



BUDGETARY CONTROL AND SERVICE CHARGE MANAGEMENT PERFORMANCE IN REAL ESTATE SECTOR: AN EMPIRICAL STUDY OF THE MOTIVATIONAL ASPECT

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ABSTRACT

Most Real Estate Property Management Companies (PMC) in most cases struggles with service charge funds (SCF) to provide amenities for tenants living in their serviced apartments after budget has been carefully prepared and approved and payments made by occupants. This paper investigated the effect of motivational aspect of budgetary control on the service charge management performance in PMCs in Nigeria. The sample frame consists of 4 major PMC with 380 staff stratified into two groups - group 1 (Luxurious) and group 2 (commercial). The sample size is made up of 95 staff representing 25% of the frame selected at random. Data was collected through structured questionnaire and analyzed. Z-test was used for hypotheses confirmation. Findings proved that budgetary control has significant influence on workers motivation which leads to savings in the service charge expenditure but not effectively employed in the subsector hence the inefficiency in Service charge expenditure (SCE) management. The study recommended that budgetary control should be intensified to motivate employees to embark on service cost minimization to gain savings or at least achieve a state of breakeven. This will promote tenancy relationship in the managed estates and the achievement of PMC financial objective.

Keywords: Budgetary control, Motivation, Real estate property management, Service charge, Nigeria

INTRODUCTION

Management experts believed that every behaviour is goal directed and for an organization to engage in any productive venture there must be a motivating force inducing them in that direction. Production of goods or services is accomplished using factors of production with special attention to the labour force. Human capital managers need to strategically put in place human resources policies to attract the best performance (Armstrong, 2009). According to the proposition of Legge

(1989), human resources policies should be integrated with strategic business planning and be used to reinforce an appropriate or change inappropriate organizational culture. Human resources are valuable and the greatest source of competitive advantage in any organization. It may be tapped most effectively by mutually consistent policies that promote commitment and consequently foster willingness in employees to act flexibly in the interest of the adaptive organization's pursuit of excellence (Legge, 1989; Barney, 1995). At the beginning of tenancy agreement and subsequently on the commencement of each financial year, service charge expenditure budget is prepared by PMC and approved by tenants. This will be implemented by the PMC with due care and proper budgetary control measure undertaken to ensure that action are in line with envisaged level of spending (Adeniji, 2002). Employees are willing to sacrifices extra time and energy only if there are apposite inducements from the employers (Oladunni, 1998). Success in budgetary process is a collective effort and every manager need to understand how to elicit the cooperation of workers and direct their performance towards achieving the organizational set goals (Becker and Gerhart, 1996).

The statement of the problem in this research paper is that of SCF management in which some PMCs in spite of excellent budget prepared and approved and the huge amount contributed by the residents, are unable to provide quality service as planned throughout the year or struggled to do so with budget deficit at the end of the service season. The primary question that may arise when any PMC is faced with such situation is who should be responsible for liquidating the shortfall? This will definitely result in disappointment of all stakeholders; accommodation cost overshoot leading vacation especially for employed executives with accommodation cost limit, a decline in landlord's income due to vacant apartments and the dilemma of PMC choosing between losing the contract of service or the option of absorbing the deficit when tenants refuse to pay due to underperformance. When unfavorable budget variance occurs on a regular basis and appropriate measure is not taken to address it, the chain of effect on PMC would include: loss of existing apartment portfolio, delay or nonpayment of staff salaries when due, high labour turnover and loss of strategic staff, loss organizational share of market and consequential profit, inability to other financial obligations and predictably, the PMC may go out of business. The general objective of this paper is to investigate the extent to which PMC can employ budgetary control to motivate her work force to achieve savings in the SCE management. The research questions include (i) does budgetary control have any significant relationship with the concept of motivation? (ii) To what extent has PMC employ motivation to influence savings in SCE? The hypotheses are: H_{01} There is no significant relationship between budgetary control and employee motivation in PMC in Nigeria. H_{02} : Motivation does not lead to service charge expenditure savings in PMC in Nigeria.

Extant Literature and Theoretical Framework

Control feedback with appropriate credit given for the achievement of target forms a morale booster and great motivating factor in any organization (Houlton, 1979). This can be used to elicit workers commitment and achieves organizational performance (Bateman and Zeithaml, 1990). According to Smith *et al.* (1978), as a result of the search for methods to be used for motivating employees, organizations have come to understand that matching skilled people with jobs, providing equitable pay, encouraging job enrichment, giving security on and possibly off the job, encouraging interaction and free flow of information, giving credit for meeting target, fair leadership, reasonable order and in general good corporate governance are the plausible ways for employees motivation. The theoretical foundation of this study is based on the aspect of Smith and Sarason theory which recommended “Encouraging interaction and free flow of information as well as giving credit for work well done”. This is the core value of budgetary control (Lucey, 1988). Budget is a reference point created to quantify organizational strategies over a given period of time and to provide a parameter upon which control measure is exercised on activities to stay within the established boundaries (Searfoss and Monozka, 1973). Actual activities obtained from implementation of budget are compared with the desired outcome to determine the level of deviation and management action required to get back on track or further the existing course of action (Lucey, 1988). In the course of budgetary control, PMC staff is motivated through feedback mechanism and reward system to achieve savings in SCE and this has dual advantage of minimizing the tenants’ cost of living in the managed estate and promoting the tenancy relationship. It is also instrumental to financial prosperity of the PMC.

Motivation

Over the years, psychologists had made several attempts to unravel the mystery surrounding why people display certain behaviour in a given condition. The question is what are those forces responsible for such behaviour? This question can only be answered with proper understanding of the meaning of motivation and its relationship with productivity. Firstly, motivation is not seen but inferred on the basis of behaviour and performance and secondly it is multifaceted making employees to have several motives at the same time. Igun (1999) stated that to motivate is to stimulate on a continuing basis human action to accomplish pre-defined desired goals. Donnelly *et al.* (1992) defined motivation as all those inner-striving conditions described as wishes, desires and drives that activates or moves and Flippo (1982) assert that, just as an employee has certain wants that he expects the organization to provide, the organization equally has certain types of behaviour it wishes to elicit from the employee, motivation is therefore the managerial skill and responsibility for aligning employee and organizational interests so that behaviour results in achievement of employee wants simultaneously with attainment of organizational objectives. Employees’ behaviours are determined by what motivate them and from the outward, motivated workers perform better than those who are not. The PMC may use motivation to influence SCF operators in their organizations to put in their best (Guest, 1992).

Budgetary System in PMC

Planning: Optimal management of available scarce resources starts with proper planning of organizational activities. It involves looking ahead and anticipating the future, making choices from available alternative means to achieve specific objectives and formulating programs of action to attain those objectives (Obadan, 2003). During planning, [strategies are](#) defined and decisions are made on allocating resources to pursue the chosen strategies. PMC should properly plan service charge activities to establish a reference point for comparison and adjustments Frank (Wood and Sangster, 2008). In real estate, services charge budget management is a combined function of Property, Facilities and Accounts Departments. They should do the following: (i) conduct a baseline study to determine the tenancy market segment and their needs; (ii) source quotations from professional service providers to address the identified needs; (iii) conduct market research to confirm the market price of the quoted materials and services to be rendered (iv) ensure integrity of quotation selection process and (v) award contract base on merit. The annual service charge budget amount is determined by the following models:

$$1. \text{ New tenant: } TC = [QSI + (S(x)_{(1)} + S(x)_{(2)}) + mf] [y] \dots\dots (i)$$

$$2. \text{ Existing tenants: } TC = [QSI + (S(x)_{(1)} + S(x)_{(2)}) + mf] \dots\dots (ii)$$

Where: TC = Total cost of services; QSI = Quotations selected for service inputs; S_1 = Salary of Site Engineers; S_2 = Salary of Technicians; x = no of Engineers and Technicians on the site; mf = 10-15% management fees (usually industry rate) and y = the fraction of the year for a new tenant (number of months of tenant's occupation /12). Having determined the total cost of services to be rendered (TC), PMC will share the total cost to determine individual tenant/apartment's contribution by the following equation:

$$3. \text{ Tenant/apartment's contribution (AC) = } TC/n \dots\dots\dots (iii).$$

Where: AC = Contribution of each apartment and n = Number of Tenants apartments in the serviced estate or square meter occupied by each tenant where apartments are of varying size. Selection of all service providers should be through a tender process by a well constituted tender board consisting of at least Heads of concerned departments and Site Engineers. The Site Engineers and Technicians are assumed to be in the employment of tenants of their respective managed estates.

Implementation: the PMC's service charge budget implementation involves the application of management process to obtain the desired result. It includes allocating resources, developing information outline, decision process, and managing resources to make sure that the organization stays within the envisaged level of spending (Adeniji, 2002). Managers involves in the implementation should ensure that quality materials are used for service provision, appropriate time are spent by site staff and every avenue for financial leakages are avoided.

Control: This involves measuring deviation between planned and actual performance and providing information leading to corrective action if required either to alter future performance to conform to original plan or modify the original plan (Lucey, 1988). The control cycle include set plan, measure actual performance, compare plan and actual outcome, feedback control units and take corrective actions. PMC should follow the control cycle with emphasis on feedback and reward system to consistently motivate employees to do their best.

Brief History of PMC in Nigeria

The history of Real Estate sector is as old as human existence. This is because shelter is one of the basic necessities of life needed both for protection and luxury. The sector consists of construction, property agency and brokers, facilities management and property management businesses. The PMC which is a relatively new concept is set up to manage both commercial and furnished luxurious apartments as well as the tenants. The properties may be owned and managed by the PMC or managed on behalf of Landlord. The occupants of PMC estate are usually expatriates, well to do indigenes with security consciousness or Chief Executive Officers (CEO) of companies. Some of the major PMCs in Nigeria are: FilmoRealty Limited, UAC Property Development Company Ltd, Caldwell Property Management Ltd., Prime Rose Properties Ltd., Broll Properties Ltd, and Excel Properties Ltd. FilmoRealty whose properties were previously managed by Participant Properties Limited till April 2005 is headed by Hajia Fatima Isa Wali (CEO). The company is identified as the pioneer of properties management in Nigeria outside organizations with department operating PMC serving internal clients. It started business of luxurious apartment's management in 1994 in Victoria Island, Lagos and today, its portfolio has grown to about 120 apartments (Wali, 2012). This was followed by UAC Properties Development plc which was a department in UAC after merger of four European companies in 1879 providing warehouses for produce, offices and exclusive residential accommodation for the mostly expatriate managers. It was incorporated as a public limited liability company in 1997 to acquires, develops, sells, leases and manages choice residential and commercial real estate in Nigeria. Other companies joined thereafter and the market is recognized a specialized field in the real estate sector.

Service Provision and Service Charges Accounting

The PMC provides serviced luxurious accommodations for tenants estate (residential or commercial) with unique value proposition in exclusivity and premier locations, environmental and eco - friendly, expansive spacing of about 35% built up, green environments with superior facilities (UACPD, 2012). The services rendered routinely include: security, common area cleaning, refuse collection, sewage disposal, pest control/routine fumigation, landscape maintenance, supply of diesel, repair and maintenance of all facilities and equipment provided, and payment of electricity and telephone bills on tenants' behalf (reimbursable). It is the industry tradition for tenants to responsible for the interior decoration of the unit they occupy although, according to the terms of their lease agreement while PMC is largely responsible for the structural

and exterior integrity of the building and its environs (Wali, 2012). Each flat is provided with various amenities and the Facilities Management Department is in charge of routine maintenance services and should have a flawless network with all concerned departments and the outsourced services providers (Wali, 2012). The service charge accounts should be judiciously maintained by the PMC accounts department either on Peachtree, Gemini or MS Excel software and should be uploaded on line for verification at all times by the tenants. The service charge budget control provides the basis for continuous monitoring of progress throughout the financial year and analysis of the component parts of the budget to give a better idea of where efficiency can be improved or changes needed to be made.

Budgetary control motivation and Service Charge Savings

The core value of budgetary control is the interaction between all stakeholders - management and the operatives by means of measuring actual with the planned outcome and determining the level of deviations which is communicated through feedback mechanism. PMC should pay attention to free flow of information, giving credit to employees' exceptional performance as well as continually embracing good corporate governance. This will motivate employees to work and achieve savings in the SCE (Smith *et al.*, 1982). PMC should create a tension in the individual workers to move them to achieve the chosen strategies (Nwachukwu, 1988). Budgetary control motivation is accomplished when employees are allowed to partake in setting targets and receive control results with necessary management action deemed proper regularly to address issues arising there from. This pattern of PMC's service charge management allows both the individual needs and that of the organization to be met simultaneously thereby providing a platform for organizational market development, strong tenancy relationship and achievement of financial prosperity.

METHODOLOGY

The population of the study consists of 6 major PMC (FilmoRealty, UACPDC, Broll, Caldwell, PrimeRose, Excel) with total property, facilities and accounts staff strength of 746 while the sample frame consists of 4 PMC with 380 stratified into two groups: group 1- luxurious PMC and group 2 - commercial PMC. The criteria for selected PMC are (i) managing portfolio in Lagos; Port Harcourt or Abuja conurbation (ii) must have Facilities, Properties and Accounts Departments, (iii) must have operated PMC for not less than 5 years and (iv) must maintain a portfolio of not less than 50 apartments in Nigeria. FilmoRealty, UACPDC, Broll, PrimeRose were selected at random. The sample size of 95 staff representing 25% is drawn from three departments of the four companies as follows:

Table-1. Summary of Response by PMC and Departments

Group	PMC	Facilities Dept	Properties Dept	Account Dept	Total
1	FilmoRealty – Group 1	7	9	3	19
	PrimeRose – Group 1	5	4	3	12
2	UACPDC – Group 2	10	12	6	28
	Broll – Group 2	12	16	8	36
Total		34	41	20	95

Source: Field work - November, 2012

The study made use of primary data and the instrument consisted of a 7- term survey questionnaire with a - 5 Likert scale response options as follows: High, Medium, Low, No influence, and No Opinion. The ordinal scale is converted to interval scale and weight assigned to each point in the 5- point scale (4 to 0). The probability is 0.05 that a true null hypothesis will be rejected. The parametric test statistic (Z-test designated as “Z”) was used for hypotheses confirmation and the formula is: $Z = \frac{X_1 - X_2}{\sqrt{[S_1 + S_2 / n_1 + n_2]}}$. Where X_1 = mean of the first sample or group; X_2 = mean of the second sample or group; S_1 = variance or standard deviation of the first sample or group; S_2 = variance or standard deviation of the second sample or group; n_1 = number of the observation or sample size of the first sample; n_2 = number of the observation or sample size of the second sample. The **Decision rule is** (i) Reject H_0 if Z calculated > Z critical value (ii) Otherwise do not reject. Multiple-choice questions were used to extract data from Respondents.

TEST OF STATISTICAL HYPOTHESES

Table-2. Summary of hypotheses test results

Variable / Group	Hypotheses	X	SD	n	df	SE	Cal. Z Value	Crit. Z Value	Remark
Group 1	1	3.39	0.790	31	94	0.18	0.67	±1.96	Accept Null Hypothesis
Group 2		3.41	0.842	64					
Group 1	2	3.65	0.598	31	94	2.583	7.16	±1.96	Reject Null Hypothesis
Group 2		3.61	0.653	64					

Source: Field work – November, 2012

(Key: X= means, SD= Standard deviations, n = no. of the observations, SE = Standard errors, df = degree of freedom.

Decision: Hypothesis 1 - Since the Z calculated value of 0.67 < the Z critical value of ±1.96, the null hypothesis (H_0) is hereby accepted and alternate (H_1) rejected. Hypothesis 2 - Since the Z calculated value of 7.16 > the Z critical value of ±1.96, the null hypothesis (H_0) is hereby rejected and alternate (H_1) accepted.

DISCUSSION OF RESULT

The article probed the correlation between budgetary control and the concept of employees' motivation in Real Estate sector on one hand and the influence of motivation on PMC service charge performance on the other. From the above results, it is obvious that the PMCs' SC management predicament in Nigeria is largely due to inadequate budgetary control. This is confirmed by question 5 with 22/48 high response representing 75% of the total. There is relationship between budgetary control and workers motivation and this is established by question 3 on Table 3 with high response rate 24/38 representing 65% but result presupposes that proper budgetary control measure is not properly employed by PMC in Nigeria hence it is of no consequence in the real estate sector. This has resulted in poor SCE analysis, shabby flow of control information, inappropriate management decision and lack of reward for exceptional performance. The concomitant effect is lack of motivation, SC deficits, high cost of living for tenants, poor tenancy relationship and PMC financial misfortune. The analysis suggests that there is a significant *relationship* between the concepts of motivation and favourable budget variances.

Theoretical Findings

Based on the objectives of this study, Findings shows that (i) Collecting Tenants' SC contribution as one off annual payment is viewed as wrong practice since SCF is a revolving fund. This makes it impossible for PMC to request for more funds when there is a general rise in price of services (ii) Normal items are lumped with heavy price fluctuated items which is unhealthy financial practice (iii) Effective budget control are not exercised leaving loopholes for mismanagement of SCF (iv) Attention is not paid to reward system for excellent services achieved which is de-motivating. (v) The incessant PMC budget deficits are an indication of lack of proper coordination of budget process.

CONCLUDING REMARKS AND RECOMMENDATIONS

As a result of the above discussion and findings, the study hereby concluded that PMC improper budget practice, tenants annual one off payment, none consideration of items with heavy price fluctuation, and above all lack of excellent communication and reward system resulting from weak budgetary control are the factors responsible for service charge failure of PMC in Nigeria. The study recommended the following: (i) Budget planning should incorporate inflationary factor since price of quoted items may not remain constant throughout the year. The planning model should be: $TC = [QSI + IR + (S(x)_{(1)} + S(x)_{(2)}) + mf]$ (iv).

Where (IR) is the inflationary factor (ii) There should be a service charge budget reform making SCF a revolving fund and Tenants' contribution a deposit on which stewardship accounts are rendered by PMC as agents to the Tenants as principals (ii) Proper book of accounts of SCF

should be kept, analyzed and uploaded in the website for tenants view and comments at all times (iii) Items like diesel with heavy price fluctuation should be separated and accounted for as reimbursable by the tenants (iv) Every target met should be rewarded to spur employees morale to willingly put in their best. (v) Excellent communication practice should be adopted to report budget deviations with recommended actions required to the control units on timely basis to avoid situation damping or amplifying.

List of Abbreviations

PMC = Real Estate Property Management Companies; SCF = Service Charge Funds; SCE = Service Charge Expenditure; SCS = Service Charge Saving; SCC = Service Charge Contributions.

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APPENDIX 1: Statistical Hypotheses

Hypothesis 1

H₀: There is no significant relationship between budgetary control and employee motivation in PMC in Nigeria.

H₁: There is significant relationship between budgetary control and employee motivation in PMC in Nigeria

Table-3. Summary of responses for the 4 PMCs. Question 3 of questionnaire administered: PMC uses budgetary control to motivate employees in Nigeria Real Estate Sector?

Options	Level of relationship between budgetary control on motivation					Total
	High (4)	Medium (3)	Low (2)	No Influence (1)	No Opinion (0)	
FilmoRealty	14	2	2	1	0	19
PrimeRose	10	1	1	0	0	12
Subtotal – Group 1	24	3	3	1	0	31
UACPDC	18	7	1	2	0	28
Broll	20	10	5	1	0	36
Subtotal – Group 2	38	17	6	3	0	64

Source: Field work – November, 2012

Table-4. Computation of Means for the group 1 and 2 of the 4 PMCs

Options	Point (x)	Group 1		Group 2	
		Resp. (f)	Fx	Resp. (f)	Fx
H	4	24	96	38	152
M	3	3	9	17	51
L	2	3	6	6	12
NI	1	1	1	3	3
NO	0	0	0	0	0
Σ		31	112	64	218
Mean X	$X_1 = \Sigma fx = 112/31 = 3.61$			$X_2 = \Sigma fx = 218/64 = 3.41$	

Source: Field work – November, 2012

Table-5. Computation of Standard Deviations for Group1 and Group 2 of the 4 PMCs

Point (x)	Group 1				Group 2			
	Resp.	$X - X_1 = X_{v1}$	$F(X_v)$	$F(X_v)^2$	Resp	$X - X_1 = X_{v2}$	$F(X_v)$	$F(X_v)^2$
4	24	0.39	17(0.39)	24(0.39) =	38	0.59	38(0.91)	38(0.91) =13.23
3	3	-0.61	7(-0.61)	3(-0.61) =1.12	17	-0.41	17(-0.09)	17(-0.09) =2.86
2	3	-1.61	4(-1.61)	3(-1.61) = 7.78	6	-1.41	6(-1.09)	6(-1.09) =11.93
1	1	-2.61	2(-2.61)	1(-2.61) =6.81	3	-2.41	3(-2.09)	3(-2.09) =17.42
0	0	-3.61	0(-3.61)	0(-3.61) = 0	0	-3.41	0(-3.09)	0(-3.09) = 0
Σ	31			19.36	64			45.44
SD				$S_1 = \Sigma f(x_1)^2/N - 1 = 19.36/31 - 1 = 0.624$ $SD_1 = \sqrt{S_1} = \sqrt{0.880} = 0.940$				$S_1 = \Sigma f(x_2)^2/N - 1 = 45.44/64 - 1 = 0.710$ $SD_2 = \sqrt{S_2} = \sqrt{0.721} = 0.849$

Source: Field work – November, 2012

Computation of Z Value: The data for the computation of Z Value are: $X_1 = 3.61$; $X_2 = 3.41$; $SD_1 = 0.790$; $SD_2 = 0.842$; $N_1 = 31$; $N_2 = 64$. $Z = X_1 - X_2 / \sqrt{[S_1 + S_2 / n_1 + n_2]} = 3.61 - 3.41 / \sqrt{[0.790^2/31 + 0.842^2/64]} = 0.20 / \sqrt{[0.0213 + 0.0111]} = 0.12 / \sqrt{0.0324} = 0.12 / 0.18$ - Standard error. **Z calculated = 0.67**

Using the degree of freedom $df = 94$, and 0.05 level of significance or 5% of probability Z – calculated is equal to $Z_{94}(0.05) = \pm 1.96$ since this is a two tailed test and we are not concerned with the direction of variance.

Hypothesis 2

H_0 : Motivation does not lead to service charge expenditure savings in PMC in Nigeria

H_1 : Motivation does not lead to service charge expenditure savings in PMC in Nigeria

Table-6. Summary of responses for the 4 PMC: Question 5 Does employees' motivation leads to achievement of savings in SCE management by PMC?

Options	Level of relationship between motivation and favourable budget variance					Total
	High (4)	Medium (3)	Low (2)	No Influence (1)	No Opinion (0)	
FilmoRealty	13	5	1	0	0	19
PrimeRose	9	2	1	0	0	12
Subtotal – Group 1	22	7	2	0	0	31
UACPDC	19	9	0	0	0	28
Broll	25	7	3	1	0	36
Subtotal – Group 2	44	16	3	1	0	64

Source: Field work – November, 2012

Table-7. Computation of Means for the group 1 and 2 of the 4 PMCs

Option	Point (x)	Group 1		Group 2	
		Resp. (f)	Fx	Resp. (f)	Fx
H	4	22	88	44	176
M	3	7	21	16	48
L	2	2	4	3	14
NI	1	0	0	1	1
NO	0	0	0	0	0
Σ		31	113	64	231
Mean X		$X_1 = \Sigma fx = 113/31 = 3.65$		$X_2 = \Sigma fx = 231/64 = 3.61$	

Source: Field work – November, 2012

Table-8. Computation of Standard Deviations for Group1 and Group 2 PMC

Point (x)	Group 1				Group 2				
	Resp.	$X - X_1 = X_{v1}$	$F(X_v)$	$F(X_v)^2$	Resp	$X - X_1 = X_{v2}$	$F(X_v)$	$F(X_v)^2$	
4	22	0.35	22(0.35)	22(0.35)=2.70	44	0.39	44(0.39)	44(0.39)=6.69	
3	7	-0.65	7(-0.65)	7(-0.65)=2.96	16	-0.61	16(-	16(-	
2	2	-1.65	2(-1.65)	2(-1.65)=5.45	3	-1.61	3(-1.61)	3(-1.61)=7.78	
1	0	-2.65	0(-2.65)	0(-2.65)=00	1	-2.61	1(-2.61)	1(-2.61)=6.81	
0	0	-3.65	0(-3.65)	0(-3.65)=00	0	-3.61	0(-3.61)	0(-3.61)=00	
Σ	31			11.10	64			27.23	
SD		$S_1 = \Sigma f(x_1)^2/N-1 = 11.14/31 -1 = \mathbf{0.358}$				$S_1 = \Sigma f(x_2)^2/N-1 = 27.23/64 -1 = \mathbf{0.426}$			
		$SD_1 = \sqrt{S_1} = \sqrt{0.390} = \mathbf{0.598}$				$SD_2 = \sqrt{S_2} = \sqrt{0.562} = \mathbf{0.653}$			

Source: Field work – November, 2012

Computation of Z Value: The data for the computation of Z Value are: $X_1 = 3.65$; $X_2 = 3.61$; $SD_1 = 0.598$; $SD_2 = 0.653$; $N_1 = 31$; $N_2 = 64$. $Z = \frac{X_1 - X_2}{\sqrt{[S_1^2/n_1 + S_2^2/n_2]}}$ = $\frac{3.65 - 3.61}{\sqrt{[0.598^2/31 + 0.653^2/64]}}$ = $0.04 / \sqrt{[0.0115 + 6.663]}$ = $0.04 / \sqrt{6.675}$ = $0.04 / 2.583$ - Standard error. **Z calculated = 7.16**

Using the degree of freedom $df = 94$, and 0.05 level of significance or 5% of probability Z – calculated is equal to $Z_{94}(0.05) = \pm 1.96$ since this is a two tailed test and we are not concerned with the direction of variance.