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## **EDITORIAL**

This edition of the *Environ* is another contribution in the continuous efforts of humankind, in expanding the frontiers of knowledge in the Built Environment Sector in the continuous search to improve and enhance his life. The papers presented by the authors discuss different subjects of interest to the built environment. They include Investigations into the Effects of Vertical Greenery on Thermal Comfort in Residential Buildings; The Effect of Construction Practitioners' Personal Characteristics on Project Performance; and An Evaluation of Energy Consumption Pattern in Research Institutes' Buildings.

Other papers included are, Investigation into Materials for use as Partial Replacement for Cement in Concrete Production; Exploration of Organic Vestiges as Medium for Social Commentary in Painting; and a Geospatial Multicriteria Approach to the Suitability Mapping of Existing Solid Waste Dumpsites; Development of Textile Studio Practice and Creativity for Effective Knowledge Sharing; Perception of Hospital Staff and Patients on the Therapeutic Performance of Teaching Hospitals; Motivational Factors Influencing Quantity Surveying Students' Academic Performance; Key Factors Affecting Stakeholder Management Process of Construction Projects; and An Organisational Performance Measurement of Indigenous Contractors using Key Performance Indicators.

We wish to acknowledge the meticulous and painstaking way the Editorial Board worked to ensure the success of this edition of the journal, and to our highly esteemed reviewers for making available their deep knowledge in ensuring that the journal maintains a high quality of scholarship. Finally, we congratulate and appreciate the authors for all their contributions.

Prof. Musa Lawal Sagada

**Editor**



## DETERMINATION OF KEY FACTORS AFFECTING STAKEHOLDER MANAGEMENT PROCESS OF CONSTRUCTION PROJECTS IN NIGERIA

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### Abstract

*Managing multiple stakeholders and maintaining an acceptable balance between their interests are crucial to successful project delivery. Several factors impede the management of stakeholders for sustainable construction projects. Previous studies focused on general factors that affect construction projects but a gap exist in the aspects of key factors such as conflict, cost, marginalization, management factors and how these factors impact on stakeholder management process which have not been researched in detailed. Hence this study determined key affects that affect stakeholder management process of construction projects in Nigeria. The study assessed 86 factors affecting stakeholder management which was sub grouped into 12 main factors. The study employed the use of self-administered questionnaires on stakeholders within the construction projects. A total of 170 questionnaires were returned giving a 73.5% response rate. Responses obtained from the respondents were collated and then analysed using mean, correlation and regression analysis. The study found out that management, conflict and marginalization factors are significant factors to be considered and improved upon in future construction projects. The study recommended that management support group should be put in place to manage stakeholders*

**Keywords:** Construction, Factors, Management, Projects, Stakeholders, Process

### INTRODUCTION

Construction projects are traditionally divided into series of operations undertaken by different individuals or groups who may have different levels of interest in the project (Heravi et al., 2015). Therefore, the process of design and execution of construction projects constitutes a complex system which involves collaboration and negotiations among many stakeholders. Managing multiple stakeholders and maintaining an acceptable balance between their interests are crucial to successful project delivery (Takim, 2009; Jurbe, 2014).

Disagreement among stakeholders during the implementation of projects adversely affects the ability of the management teams to deliver the construction project within the time and allocated budget and expected degree of quality. These disagreements are often caused by inappropriate identification and management of the different stakeholders involved (Olander and Landin, 2005).

Conflicting objectives among the project stakeholders impede the achievement of best value in construction projects (Aapaoja and Haapasalo 2014).). Karlisen (2002) considered poor management of

stakeholders to be a recipe for potential and serious challenges that are often associated with construction projects. These problems include factors such as incessant change order in scope of work, poor definition of work and scope, poor allocation of scarce resources to projects, poor communication, conflicts and controversies which are majorly the origin of delays and attendant time and cost overruns.

Despite several contributions on management of stakeholders in the construction industry, several studies point towards critical success factors; hence boycotting the root problems that contribute to poor stakeholder management (Chinyio and Akintoye, 2008; Olander and Landin, 2008; Yang et al., 2009; Jepsen and Eskerod, 2009; Li et al., 2011). Contributing factors also appear limited in literature (Karlsen (2002), also the impact of factors on stakeholder management of construction projects, thereby considering more in-depth studies to be done in this area as stipulated by (Golder and Gawler, 2005). Therefore, a need arises to determine the key factors that affect stakeholder management of construction projects in Nigeria.

## **LITERATURE REVIEW**

### **Stakeholder Management Processes**

Stakeholder management process, if designed appropriately, can deliver a wide range of outcomes ranging from the capture of different forms of knowledge to social learning. Stakeholder management should ensure collaboration but bringing about collaboration between project managers and influential stakeholders depends a lot on the worker's ability and willingness to share knowledge which requires a great amount

of team effort to be engendered (Bourne, 2005). Furthermore, knowledge should be sought on the activities at all stages and corresponding stakeholders; types of decision that need to be made at each stage of the construction project; and the consequences of change in decision on the process. This will help in forming a formidable team by appreciating the efforts needed for each stage and allocating appropriate resources and responsibilities to them (Elias et al., 2002; Bourne and Walker, 2005).

Takim (2008) suggested the involvement of project stakeholders throughout the project life cycle, particularly at the planning stage and that overall communication with the various stakeholders is very important in order to achieve alignment and feedback between them. Similarly, good project management at the early stages of a project has been found to provide potentially significant opportunities for eliminating several problems that prevent the achievement of project success (Faniran et al. 1999). However, in order for this to be effectively done, it is necessary for the project managers to identify and analyse the various stakeholders they need to manage.

Chinyio and Akintoye (2008) identified several approaches for managing construction stakeholders and grouped them under the two categories of underlying (overarching) and frontline (operational) approaches. The underlying approaches are relatively medium to long-term guides that influence the actions of employees and can be viewed as 'overarching', 'higher order' or 'behind-the-scene' principles that inform practice and are used constantly. While the frontline approaches are the

The main essence of stakeholder mapping is to develop a useful list of stakeholders and assess some of their key characteristics as well as presenting the assessments in a way that helps the project team develop insight and understanding to support their implementation of planned stakeholder

**(Mapping)**

**1. Visualize**

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claim, attention and priority attached to a stake while Cago and Anolin (2004) viewed urgency as the degree to which a claim demands immediate attention. It seems thus that urgency influences the manner and extent to which power is exercised in stakeholder engagement. A tri-axial template can be used to map stakeholders. Companies/organisations will address stakeholder claims of those groups whose claims they see as most salient (Mitchell *et al.*, 1997).

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*Legitimacy and Legitimacy*

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**2. Prioritizing Stakeholders**

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holders can try to gain salience through other stakeholders if they have some requirements of the project.

Therefore, project managers should ensure that all stakeholders in the project are identified as early as possible so that they can be mapped according to their level of interest and power. However, all stakeholders involved in a project should be monitored closely throughout the span of the project as their various levels of power and interest and predictability can change thus placing them into different zones on the matrices (Newcombe, 2003; Bourne and Walker, 2006; Chinyio and Akintoye, 2008).

#### **4. Engaging Stakeholders**

According to Bourne (2010) engaging stakeholders enable the team to understand where to focus their scarce resources to ensure maximum gain for their project. Therefore, it is very essential to engage stakeholders during all phases of the project. Different avenues for engaging stakeholders were identified by Chinyio and Olomolaiye (2008) that includes: consultation, dialogue, partnership and regular supply of information. They further suggested that these avenues can be exploited at corporate events, exhibitions and meetings. Channels of communication could also be exploited, such as uses of posters, websites, newsletters and emails. The idea is to use an approach and tactics that are effective. Low and Cowton (2004) identified two (2) steps for engaging stakeholders. First, stakeholder engagement requires an organisation to meet and consult with stakeholder groups, but at the same time they have little influence on corporate decision-making. Second, stakeholder participation involves a more inclusive management strategy allowing stakeholder groups to

be actively involved in decision-making and integrating them within the governance structures of an organisation.

#### **5. Managing Stakeholders**

As stakeholders have claims, rights and expectations, they must be managed in each project to avoid any of their influences that could be contrary to a firm's objectives. Differing stakes can become a major source of conflict between stakeholders and hence it is worthwhile to manage stakeholders in most undertakings. Bourne (2010) suggests that communication in its many forms is the only tool (or technique) for managing stakeholder relationships. Effectively planning and implementing the specific communication strategy tailored for the project's stakeholder community must be considered one of the most important roles of the team and the project manager often consuming. The various and diverse forms of communication to stakeholder include: Face-to-face meetings, Technology-assisted meetings, Telephone conversations, Emails, Project documentation, Progress reports, Estimates and forecasts, Issues logs, Risk register and action lists.

Olander and Landin (2005) posited that in order to effectively manage stakeholders, the project team (manager) must sufficiently keep satisfied, manage closely, monitor, and keep informed all the stakeholders identified. All these can be achieved through establishing effective communication between the project team and the project stakeholders as well as between the various stakeholders involved in the project. Two (2) ways have been identified in managing project stakeholders. Firstly, each stakeholder should be managed uniquely on the basis of their disposition,

initiatives (Bourne and Weaver, 2010). One way in which firms can identify stakeholders from within the organisational environment is by undertaking a mapping exercise. The following list identifies some of the best known and most commonly used methods for stakeholder mapping: Assessing attributes: Power, legitimacy and urgency; Based on value hierarchies and Key Performance Areas; Potential for threat and potential for cooperation; Attitude of Stakeholders being supportive or opposing (Turner *et al.*, 2002). Some of the commonly used dimensions as identified by Olander (2007) Bourne and

Weaver (2010) include: Power (High/medium/low); Support (positive, neutral or negative); Influence (High/low); Interest (High/low); Attitude (supportive/obstructive); Predictability (high/low). The power/interest matrix presented by Newcombe (2003) and Olander's (2007) stakeholder impact/probability-matrix ranks stakeholders dependent upon the level of power they yield and the level of interest that they have in the operations of the project/organisation. It is the most common used matrix. The matrix is shown in the Figure 2.1

Level of impact	Keep satisfied	Key players
	Minimal effort	Keep informed
	Probability to impact	

Figure 2.1: The stakeholder impact/probability-matrix (Olander, 2007).

The matrix indicates the types of relationship that project management might typically establish with stakeholders in the different quadrants.

1. The **key players** are usually those with responsibilities for the project.
2. The **keep informed** stakeholders consists different interest groups, such as local residents, non-governmental organizations or organizations with low impact.
3. The **keep satisfied** stakeholders are often national governments, authorities or other similar organizations that have requirements and even the power to stop the project, but do not usually have a personal interest in it.
4. **Minimal effort** does not mean ignoring the stakeholders: however, the project management does not regard them as salient and focal. However, these stake-

operational techniques that are used regularly depending on the prevailing circumstances. For example, from the operational approaches, effective communication can be used to maintain existing relationships, understand the expectations of stakeholders from the project and to keep them adequately informed. The means for communication can vary from time to time and from stakeholder to stakeholder, depending on the stakeholders' attributes. Negotiation can in turn play a vital role in resolving differences and settling claims whenever they arise in the course of the project. Project managers' ability to have the intuition to assess the power and interest of stakeholders can inform them on the stakeholders becoming either less or more interested than they previously were in imposing their will on the project as the project progresses. Furthermore, incentives and concessions can be used separately or together to douse or counteract the concerns of opposing/protesting stakeholders. Workshops and meetings can be used to engage with stakeholders in the course of the project. They argue that project managers should be capable of using these principles to ensure successful projects. Their study also concentrated on how issues with external stakeholders are handled which may only work if all is well among the internal stakeholders. But project managers may not be around early enough in the course of the project depending on the procurement route of the project. This brings to the fore the need to connect the design and construction stages and consider the concerns of both internal and external stakeholders in formulating and adopting stakeholder management strategy.

### **Stakeholder Management Cycle**

Bourne (2005) developed a tool referred to as the "stakeholder management cycle" for identifying, visualising and mapping stakeholder influence on projects. The stakeholder circle tool has been tested using case studies (Bourne and Walker, 2006; Walker *et al.*, 2008; Bourne, 2009; Bourne and Weaver, 2010) and found to be useful for project stakeholder analysis. The stakeholder cycle is made up of five steps:

- i. identification of stakeholders
- ii. prioritize the stakeholders
- iii. visualize the stakeholders (map)
- iv. engage the stakeholders
- v. monitor the outcome (manage)

#### **1. Identification of Stakeholder**

Olander and Landin (2005) recommend that it is good practice for project teams to identify any stakeholders who can affect the product and "then manage their differing demands through good communication". Yang *et al.* (2009) describes the construction industry involving a wide range of stakeholders, each bringing them with a great variety of interests, concerns, requirements and potential opportunities, thus it is very important to carefully identify all the relevant stakeholders. The starting point of stakeholder analysis, i.e. identification, focuses or helps on defining stakeholders of an infrastructure project. The identification of different stakeholder groups can subsequently help an organisation to determine what type of stakeholder management strategy is needed for each group.

According to Yu and Shen (2005) project stakeholders are identified by their interests in the project resources and how those resources are likely to affect their well-being. generic stakeholder list, brainstorm, inquiry from organizational personnel, by their influence. Yang *et al.*

That way, the missions, strengths, weaknesses, strategies and behaviour of the different stakeholders will be engaged circumspectly (Cleland, 2002) to avoid any threats they may pose to projects and corporate governance, processes and outcomes (Freeman, 1984). Secondly, each project-based set of stakeholders must be managed as a cohort. This activity extends beyond the construction phase of a project. Users of facilities, members of the public, etc. may exert their interests after the construction phase and so stakeholder management stretches in consonance with the life of a facility.

Stakeholders in a project are rarely equal; hence their probability to impact or contribute to the project varies. However, they influence the validity of requirements, which aims to ensure that requirements are consistent, complete, and correct for the project (Razali and Anwar, 2011). Therefore, it is essential that the project management assess the salience of stakeholders and their probability of impacting the project.

Aapaoja and Haapasalo (2014) also developed a matrix for a case studied project. The matrix is an adaptation of the impact/probability matrix modified by Olander (2007). The Y-axis describes the

stakeholder groups in order of importance while the X-axis describes stakeholder's probability to impact/ability to contribute to the project. Compared to Olander (2007)'s matrix, the order of stakeholder positions is changed to improve the reflection of stakeholder salience. The stakeholder cannot be a key player if it does not possess at least two attributes. Due to the high salience, key players can be also regarded as primary team members of the project. Finally, the stakeholder possessing one attribute can be considered "minimal effort" or "extended stakeholders". The matrix also takes into account that the active impact and contribution of a stakeholder may affect that stakeholder's position.

Several studies have over the years developed stakeholder management processes by indicating different actions that should be involved in the construction process. For instance, Young (2006) proposed stakeholder management processes as: identification of stakeholders, gathering information about stakeholders and analysing the influence of stakeholders. Table 2.1 shows the stakeholder management processes by several scholars. It can be seen that over the years, the proposed processes have become more detailed and expanded.



**Table 2.1 Stakeholder Management Processes (Summary)**

Elias <i>et al.</i> (2002)	Prepare a specific stakeholders chart, identify a stakeholders stakes, prepare a power versus stake grid, conduct stakeholder analysis, determine stakeholder management capability, analyse the dynamics of stakeholder interactions.
Karsen (2002)	Identify stakeholder, analysing the characteristics of stakeholder, communicating and sharing information with stakeholders.
Bourne and Walker (2005)	Identify stakeholder, analyse the characteristics of stakeholder, prioritize stakeholder, develop stakeholder management or engagement strategy, implement stakeholder management strategy.
Olander (2006)	Identify stakeholder, communicate and share information with stakeholders, gather information about stakeholders, determine stakeholders strength and weaknesses, identify stakeholders mission, predict stakeholders behaviour, identify stakeholders management strategy, implement stakeholders management strategy.
Young (2006)	Identify stakeholder, gather information on stakeholders, analyse the influence of stakeholders.
Chinyio and Akintoye (2008)	Identify stakeholder, communicate and share information with stakeholders, monitor stakeholders saliency continuously, put in place a stakeholder forum to measure feedback periodically, institute a no blame culture and dispute resolution agreement, engage stakeholders through "frontline" and "underlying" approaches, identify stakeholders' management strategy, implement stakeholder management strategy.
Walker <i>et al.</i> (2008)	Identify stakeholder, prioritize stakeholder, monitor effectiveness of communication, visualize stakeholder.
Yang <i>et al.</i> (2011)	Identify stakeholder, analyse the characteristics of stakeholder, communicate and share information with stakeholders, determine stakeholders strength and weaknesses, analyse the influence of stakeholders, identify stakeholders mission, implement stakeholders management, carry out the analysis of the impact of stakeholders relationship network on the project.
PMI (2013)	Identify stakeholder, plan stakeholder management, manage stakeholder engagement, control stakeholder engagement.

Source: Researchers' Review (2020)

Although all the scholars cited in Table 2.1 recognise stakeholder identification as an important step, it appears there is no agreement on the best set of approaches to use. Stakeholder management needs to balance competing claims on resources between different parts of the project, between the project and other projects and between the project and the organisation (Bourne, 2005). These processes need to be carefully harnessed in order to carry out stakeholder management in construction projects effectively.

## METHODOLOGY

A Quantitative research approach was adopted for this study. The scope of the study was limited to North Central Nigeria and higher institutional construction projects were the focal point of the study. 6 internal stakeholders within the eight (8) sampled institutions in the study area were selected using stratified and purposive sampling techniques. The 6 internal stakeholders include architect, quantity surveyor, Engineer, builder, client and contractor. These stakeholders were selected because they are formally registered on construction projects. Stratified sampling

is a probability sampling technique which ensures that the resulting sample of a study is distributed in the same way as the population in terms of the stratifying criterion (Bryman, 2012). Stratified sampling technique was adopted in selection of the tertiary institutions for the study. The selected institutions were based on strata of public Federal, State, Colleges of Education and Polytechnic where public projects feature. Purposive sampling technique which is a non-probability sampling, was adopted for selection of the internal stakeholders for the study.

Tertiary institutions were chosen for this study due to the fact that all stakeholders considered for the study are formally commissioned on the public projects within the higher institutions (Bowen *et al.*, 2012). Most government projects

are public projects which includes tertiary institutions. The north central zone of Nigeria has witnessed recent developments which accounts for over 60% of public projects and tertiary institutions being one of them. Responses obtained for the study was analysed using mean item score, standard deviation, correlation and regression analysis. The results were discussed and conclusions were drawn for the study.

Table 3.1 shows the individual response rate of respondents from the sampled higher institutions in the study area. A total of 200 questionnaires were self-administered to respondents in 8 sampled higher institutions while 170 were returned giving a response rate of 73.5% which was very adequate for the study (Takim, Akintoye and Kelly, 2010).

**Table 3.1: Response Rate of Respondents**

Higher Institution	Questionnaire Distributed	Questionnaire Returned	Percentage (%)
A	35	30	17.65
B	25	21	12.35
C	25	23	13.53
D	23	21	12.35
E	22	19	11.18
F	25	18	10.59
G	20	17	10.00
H	25	21	12.35
TOTAL	200	170	100.00

Source: Researcher Field work (2020)

## RESULTS AND DISCUSSION

Table 4.1: Factors Affecting Stakeholder Management Process

Coding	Factors	Mean	Std. Dev.
MGF	Management factors	3.77	0.67
CMF	Conflict management factors	3.76	0.61
COS	Cost factors	3.72	0.62
COF	Communication factors	3.68	0.61
CTF	Contractual factors	3.65	0.67
REF	Relationship factors	3.63	0.60
STR	Stakeholder requirements	3.62	0.61
OGF	Organization factors	3.61	0.55
STE	Stakeholder Engagement	3.59	0.69
MAR	Marginalization	3.24	0.85

Source: Field work (2020)

Table 4.1 showed the factors affecting stakeholder's management on construction projects. Management related factors was the most significant factor affecting stakeholder management process with a mean item score of 3.77, followed by conflict management factors with a mean of 3.76. The stakeholder at management level should integrate all other stakeholders into project team and maintaining a balance of their interest is crucial to project success. Poor management leads to cost and time overrun of construction projects (Olander and Landin, 2005; Yang *et al.*, 2011).

Next in line was communication factors and cost factors with mean scores of 3.72

and 3.65 respectively. This is in agreement with the findings of Aaltonen and Kujala (2010) that conflicts have a resultant effect on stakeholder management which affects the overall success of a project. However, marginalization factor was least with a mean of 3.24. This particular factor adds contribution to knowledge that agrees with Golder and Cowler (2005) that gender is an important factor to be considered in stakeholder management as this affects the performance of a project.

The results in Table 4.2, 4.3 and 4.4 give a detailed breakdown of the most significant factors that affect stakeholder management which calls for attention for future construction projects.

**Table 4.1: Management Related Factors**

<b>Management Related Factors</b>	<b>Mean</b>	<b>Std. Deviation</b>
Inadequate Planning, coordinating and programming	3.92	0.90
lack of wide and deep knowledge / understanding of the concepts of project and stakeholder management by stakeholders	3.86	0.98
Poor feedback mechanism	3.77	0.90
Poor strategies to manage stakeholder responsibility	3.71	0.96
Lack of technical capacity and support on the part of the stakeholders	3.69	1.05
stakeholder competencies	3.66	0.99
Decision making problems	3.65	0.89
Difficulty in identifying stakeholders	3.59	1.18
Lack of ability to understand the implications of the project	3.56	1.00
non - existence of formal / systematic process of project stakeholder management	3.55	0.95
lack of knowledge about stakeholder groups and their expertise	3.54	1.01
inability to clearly identify the attitudes of stakeholders either positively or negatively towards the project	3.53	1.00

Source: Field work (2020)

The results in Table 4.1 showed the management related factors that affect stakeholder management. Inadequate planning, coordinating and programming, was the most management related factor that affect stakeholder management of construction projects with a mean score

of 3.92 followed by lack of wide and deep knowledge / understanding of the concepts of project and stakeholder management by stakeholders, and Poor feedback mechanism with mean scores of 3.92, 3.86 and 3.77 respectively.

**Table 4.3: Conflict Related Factors**

<b>Conflict Related Factors</b>	<b>Mean</b>	<b>Std. Deviation</b>
Poor approaches in solving conflict and controversies among stakeholders	3.86	1.00
Poor implementation and non-adherence to conflict contract condition by project stakeholders	3.84	0.92
Consequences of mismanagement of stakeholders	3.67	1.02
different perceptions of the same issue	3.53	1.03
Analysing conflicts and coalition among stakeholders	3.33	1.00

Source: Field work (2020)

The conflict related factors in Table 4.2 showed that there are poor approaches in solving conflicts amongst stakeholders which came first with a mean score of 3.86, followed by poor implementation and non-adherence to conflict contract condition by project stakeholders, Consequences of mismanagement of stakeholders, different perceptions of the

same issue, and analysing conflicts and coalition among stakeholders with mean scores of 3.86, 3.84, 3.67, 3.53 and 3.33 respectively. The findings agree with Olander and Landin (2005) and Jurbe (2014) that disagreements amongst stakeholders have adverse effect on construction project as a whole.

Table 4.4: Marginalized Related Factors

Marginalized Related Factors	Mean	Std. Deviation
Incentives and benefits	3.73	1.07
influence of the stakeholders	3.52	1.02
Type of stakeholder (indigenous, foreign, etc.)	3.31	1.01
sensitivity of stakeholders	3.3	0.98
Social and economic characteristics of the stakeholder	3.28	1.07
The position of the stakeholders in the project	3.21	1.04
Discrimination of gender	3.12	1.04
status of stakeholders	3.05	0.97
potentials of men and women in the stakeholder group	3.04	0.96
gender inequalities	3.02	0.96
volume of allocation of task to men and women	3.01	0.96
Gender differences	2.91	0.88

Source: Field work (2020)

As seen in Table 4.4, poor incentives and benefits, influence of the stakeholders, type of stakeholders, sensitivity of stakeholders, came first with mean scores of 3.73, 3.52, 3.31 and 3.30 in that order. However, volume of allocation of task to men and women, Gender differences ranked the least with mean scores of 3.01 and 2.91 respectively. These are new findings and are lacking in the findings of Yogita *et al.* (2016), hence call for consideration for future projects.

To determine the impact of key stakeholder management factors on stakeholder management process of construction projects in Nigeria, Pearson's product moment correlation coefficient analysis was employed to test for the nature of relationship between eight (8) factors and regression analysis was performed to determine the degree of impact of the factors on the processes. The results in Table 4.5 measured the relationship between stakeholder factors and SHMP. Correlations among the measured variables ranged from 0.002 - 0.722 in absolute values. The higher the correlation coefficient, the stronger the

relationship between the variables. Yang *et al.* (2014) asserts that a correlation value of 0 indicates no relationship, a correlation of -1.0 indicates a perfect positive relation while -1.0 is a perfect negative relationship. Hair *et al.* (2010) further authenticated this assertion with their own rule of thumb for correlation strength of relationships ( $r$  - values from: 0.1 - 0.29 (small); 0.30 - 0.49 (medium); 0.50 - 1.0 (strong).

Deducing the results from Table 4.5, there was no significant relationship between MGF and SHMP, the strength of the relationship was weak and negative ( $r = -0.081$ ,  $P = 0.147 > 0.05$ ). Although a positive significant relationship existed between SHMP and STR ( $r = 0.064$ ,  $P = 0.205 > 0.05$ ), the  $H_0$  was also accepted since the significance value was greater than 0.05. This implies that the level of stakeholder engagement on a project affects stakeholder management process. However, the matrix also revealed that CMF was more strongly positively correlated to COF ( $r = 0.624$ ,  $P = 0.000 < 0.05$ ) than to REF ( $r = 0.236$ ,  $P = 0.000 < 0.05$ ). This implies that 39% of COF has

more of the variability in SHMP than does MGF. It can be seen that communication factors play a vital role in stakeholder management process (SHMP) for effective project success. As is seen in the first relationship between the variables, the more negative MGF, the

less effective the SHMP for building construction projects. This will affect construction project success, hence attention need to be given to effective management of stakeholders on construction projects.

**Table 4.5: Pearson Correlation Matrix for Factors and Stakeholder Management Process**

Variables	PROCESS	MGF	CMF	CCF	COB	REL	CTF	STR	MAE
PROCESS	1								
MGF	-0.39**	1							
CMF	-0.17**	0.49**	1						
CCF	0.26**	0.38**	0.24**	1					
COB	-0.02	0.29**	0.24**	0.03**	1				
REL	0.08**	0.24**	0.24**	0.77**	0.52**	1			
CTF	0.06**	0.21**	0.24**	0.39**	0.17**	0.24**	1		
STR	0.22**	0.28**	0.27**	0.02**	0.28**	0.20**	0.22**	1	
MAE	0.27**	0.29**	0.27**	0.41**	0.17**	0.18**	0.11**	0.20**	1

MGF = management factors, CMF= conflict management factors, CCF = communication factors COB = cost factors, REL = relationship factors, CTF = contractual factors, STR = stakeholder engagement, MAE = materialization

Multiple Hierarchical Regression analysis was further carried out to predict the degree of effect of the measured factors on stakeholder management process (SHMP). Table 7 presents the results of the SHMP and factors. A predictive model was generated from the hypothesis tested. It was found out from model 1 that 0.7% of the variance in MGF can be explained by SHMP which was quite low ( $R = 0.18$ ,  $R^2 = 0.007$ ,  $F = 1.16$ ,  $p = 0.07$ ,  $Pvalue = 0.294$ ). Model 7 however, showed a slight increase in the predictive ability of 4% ( $R = 0.199$ ,  $R^2 = 0.040$ ,  $F = 1.05$ ,  $Pvalue = 0.307$ ). This implies that an increase in MGF problems will automatically contribute to an increase in SHMP which decrease the

chances of the project being successful. The relationship between the variables was not statistically significant since the Pvalue is greater than 0.05, hence the  $H_0$  was accepted.

The analysis from the regression coefficient Table 4.6 also revealed that there are no multicollinearity between the variables as all the variables were lesser than 1.80. The Cook's distance was -0.040 which is less than 1. The std residual and stud residual values were -2.329 and -1.953 which was within the rule of 3 and 3. The predictive model generated for the hypothesis tested is given below:

$$Y_{SHMP} = 3.464 - 0.176_{MGF} + 0.030_{CMF} - 0.152_{CCF} - 0.193_{COB} + 0.258_{REL} - 0.131_{CTF} + 1.05_{STR} - 0.121_{MAE} \quad (1)$$

**Table 4.6: Regression Result for Key Stakeholder Factors and Stakeholder Management Process**

Independent Variables	Dependent Variable							
	Model 1	Model 2	Model 3 <sup>a</sup>	Model 4	Model 5	Model 6	Model 7	Model 8
Factors	-.137	.007	.118	-.155	.181	-.117	.121	-.023
R	.081 <sup>a</sup>	.097 <sup>b</sup>	.126 <sup>c</sup>	.143 <sup>d</sup>	.181 <sup>e</sup>	.183 <sup>f</sup>	.199 <sup>g</sup>	.200 <sup>h</sup>
R <sup>2</sup>	.007	.009	.016	.020	.033	.033	.040	.040
Δ F	1.107	.497	1.087	.740	2.136	.068	1.050	.073

a: Predictors (Constant), Dependent Variable: Process

### CONCLUSION & RECOMMENDATIONS

The study concluded that management related factors had the most significant effect on stakeholder management of construction projects followed by, conflict factors, communication factors and cost factors. However, a new contribution to knowledge is being made on additional factor such as marginalization factor which is lacking in other studies. Stakeholder management factors have a significant relationship with stakeholder management process. Hence, key stakeholder factors should be given adequate attention for the success of future projects.

In order to improve the management of stakeholders on projects, the study recommends that a management support group should be put in place to manage stakeholders, adherence to conflicts contract conditions and consideration of gender in stakeholder analysis. These will improve construction performance for future projects.

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