the survey are conversant with the hotel environment; and thus qualified to provide reliable data on their levels of satisfaction with the different aspects of the hotels.

Satisfaction with Circulation in the Hotel

Table 2 shows the result on the respondents' level of satisfaction with the different circulation elements in the three hotels sampled. This was assessed using Mean Satisfaction Score (MSS), which is the average satisfaction score given by all the 103 respondents on each of the items investigated in this study. Column two of Table 2 shows the MSS arranged in descending order.

Examination of the result in Table 2 will reveal that the respondents were most satisfied with the location of parking spaces with MSS of 4. 67, followed by access to the parking space (4. 63) and access to the reception (6. 41), respectively. On the other hand, the respondents were least satisfied with access to outdoor recreational facilities with MSS of 2. 82, followed by access to pedestrian walkways (2. 91) and the use of landscaping elements to direct human and vehicular traffic within the hotels' premises (2. 93), respectively.

Table 2: Respondents' Satisfaction with Circulation Elements

Circulation Elements	Mean Satisfaction Score	Std. Deviation	Rank
Location of parking area	4. 67	0. 600	1
Access to parking area	4. 63	0. 542	2
Location of reception	4. 41	0. 692	3
Geometry of staircases	4. 16	0. 622	4
Access to the lobbies	4. 12	0. 704	5
Location of elevators	4. 10	0. 693	6
Location of staircases	4. 09	0. 755	7
Location of the lobbies	4. 09	0. 742	8
Access to staircases	4. 09	0. 579	9
Location of exits	4. 05	0. 890	10
Size of elevators	4. 02	0. 874	11
Access to elevators	4. 02	0. 754	12
Access to the reception	4. 02	0. 792	13
Location of ramps	4. 01	0. 786	14
Access to ramps	4. 01	0. 618	15
Access to the fire escape/ exits	4. 01	0. 777	16
Access to the entrance porch	3. 94	0. 669	17
Location of entrance porch	3. 91	0. 951	18
Location of the indoor gymnasium	3. 87	0. 967	19
Access to the corridors	3. 84	0. 724	20
Location of the corridors	3. 83	0. 974	21
Size of lobbies	3. 82	1. 064	22
Access to indoor gymnasium	3. 78	1. 102	23
Visibility of signage	3. 78	1. 146	24
Location of lounge	3. 76	1. 062	25
Location of the restaurants	3. 74	1. 080	26
Access to rooms	3. 71	1. 311	27
Access to the restaurants	3. 60	1. 166	28
Access to the lounge	3. 59	1. 089	29
Access to toilet facilities	3. 55	1. 348	30
Location signage	3. 15	1. 061	31

Access to outdoor recreational facilities	3. 09	1. 429	32
Access to vehicular drop off	3. 01	1. 438	33
Use of landscape to direct human and vehicular traffic	2. 93	1. 360	34
Access to pedestrian walkways	2. 91	1. 358	35

The result also shows the satisfaction score for internal circulation was 3. 33 with standard deviation of 1. 088, while that of external circulation elements was 2. 90 with a standard deviation of 0. 995. This implies that the respondents are more satisfied with internal circulation in the hotel buildings than the external circulation within the hotel premises. However, the respondents were generally satisfied with all aspects of the circulation as the MSS was 3. 12. Further, the guests were also asked to rate their satisfaction with the overall facilities in the hotels sampled. The result produced MSS of 3. 35 with standard deviation of 1. 177; suggesting that the respondents are generally satisfied with the facilities in the three hotels investigated.

Dimensions of Satisfaction with Circulation in the Hotels

The study also investigated the dimensions of guests' satisfaction with circulation in the hotels using exploratory factor analysis. Assessment of the suitability of the our survey data for this analysis was done by investigating the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and the Bartlett's Test of Sphericity values. It was observed that the KMO value was 0. 725 and Bartlett's test was significant (p =. 000). These values are more than 0. 6 for KMO and 0. 05 for Bartlett's test as recommended by Pallant (2011). This means that the data derived from the survey is suitable factor analysis. The exploratory factor analysis was conducted because of the nature of the research questions.

Table 3 shows result of the exploratory factor analysis performed on the 35 attributes used to investigate the respondents' satisfaction with circulation in the hotels sampled. It can be seen from the result in Table 3 that the 35 variables investigated in the survey were viewed from five main dimensions (factors) and that the total variance explained across the 35 variables is around 84%. Table 3 also reveals the five factors with Eigenvalues of more than one. The first dimension the location of circulation elements and ancillary facilities, which has Cronbach's alpha of 0. 851 accounts for around 29% of the variance across the 35 variables with 13 variables loaded on it. The second dimension is access to ancillary facilities and has Cronbach's alpha of 0. 801 accounting for around 23% of the variance across the 35 variables and with nine factors loaded on it. The third dimension is access to circulation elements with Cronbach's alpha value of 0. 778 accounting for around 18% of the total variance across the variables investigated with seven factors loaded on it. The remaining two dimensions are Size and Shape of Circulation elements and the use signage and landscaping accounting for around 9% and 5% of variance across the 35 variables investigated, respectively.

Table 3: Factor Analysis of Satisfaction with Circulation

	Cronbach's alpha	Factor Loadings	Eigen value	Percentage of variance	Percentage Cumulative
Factor 1: *Location of circulation elements and Ancillary facilities*	**0. 851**		6. 361	28. 80	**28. 80**
Location of parking area		. 661			
Location of elevators		. 660			
Location of staircases		. 667			
Location of the lobbies		. 568			
Location of exits		. 673			
Location of the corridors		. 710			
Location of ramps		. 597			
Location of entrance porch		. 601			
Location of the indoor gymnasium		. 512			
Location of the restaurants		. 642			
Location signage		. 453			
Location of lounge		. 707			
Location of reception		. 605			
Factor 2: *Access to Ancillary facilities*	**0. 801**		5. 234	23. 34	52. 14
Access to the lounge		. 860			
Access to toilet facilities		. 705			
Access to the reception		. 702			
Access to the entrance porch		. 608			
Access to outdoor recreational facilities		. 578			
Access to indoor gymnasium		460			
Access to vehicular drop off		. 560			
Access to parking area		. 670			
Access to rooms		. 567			
Access to the restaurants		. 637			

Factor 3: Access to Circulation Elements	**0. 778**		4. 032	18. 01	**70. 15**
Access to the corridors		. 719			
Access to elevators		. 719			
Access to staircases		. 548			
Access to ramps		. 645			
Access to pedestrian walkways		. 615			
Access to lobbies		. 650			
Access to the fire escape/ exits		. 629			
Factor 4 : Size and Shape of Circulation Elements	**0. 767**		2. 572	9. 32	**79. 47**
Size of lobbies		. 623			
Size of elevators		. 542			
Geometry of staircases		. 462			
Factor 5: Use signage and landscaping elements	**0. 730**		1. 391	4. 60	**84. 07**
Visibility of signage		. 477			
Use of landscape to direct human and vehicular traffic		. 594			

Total variance explained = 84%.

Relationship between Satisfaction with Circulation and Satisfaction with hotel facilities

Table 4 is a display of the result obtained in the CATREG analysis involving overall satisfaction with facilities score as the dependent variable and the seven variables used in describing the profiles of the respondents and the five factors extracted from the exploratory factor analysis as the independent variables.

From the p-values in the sixth column of Table 4, it is evident that seven variables, including the sex of respondents, frequency of visit and length of stay in the hotels, the location of circulation elements and ancillary facilities (Factor 1), access to ancillary facilities (Factor 2), access to circulation elements (Factor 3) and the use of signage and landscaping elements (Factor 5) emerged as the significant predictors of overall satisfaction with hotel facilities in the survey. The result also shows that a combination of the aforementioned five independent variables predicted overall satisfaction with hotel facilities among the guests sampled in the three hotels in Port Harcourt, Nigeria with F (35, 812) = 5424. 124, P < 0.

000. The R^2 value (0. 513) of the model indicates that around % of the variance in satisfaction with hotel facilities is explained by the regression model.

Table 4: Regression analysis of Overall satisfaction with facilities, profile of the respondents and satisfaction with circulation in the hotels

Variables	Standardized Coefficients		df	F	p
	Beta	Estimate of Std.Error			
Sex	0.016	0.004	1	2.109	0.001*
Age	0.007	0.006	2	0.241	0.321
Highest educational qualifications	0.018	0.003	4	3.08	0.657
Frequency of visit to the hotel	0.108	0.010	3	0.651	0.000*
Type of room lodged	0.013	0.003	2	7.201	0.475
Length of stay in the hotel	0.218	0.001	3	0.470	0.000*
Mode of Transportation to the hotel	-0.021	0.002	1	0.062	0.804
Location of circulation elements and ancillary facilities (*Factor 1*)	0.663	0.010	1	74.084	0.000*
Access to Ancillary facilities (*Factor 2*)	0.312	0.003	1	602.210	0.000*
Access to Circulation Elements (*Factor 3*)	0.224	0.007	1	476.108	0.000*
Size and Shape of Circulation Elements (*Factor 4*)	0.106	0.009	1	607.237	0.871
Use signage and landscaping Elements (**Factor 5**)	0.322	0.010	2	22.245	0.000*

significant predictors

It is also evident in Table 4 that satisfaction with the location of circulation elements and ancillary facilities (Factor 1) with the highest beta coefficient of. 663 made the highest contribution in explaining overall satisfaction with facilities in the hotels. This is followed by satisfaction with the use of signage and landscaping elements (Factor 5) with beta value of 0. 352; access to ancillary facilities (Factor 2) with a beta value of 0. 322 and satisfaction with access to circulation elements (Factor 3) with a beta value of 0. 224, respectively. The three variables related to the profiles of the respondents that made significant contribution to prediction satisfaction with hotel facilities were the length of stay; frequency of visit to the hotel and the sex of the respondents.

Discussion
As stated in the introduction of this paper, the study investigated the impact of guests' satisfaction with circulation design on satisfaction with hotel facilities in Port Harcourt, Nigeria. The study was guided by three research questions: (i)

to what extent are guests satisfied with the circulation and facilities in hotels in Port Harcourt? (ii) what are the dimensions of satisfaction with circulation evaluation by guests in the hotel sampled; and (iii) which aspects of satisfaction with circulation contribute mostly to predicting guests' overall satisfaction with hotel facilities in the study area? Based on these research questions, three key issues have been identified from the findings of this research. In this section of the paper, the authors discuss these issues for a deeper insight into the subject matter investigated.

Regarding the first research question, it was found that the respondents in the survey were more contented and happy with the internal circulation than external circulation in the three hotels investigated. This is seen in a higher MSS for internal circulation than external circulation. This result did not come as a surprise because the data in Table 2 show that except items related to the location and access to parking spaces, most of the items with MSS of 4. 0 and above are related to location of and access to internal circulation elements. In addition, the result also shows that the respondents were generally satisfied with all aspects of circulation in the three hotels investigated. This is also understandable because of the 35 items used in assessing satisfaction with circulation; only three at the bottom of Table 2 have MSS of less than 3. 0. This suggests that most of the guests sampled expressed dissatisfaction with the extent to which signage is used to direct human and vehicular traffic, provision and access to pedestrian walkways and access to outdoor recreational facilities in the hotel premises.

In sum, this study reveals that the guests were very happy with the location of and access to parking spaces and reception in the three hotels investigated. This finding can be related to that by[23] suggesting that user satisfaction with circulation is based on the location of circulation elements in the buildings. It can be inferred from this finding that although the hotels sampled were designed, planned, constructed and maintained based on established standards and specifications, sometimes, such standards and specifications are at variance with the changing needs and expectations of users. As a result, users are not always satisfied with the performance of some aspects the buildings and their surroundings. This calls for constant study on the performance of constructed facilities from the perspective of end users so as achieve a better outcome in user satisfaction and value for money in the provision of buildings and related services.

On the second research question, the study found that the participants in the survey understood the 35 variables used in assessing the guests' satisfaction with circulation in the hotels from five different dimensions. These dimensions are: (i) satisfaction with the location of circulation elements and ancillary facilities (ii) satisfaction with access to ancillary facilities (iii) satisfaction with access to circulation elements (iv) satisfaction with the size and shape of circulation elements; and (v) satisfaction with the use of signage and landscaping elements. This finding is an indication that these five dimensions represent the factors that influenced guests' satisfaction with the design of circulation elements in the hotels sampled. They are also the different dimensions users responded to in their evaluation of satisfaction with the circulation in hotel buildings in the study area.

In terms of the contribution of these five dimensions to the differences in the guests' levels of satisfaction with the 35 items investigated, satisfaction with the location of circulation elements and ancillary facilities (Factor 1) has the highest contribution, followed by satisfaction with access to ancillary facilities (Factor 2) and satisfaction with access to circulation elements (Factor 3), respectively. Making the least contribution is the use of signage and landscaping elements (Factor 5). One key inference from this finding is that the way the researchers conceived satisfaction with the design of circulation in hotels as shown in Figure 1 is different from the way the users of the building evaluate their satisfaction with circulation. Therefore, this finding is consistent with the submission by authors [29 and 30] that users give their views and/or feelings about buildings-in-use based on their experience and interactions with buildings as compared to the views of professionals who design and construct buildings and never use them.

As it relates to which aspect of the guests' satisfaction with circulation that contributes mostly to predicting their overall satisfaction with hotel facilities, result of the CATREG reveals that the three factors, which made the most contribution in predicting satisfaction with hotel facilities in the order of their contribution were: satisfaction with the location of circulation elements and ancillary facilities satisfaction with the use of signage and landscaping elements and satisfaction with access to ancillary facilities. This means that in terms of circulation attributes, the aforementioned components are the most important factors in understanding satisfaction with hotel facilities among the guests in the three hotels sampled in Port Harcourt, Nigeria. Firstly, this specific finding of this study is consistent with the submissions in [14 and 15] that location of facilities and circulation are among the factors that influence guests' satisfaction with hotel services. Secondly, it is also in line with the finding in[21] suggesting that improper design and location of circulation elements elements within and around buildings can limit the extent to which users have access and interact with key facilities resulting in poor utilization and appreciation of such facilities. This can led to dissatisfaction and poor customer experience and patronage.

Furthermore, the factor related to the personal profile of the guests with the highest impact on satisfaction with hotel facilities was the length of stay in the hotels. This is followed by the frequency of visit to the hotels and lastly, the sex of the guests. Since one of the principal services provided by hotels is, the provision of temporary accommodation and the supporting facilities to their customers, to some extent hotels provide temporary residential facilities. From housing perspective, the result on the impact of the length of stay and sex of the guests on their satisfaction hotel facilities is consistent with the findings of studies in housing research showing that the sex of occupants [31 and 32] and their length of stay in housing [33 and 34] are predictors of satisfaction with housing environment. This means that in addition to circulation-related factors, the personal characteristics of users have influence on their satisfaction with hotel facilities.

Conclusions and Recommendations

In this study, the authors examined the impact of guests' satisfaction with circulation design on satisfaction with hotel facilities using data derived from a survey of 103 guests in three hotels in Port Harcourt, Nigeria. Based on the findings emanating from this research, authors arrived at the following conclusions. The first conclusion is that the guests sampled were very happy with the location of and access to parking spaces and reception in the three hotels; and were generally more satisfied with internal than external circulation in the hotels. The second conclusion is that the guests viewed their satisfaction with the design of circulation in the hotels from five dimensions, which are different from the way the researchers understood satisfaction with circulation. The last conclusion is that satisfaction with the location of circulation elements and ancillary facilities contributed most to predicting satisfaction with hotel facilities among the guests sampled in the survey.

This study has implication for design and management practices. First, the study implies that to ensure improved satisfaction with facilities in hotels, adequate attention must be given to the design, construction and maintenance of both internal and external circulation elements in hotels. The study also implies that to ensure better customer experience, more attention should be given to the design of specific areas such as the use of signage to direct human and vehicular traffic, location of and access to outdoor recreational facilities and the provision and access to pedestrian walkways in the existing and future hotels in the study area. In addition, the study has shown that there is a difference between the dimensions of satisfaction with circulation design as conceived by experts/researchers, and the way the actual users understand this. Therefore, studies of this nature are needed to investigate and understand end users' perspective when it comes to the design, construction and management of buildings and their surroundings. Another implication of this study is that the architects, planners and builders involved in the development of the three hotels sampled had given more attention to the location of and access to parking spaces and reception areas of the hotels than any other aspects of the hotel facilities. This might explain why the guests were most satisfied with these aspects of circulation in the hotels.

Notably, this study is limited in a number of ways. The first limitation of the study is that only 35 circulation attributes were investigated in this study leaving out several other factors. Future study might consider the inclusion of more variables for a better result. The second limitation is that only three of the five hotels identified to be of 4-and 5-Star status were sampled. The inclusion of all the hotels in these categories and other hotels in the city would have produced a different result. In addition, the survey was conducted during the holiday season of December and January, conducting the survey in different period would have produced a different result. Hence, other studies may consider using data derived from longitudinal surveys for a better result. Despite these limitations, the study can be considered to have achieved its goal by improving understanding of the impact of guests' satisfaction with circulation on satisfaction with hotel facilities in Port Harcourt, Nigeria.

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