# Influence of Insurance Policy on the Cost of Accidents in Medium-Sized Construction Projects in Minna, Niger State

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## Abstract
Studies have shown that despite the importance of the construction industry for national economy, construction activities sadly pose serious health and safety (H&S) risks to workers, users of construction facilities and the public. Despite availability of H&S policy with specific insurance considerations; injuries, fatalities and death from construction related activities appear unabated, suggesting possible non-compliance of contractors to established H&S regulations. This study therefore evaluated the influence of insurance policy on the costs of accidents in medium-sized construction projects in Minna, Niger State with a view to enhancing construction site safety. The study adopted a quantitative research approach through the use of questionnaire and data collection checklist. The study's population was 130, comprising of professionals of Government Ministries and safety officers of construction firms actively involved in the projects executed by the with a response rate of 82.31%. Analysis of data was carried out with the use of percentage, Relative Importance Index (RII) and Spearman Rank correlation. Major findings from the study were that the relationship between level of implementing insurance policy and costs of accidents was significant; and the most effective strategy for improving level of implementing insurance policy was "Designation of safety responsibilities to trained personnel" (RII = 0.936). Hence, it was concluded that the influence of insurance policy on the costs of accidents in medium-sized construction projects in Minna, Niger State is significant. It was recommended that construction stakeholders should develop a mechanism that will adequately take cognizance of the proposed strategies of this study.

**Keyword:** Accidents, Cost, Construction projects, Influence, Insurance policy.

## Introduction
The construction industry significantly contributes to economic growth and social development of nations. However, despite the importance of the construction industry for national economy, construction activities sadly pose serious H&S risks to workers, users of construction facilities and the public (Boadu *et al*., 2020). Based on project risk, construction projects can be classified as Small, Medium or Large sized (Software Education, 2008). In Minna, Niger State, the construction industry is dominated be small and medium-sized construction firms who usually undertake small and medium-sized projects. These construction firms have the characteristics of Small and Medium Enterprises (SMEs). SMEs as those business whose capital investment do not exceed #5 million (including land and working capital) or whose turnover are not more than N25million annually (Alabi *et al*., 2015). In view of these, the study considered medium-sized construction projects.

The construction industry, which is responsible for projects involving housing construction, is subject to more risk and uncertainty than many other industries

(Perera *et al*., 2008; Samuel, 2014; Queen & Satheesh, 2018). Therefore, it is established that in every stage of the building construction process from initial investment appraisal through to construction and use, the built facility is subjected to risks for the parties involved (Perera *et al*., 2008; Samuel, 2014; Queen & Satheesh, 2018). According to Sola *et al*. (2013), risks are the uncertainties inherent in plans and the possibility of something happening that can affect the prospect of achieving business or project goal. The uncertainty may be positive or negative. In common language, risks are therefore a possible hazard or opportunity that if it occurs it would threaten or benefit business outcomes. Insurance is defined as a contract where by an insurer agrees, in consideration to the premium paid by the insured to protect the insured against loss on the happening of certain events (Sola *et al*., 2013; Samuel, 2014; Queen & Satheesh, 2018).

Transferring construction risks in an insurance policy is an accepted method worldwide (Odeyinka, 2000; Okongwu *et al*., 2021). Among the insurance policies used in construction, Contractors' All Risks (CAR) policy is the most popular. CAR insurance is an all-inclusive insurance cover used in construction contracts (Perera *et al*., 2008). In addition, Sola *et al*. (2013) referred to CAR as Builders risk insurance. This is because Builders risk insurance is also known as "course of construction", "construction all risk" and "contractors all risk insurance", is a specialized form of insurance designed to insure buildings or project against repair or replacement cost while they are under construction and in some cases, for a specific period afterwards. This insurance will usually also cover build materials, fixtures and appliances all of which are intended to become an integral part of the structure under construction. Unfortunately, construction firms do not seem to understand the implication of not taking up employees' insurance (Okongwu *et al*., 2021). This is because it has also been established that compulsory insurance of buildings under construction revolve around poor compliance structure, ineffective implementation strategy by the insurance regulator and lack of awareness on the part of the Nigerian public (Jimoh *et al*., 2019). Hence, the need to evaluate the influence of insurance policy on the costs of accidents in medium-sized construction projects in Minna, Niger State with a view to enhancing construction site safety. In view of this, the study identified the factors influencing the implementation of insurance policy; established the relationship between the implementation of insurance policy and the amount of compensation; number of accidents recorded; and lost time due to accident occurrence in medium-sized construction projects in Minna, Niger State.

The need for this study was as a result of the pilot study carried out for undergraduate academic research which revealed that most of the client's organisations (81.82%) in Minna do not take part in the implementation of insurance policy in construction projects being executed mainly due to lack of awareness and unwillingness. Therefore, in most cases, the responsibility of taking up insurance policy in construction projects is solely left for the contractor to bear.

## Literature Review

### *Factors Influencing of the Implementation of Insurance Policy in Construction Projects*

The factors influencing the implementation of insurance policy in construction projects, in this section, are viewed from two perspectives; negative factors (barriers) positive factors (drivers).

### *Barriers to the implementation of insurance policy in construction projects*

Health and safety (H&S) insurance facilities truly attract additional cost to the contractor while such cost is categorized as sunk cost and are irrecoverable. In addition, the challenge of poor leadership is more so identified; when the leadership lack the ability to provide direction, and motivation for compliance with H&S, compliance

naturally becomes difficult. In view of this, studies have identified several barriers to the implementation of insurance policy in construction projects. These barriers are summarised in Table 1.

## *Drivers of the implementation of insurance policy in construction projects*

The implementation of employees' insurance is very important in a construction project in order to ensure that injured workers or participants on site are adequately and promptly catered for. The enforcement of this insurance policies, according to Health and Safety Executive (2012), can be significantly driving with the use of Employers' Liability Insurance which is compulsory for employers to undertake for the H&S of their employees while they are at work. Based on this, studies have identified several drivers of the implementation of insurance policy in construction projects as presented in Table 2.

**Table 1: Barriers to the implementation of insurance policy in construction projects**

| S/No. | Barriers to the Implementation of Insurance Policy | Source(s) |
|---|---|---|
| 1 | Poor leadership | Idubor and Oisamoje (2013); Ameh and Farinde (2020) |
| 2 | Attracts additional cost to the contractor | Idubor and Oisamoje (2013); Samuel and Muhammed (2021); Oknogwu *et al*. (2021) |
| 3 | Lack of concern | Idubor and Oisamoje (2013) |
| 4 | Lack of accurate records | Idubor and Oisamoje (2013) |
| 5 | Poor statutory regulations | Idubor and Oisamoje (2013) |
| 6 | Urgency to allocate a fraction of budget on the safety and health cost in the contract for both the public and private projects | Patrick (2008) |
| 7 | Inadequate legal framework | Jimoh *et al*. (2019) |
| 8 | Ineffective implementation strategy | Jimoh *et al*. (2019) |
| 9 | Cultural factors | Jimoh *et al*. (2019) |
| 10 | Low awareness level | Ameh and Farinde (2020); Jimoh *et al*. (2019); Samuel and Muhammed (2021) |
| 11 | Lack of proper enforcement of the Act | Jimoh *et al*. (2019) |
| 12 | Time to time replacement of H&S facilities | Ameh and Farinde (2020) |
| 13 | Cost implication of H&S policies | Ameh and Farinde (2020) |
| 14 | Poor management commitment | Ameh and Farinde (2020) |
| 15 | Fear of not recouping investment in H&S facilities | Ameh and Farinde (2020) |

**Table 2: Drivers of Implementation of Insurance Policy in Construction Projects**

| S/No. | Drivers of the Implementation of Insurance Policy | Source(s) |
|---|---|---|
| 1 | Employers' Liability Insurance Policy | Health and Safety Executive (2012); Ameh and Farinde (2020) |
| 2 | Provision for plan for setting aside replacement cost for plant and equipment | Ijigah *et al*. (2015) |
| 3 | Engaging in research and development | Ijigah *et al*. (2015); Agyekum *et al*. (2018) |
| 4 | Having clearly written down H&S policy | Ijigah *et al*. (2015); Agyekum *et al*. (2018) |
| 5 | Upper management support | Agyekum *et al*. (2018) |
| 6 | Involvement of employee in safety and evaluation | Agyekum *et al*. (2018) |
| 7 | Emergency response planning; and Safety and health committees | Agyekum *et al*. (2018) |
| 8 | Proper contracts reviewed by a knowledgeable attorney and reading contracts for consistency | Jimoh *et al*. (2019) |
| 9 | Encouraging ethical practices by all stakeholders | Samuel and Muhammed (2021) |
| 10 | Ensuring that construction companies subscribe to one type of insurance in order to reduce risk | Samuel and Muhammed (2021) |

## *Effects of Insurance Policy on Construction Site Safety*

According to, Odeyinka (2000), actual replacement cost has a significant relationship with the claim settled in a construction project. In the same vein, Ijigah *et al*. (2015) identified 5 major effects of employees' insurance on the safety performance of construction project performance**.** These effects range between risk elimination resulting to high morale of management and Risk acceptance ensuring that each party's responsibility is well understood thereby reducing unnecessary conflicts. It has also been emphasized that insurance is very significant to reducing the influence of risks on construction project performance to the barest minimum and boost the economy of the country (Okongwu *et al*., 2021; Samuel & Muhammed, 2021). In view of this, Okongwu *et al.* (2021) identified several effects of insurance policy on the safety performance of construction firms: these are: insurance improves safety through creation of awareness; Insurance helps in management of business risk; Insurance helps in economic stimulation; Insurance encourages the holder to plan in advance for life stage (Planning and peace of mind); Spreading risk; insurance provides the benefits of protection against diseases and hospital expenses; and Insurance encourages savings among others.

## *Strategies for Improving the Implementation of Insurance Policy in Construction Projects*

To make the use of insurance effective in managing risks in construction projects, considerable care should be taken in determining the insured sum. Therefore, researchers have identified several strategies for improving the implementation of insurance policy as shown in Table 3.

**Table 3: Strategies for Improving the Implementation of Insurance Policy in Construction Projects**

| S/No. | Strategies for Improving Compliance with Insurance Policy | Source(s) |
|---|---|---|
| 1 | Considerable care should be taken in determining the insured sum in a project | Odeyinka (2000) |
| 2 | Contractors should study the exclusion clauses carefully before entering into any contract of insurance | Odeyinka (2000) |
| 3 | Designation of safety responsibilities to trained personnel | Olutuase (2014); Cesarini and Kupiec (2016) |
| 4 | Direct safety talks with workers | Olutuase (2014) |
| 5 | Systematic hazard identification | Olutuase (2014) |
| 6 | Assessment of risk level | Olutuase (2014) |
| 7 | Safety orientation for new/transferred workers | Olutuase (2014) |
| 8 | Pre-project/project safety trainings received | Olutuase (2014); Cesarini and Kupiec (2016) |
| 9 | Scheduled in-house inspections | Olutuase (2014) |
| 10 | Having resident safety officer at sites | Olutuase (2014); Cesarini and Kupiec (2016) |
| 11 | Regular safety audit | Olutuase (2014) |
| 12 | Review accidents and near misses | Cesarini and Kupiec (2016) |
| 13 | Evaluate each project phase for safety | Cesarini and Kupiec (2016) |
| 14 | Work with your insurer and risk management experts | Cesarini and Kupiec (2016) |
| 15 | Work toward zero injuries | Cesarini and Kupiec (2016) |
| 16 | Construction companies should ensure to subscribe to one type of insurance in order to reduce risk | Samuel and Muhammed (2021) |

## Methodology

This study adopted a quantitative research approach. The use of structured questionnaire was employed to collect data. The questionnaire was administered to professionals from Niger State Housing Corporation (NSHC); Niger State Ministry of Works and Infrastructural Development (NSMWID) in Minna and safety officers of construction firms in active sites of NSHC and NSMWID. The population/sample size was 130 as all the population elements were considered. This agrees with the assertion of Watson (2001) that if the population size is small (200 or less), then it is preferable to take a census of the total population.

The copies of questionnaire administered were 130, while 107 copies were returned and used for analysis; this gives a response rate of 82.31%. Analysis of data was undertaken using of percentage, Relative Importance Index (RII) and Spearman's Rank correlation analysis. Percentage was used to analyse the profile of respondents while RII and Spearman's Rank correlation were used to achieve the study's objectives. The formula used for calculating RII for data analysis is expressed in Equation 1 while Table 4 presents the decision rule used to interpret the RII values.

$$RII = \frac{\Sigma W}{A X N} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

(Source: Kassem, 2020)

*Where: Σ = Summation, W = the weights of every one of the factors given by respondents and it was in the range of (1 - 5), (A=5) the largest value of weight (i.e., Highest factor) and finally N refers to the Total number of respondents.*

**Table 4: Decision Rule for RII Analysis**

| *Scale* | *Cut-off Point (RII)* | *Interpretation* | | |
|---|---|---|---|---|
| | | **Level of Importance** | **Level of Significance** | **Level of Compliance** |
| 5 | 0.81 - 1.00 | Extremely Important | Extremely Significant | Very High |
| 4 | 0.61 - 0.80 | Important | Significant | High |
| 3 | 0.41 - 0.60 | Fairly Important | Fairly Significant | Average |
| 2 | 0.21 - 0.40 | Less Important | Less Significant | Low |
| 1 | 0.00 - 0.20 | Least Important | Least Significant | Very Low |

Source: Adapted and Modified from Shittu *et al*. (2021)

For the Spearman Rank correlation, the decision rules for the nature of correlation state that if coefficient of correlation (r) = 0.10 to 0.29, then there is small amount of correlation; if r = 0.30 to 0.49 then there is medium amount of correlation; and if r = 0.50 - 1.0, then there is large amount of correlation between the variables, as opined by Pallant (2013). A reliability test was undertaken to validate the research instrument. The results of the reliability test revealed an Inter Item Correlation Matrix comprising of positive values, indicating that the items are measuring the same underlying characteristic. The Cronbach's Alpha observed was 0.856, suggesting very good internal consistency reliability for the scale with this sample. Therefore, the data set are reliable for analysis. This also agrees with the bench mark prescribed by Pallant (2013) that Values above 0.700 are considered acceptable.

## Discussion of Results

This section shows the results of the analysis carried out in line with the study's objectives

### *Respondents' Profile*

The profile of respondents considered for the study is hereby presented in Table 5. It can be seen from Table 5 that majority of the respondents are Quantity Surveyors (i.e., 32.71 % of the total group). It was also revealed that most of the respondents are BSc/BTech degree holders (37.38% of the respondents). Table 5 also shows that all the respondents are registered members of their respective professional bodies. Finally, it was revealed from Table 5 that majority of the respondents have 11 – 15 years of experience, representing 31.78% of the total number of respondents. The profile of respondents indicates that the respondents are educated, experienced and knowledgeable enough to provide reliable information required for the study. This has already been confirmed in the result of the reliability test presented in the previous section.

### *Barriers to the Implementation of Insurance Policy by Construction Firms*

The RII result of the barriers to the implementation of insurance policy by construction firms in Minna, Niger State is presented in Table 6.

Table 6 revealed that "Delay in payment of insurance claims" was the most important barrier to the implementation of insurance policy by construction firms (RII = 0.872). On the average, all the barriers to the implementation of insurance policy by construction firms in Minna, Nigeria were important (average RII = 0.722). The result of the study here agrees with result of past studies which revealed that continuity in business could become a major barrier if the contractor is skeptical about continuity in business or have the future plan of quitting operation and shifting towards other lines of business (Jimoh *et al*., 2019; Odeyinka, 2000; Ameh & Farinde, 2020). On the other hand, the study of Samuel and Muhammed (2021) disagrees with the finding of this study because it revealed that the overall level of barriers to the adoption of insurance policy is moderately significant.

**Table 5: Respondents' Profile**

| PROFILE | STATISTICS | |
|---|---|---|
| **Respondents' Profession** | **Frequency** | **Percentage** |
| Architect | 14 | 13.08 |
| Builder | 32 | 29.91 |
| Engineer | 26 | 24.30 |
| Quantity Surveyor | 35 | 32.71 |
| **Respondents' Highest Academic Qualification** | **Frequency** | **Percentage** |
| ND | 15 | 14.02 |
| HND | 29 | 27.10 |
| BSC/BTech | 40 | 37.38 |
| MSC/MTech | 23 | 21.50 |
| **Respondents' Professional Qualification** | **Frequency** | **Percentage** |
| MNIA/ARCON | 14 | 13.08 |
| MNIOB/CORBON | 32 | 29.91 |
| MNSE/COREN | 26 | 24.30 |
| MNIQS/RQS | 35 | 32.71 |
| **Respondents' Years of Experience** | **Frequency** | **Percentage** |
| 1 – 5 years | 19 | 17.76 |
| 6 – 10 years | 23 | 21.50 |
| 11 – 15 years | 34 | 31.78 |
| 16 – 20 years | 19 | 17.76 |
| Above 20 years | 12 | 11.21 |
| ***TOTAL*** | ***107*** | ***100.00*** |

**Table 6: Challenges to the Implementation of Insurance Policy by Construction Firms**

| Code | Barriers | RII | Rank | Interpretation |
|---|---|---|---|---|
| B23 | Delay in payment of insurance claims | 0.872 | 1st | Extremely Important |
| B22 | Governments non implementation of existing insurance act | 0.860 | 2nd | Extremely Important |
| B16 | Poor safety discipline | 0.792 | 3rd | Important |
| B17 | Absence of clearly stated safety rules; | 0.787 | 4th | Important |
| B21 | Bureaucratic processes involved in purchasing these policies | 0.784 | 5th | Important |
| B19 | Excessive premium charged by insurance companies | 0.779 | 6th | Important |
| B5 | Poor statutory regulations | 0.760 | 7th | Important |
| B11 | Lack of proper enforcement of the Act | 0.744 | 8th | Important |
| B20 | Lack of trust for the insurance companies | 0.743 | 9th | Important |
| B7 | Inadequate legal framework | 0.742 | 10th | Important |
| B14 | Poor management commitment | 0.729 | 11th | Important |
| B10 | Low awareness level | 0.727 | 12th | Important |
| B8 | Ineffective implementation strategy | 0.721 | 13th | Important |
| B15 | Fear of not recouping investment in H&S facilities | 0.682 | 14th | Important |
| B13 | Cost implication of H&S policies | 0.699 | 15th | Important |
| B18 | Continuity in business | 0.677 | 16th | Important |
| B1 | Poor leadership | 0.671 | 17th | Important |
| B4 | Lack of accurate records | 0.669 | 18th | Important |
| B2 | Attracts additional cost to the contractor | 0.667 | 19th | Important |
| B12 | Time to time replacement of H&S facilities | 0.665 | 20th | Important |
| B3 | Lack of concern | 0.651 | 21st | Important |
| B6 | Urgency to allocate a fraction of budget on the safety and health cost in the contract for both the public and private projects | 0.611 | 22nd | Important |
| B9 | Cultural factors | 0.578 | 23rd | Fairly Important |
| | ***Average RII*** | ***0.722*** | | ***Important*** |

### *Drivers of the Implementation of Insurance Policy by Construction Firms*

The results of the MIS ranking of the drivers of the implementation of insurance policy by construction firms are presented in Table 7.

Table 7 shows that the most important driver of the implementation of insurance policy by construction firms was "Ensuring that construction companies subscribe to one type of insurance in order to reduce risk" (RII = 0.886) On the average, all the drivers of the implementation of insurance policy by construction firms in Minna, Nigeria were important (average RII = 0.672). In line with the finding of this study, past studies revealed that these factors are driving forces that can significantly lead to the effective implementation of employees' insurance in construction projects (Health and Safety Executive, 2012; Ijigah *et al*., 2015; Agyekum *et al*., 2018; Ameh & Farinde, 2020; Samuel & Muhammed, 2021).

### *Relationship between Implementation of Insurance Policy and Costs of Accidents in Medium-sized Construction Projects*

The use of Spearman Rank correlation analysis was adopted to determine effect of insurance policy on the cost of site accidents in medium-sized construction projects in Minna, Niger State. In view of this, the cost of accidents was measured using the amount of compensation incurred; the number of accidents recorded; and the lost time experienced in the event of accident occurrence for a five-year period (2016 – 2020). However, before conducting the Spearman Rank Correlation Analysis, the suitability of the data for Spearman Rank correlation was tested. The suitability test carried out between the level of implementing insurance policy in construction projects and amount of compensation shows no evidence of outliers with a scatterplot with the data points spread all over the place, suggesting a slightly low correlation. This shows that the data set is fit for Spearman Rank Correlation Analysis. See Figure 1 for scree plot.

**Table 7: Drivers of the Implementation of Insurance Policy by Construction Firms**

| Code | Drivers | RII | Rank | Interpretation |
|---|---|---|---|---|
| C10 | Ensuring that construction companies subscribe to one type of insurance in order to reduce risk | 0.886 | 1st | Extremely Important |
| C9 | Encouraging ethical practices by all stakeholders | 0.865 | 2nd | Extremely Important |
| C8 | Proper contracts reviewed by a knowledgeable attorney and reading contracts for consistency | 0.781 | 3rd | Important |
| C6 | Involvement of employee in safety and evaluation | 0.720 | 4th | Important |
| C4 | Having clearly written down H&S policy | 0.688 | 5th | Important |
| C7 | Emergency response planning; and Safety and health committees | 0.656 | 6th | Important |
| C5 | Upper management support | 0.632 | 7th | Important |
| C3 | Engaging in research and development | 0.623 | 8th | Important |
| C1 | Employers' Liability Insurance Policy | 0.454 | 9th | Important |
| C2 | Provision for plan for setting aside replacement cost for plant and equipment | 0.414 | 10th | Fairly Important |
| | ***Average RII*** | ***0.672*** | | ***Important*** |

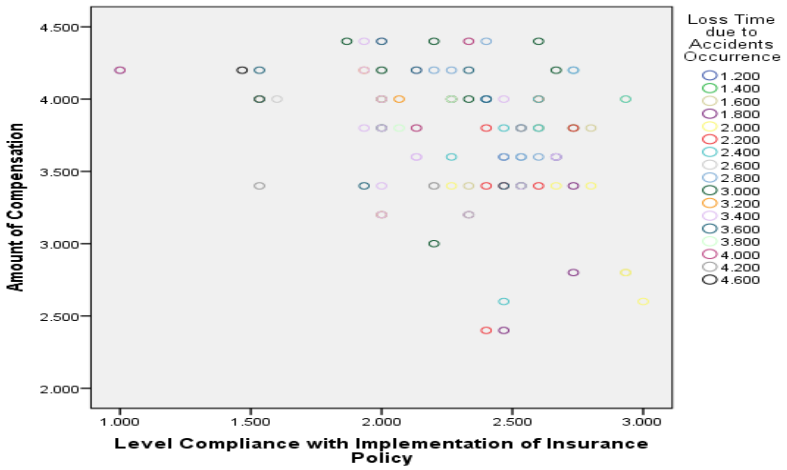


**Figure 1:** Scree Plot between the Level of Implementing Insurance Policy in Construction Projects and Amount of Compensation

The suitability test carried out between the level of implementing insurance policy in construction projects and number of accidents recorded shows no evidence of outliers with a scatterplot with the data points neatly arranged in a narrow cigar shape, suggesting quite a strong correlation. This shows that the data set is fit for Spearman Rank Correlation Analysis. Figure 2 shows the scree plot.

The suitability test carried out between the level of implementing insurance policy in construction projects and lost time due to accidents occurrence shows no evidence of outliers with a scatterplot with the data points neatly arranged in a narrow cigar shape, suggesting quite a strong correlation. This shows that the data set is fit for Spearman Rank Correlation Analysis. Figure 3 shows the scree plot.

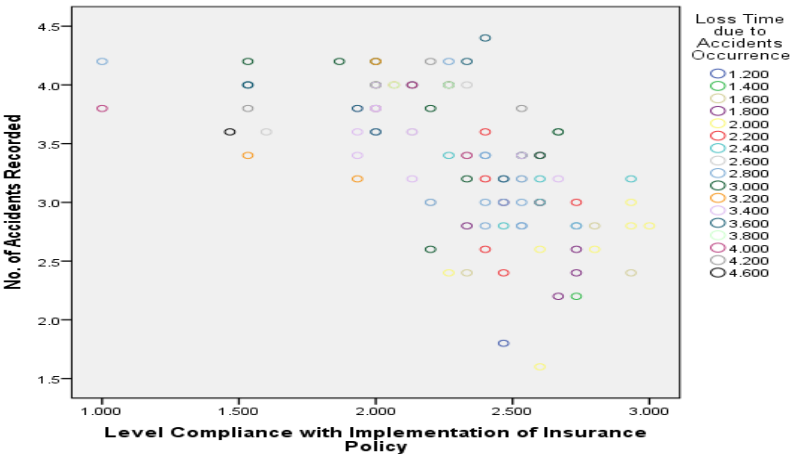


**Figure 2:** Scree Plot between the Level of Implementing Insurance Policy in Construction Projects and Number of Accidents Recorded

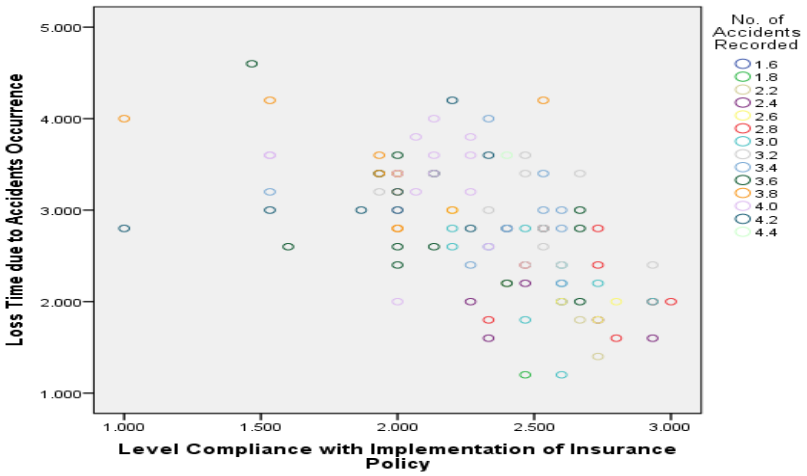


Figure 3: Scree Plot between the Level of Implementing Insurance Policy in Construction Projects and Lost Time due to Accidents Occurrence

The first Spearman Rank correlation analysis shows that the relationship between the level of implementing insurance policy in construction projects and amount of compensation is slightly weak, negative and significant. The correlation coefficient (*r* value) observed was -0.234 indicating slightly low degree of association between the variables. Hence, the correlation between the variables is small (Pallant, 2013). The second Spearman Rank correlation analysis shows that the relationship between the level of implementing insurance policy in construction projects and number of accidents recorded was strong, negative and significant. The *r* value observed was -0.663, indicating strong degree of association between the variables. Hence, the correlation between the variables is large (Pallant, 2013). The third Spearman Rank correlation analysis shows that the relationship between the level of implementing insurance policy in construction projects and lost time due to accidents occurrence is strong, negative and significant. *r* value was -0.594, indicating strong degree of association between the variables. Hence, the correlation between the variables is large (Pallant, 2013). See Table 8 for the summary of the results of the Spearman Rank correlation analysis.

The result presented in Table 8 is in line with findings from past studies which revealed that insurance policy implementation is very significant in reducing the influence of risks on construction project performance to the barest minimum and boost the economy of the country (Okongwu *et al*., 2021; Samuel & Muhammed, 2021).

**Table 8: Relationship between Level of Implementing Insurance Policy in construction projects and Costs of Accidents**

| Variables | | Observations | | | Inferences | |
|---|---|---|---|---|---|---|
| $X_1$ | $X_2$ | ***r* (%)** | **LOS** | $P_{value}$ | **Strength of Relationship** | **Remark** |
| Level of Implementing Insurance Policy in Construction Projects | Amount of Compensation | -0.234 | 0.01 | 0.001 | Slightly Weak | SS |
| Level of Implementing Insurance Policy in Construction Projects | Nr of Accidents Recorded | -0.663 | 0.01 | 0.000 | Strong | SS |
| Level of Implementing Insurance Policy in Construction Projects | Lost Time due to Accidents Occurrence | -0.594 | 0.01 | 0.000 | Strong | SS |

**KEY:**
SS = Statistically Significant
R = Correlation Coefficient
LOS = Study's Level of Significance
$P_{value}$ = Calculated Probability Value

### *Strategies for Improving the Implementation of Insurance Policy in Medium-sized Construction Projects*

The results of the RII ranking of the strategies for improving the implementation of insurance policy in medium-sized construction projects in Minna, Niger State are presented in Table 9.

Table 9 revealed that the most effective strategy for improving implantation of insurance policy in medium-sized construction projects was "Designation of safety responsibilities to trained personnel" (RII = 0.936). On the average, all the identified strategies for improving implantation of insurance policy in medium-sized construction projects in Minna, Niger State are effective (average RII = 0.732). In agreement with the findings of this study, past studies have established that in order to provide room for improving compliance with insurance policy in construction projects for improved safety performance, the safety management system of a construction firm should make provision for all the major strategies for improving implantation of insurance policy in medium-sized construction projects identified in this study (Odeyinka, 2000; Olutuase. 2014; Cesarini & Kupiec, 2016; Okongwu *et al.*, 2021; Samuel & Muhammed, 2021).

**Table 9: Strategies for Improving the Implementation of Insurance Policy in Medium-sized Construction Projects**

| Code | Strategies | RII | Rank | Interpretation |
|---|---|---|---|---|
| F3 | Designation of safety responsibilities to trained personnel | 0.936 | 1st | Extremely Effective |
| F10 | Having resident safety officer at sites | 0.905 | 2nd | Extremely Effective |
| F16 | Construction companies should ensure to subscribe to one type of insurance in order to reduce risk | 0.888 | 3rd | Extremely Effective |
| F1 | Considerable care should be taken in determining the insured sum in a project | 0.865 | 4th | Extremely Effective |
| F2 | Contractors should study the exclusion clauses carefully before entering into any contract of insurance | 0.865 | 4th | Extremely Effective |
| F6 | Assessment of risk level | 0.855 | 6th | Extremely Effective |
| F14 | Work with your insurer and risk management experts | 0.839 | 7th | Extremely Effective |
| F5 | Systematic hazard identification | 0.811 | 8th | Extremely Effective |
| F4 | Direct safety talks with workers | 0.810 | 9th | Extremely Effective |
| F11 | Regular safety audit | 0.693 | 10th | Effective |
| F7 | Safety orientation for new/transferred workers | 0.625 | 11th | Effective |
| F15 | Work toward zero injuries | 0.543 | 12th | Fairly Effective |
| F8 | Pre-project/project safety trainings received | 0.536 | 13th | Fairly Effective |
| F13 | Evaluate each project phase for safety | 0.528 | 14th | Fairly Effective |
| F12 | Review accidents and near misses | 0.519 | 15th | Fairly Effective |
| F9 | Scheduled in-house inspections | 0.490 | 16th | Fairly Effective |
| | ***Average RII*** | ***0.732*** | | ***Effective*** |

## Conclusion and Recommendations

It was found that the most important factors influencing the implementation of insurance policy in medium-sized construction projects are "Delay in payment of insurance claims", as the barrier and "Ensuring that construction companies subscribe to one type of insurance in order to reduce risk", as the driver. The study also shows that the relationship between level of implementing insurance policy and costs of accidents is significant. Finally, the study found that the most effective strategy for improving level of implementing insurance policy in medium-sized construction projects is "Designation of safety responsibilities to trained personnel". It can therefore be concluded that the influence of insurance policy on the costs of accidents in medium-sized construction projects in Minna, Niger State is significant. In the light of this, it is highly recommended that in order to improve the level of implementation of insurance policy in medium-sized construction projects, construction stakeholders should develop a mechanism that will adequately take cognizance of the proposed strategies of this study.

Finally, the implication of this study is that it will serve as a guide to all the major parties to a construction contract on the need to implement insurance policy in order to mitigate the risk of accidents in construction projects. However, further studies can be carried out to assess the effect of insurance policy on the safety performance of workers on construction site using a different study area where there are more of lager-sized construction projects and construction firms.

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