Baltic Journal of Real Estate Economics and Construction Management
ISSN: 2255-9671 (online)
2023, *11*, 289–304
https://doi.org/10.2478/bjreecm-2023-0018
https://content.sciendo.com

EXPLORATORY ANALYSIS OF SECURITIES AND CONTRACTORS' ALL RISK INSURANCE IMPLEMENTATION IN THE CONSTRUCTION INDUSTRY OF ZAMBIA

Kabemba S. NGOY[1]*, Vennah Beene N'GANDU[2], Erastus MWANAUMO[3]

[1–3]*The University of Zambia, Lusaka, Zambia*
[1]*Riga Technical University, Riga, Latvia*
[2]*University of South Africa, Pretoria, South Africa*
**Corresponding author's e-mail: kabembasteve7@gmail.com*

Received 25.10.2023; accepted 06.11.2023

Abstract. The risks associated with construction can be transferred to insurance. However, in the Zambian construction industry (ZCI), knowledge and use of insurance covers (performance security, advance payment, and contractor's all risk insurance) have not been previously fully elucidated. The study was designed to cover this knowledge gap among professionals in government and private sector construction institutions, as well as insurance and financial institutions. Analysed data were approached quantitatively. Based on responses collected from 68 participants purposively sampled using a structured questionnaire as instrument, results were discussed and conclusion drawn. Private sector personnel headed the number of respondents and were more likely to have had five or more years of work experience than those of the Government of the Republic of Zambia (GRZ) institutions (86 % vs 36 %, $p = 0.001$). Approximately 88 % of the participants both in the public 33 % and private 67 % sector had knowledge about securities and contractors' all risk insurance. There was variation in the use of different securities and contractors' all risk insurance, with the lowest uptake being for retention bonds. Personnel from public institutions were more likely to have used CAR-insurance security in one or more projects than those from the private sector (100 % vs 47 %, $p = 0.009$). Participants also reported that they had valid securities and had successful implementation of securities with a variable level of compliance among different stakeholders. Finally, approximately half of the participants had effective systems for monitoring performance of securities, and a majority of the systems were said to be effective. Education of key players in risk management, formulation and enforcement of laws are necessary to ensure effective risk management practices.

Keywords: *Construction guarantees, contractor's all risk insurance, risk management, securities*.

INTRODUCTION

The construction industry is a high-risk industry. Its exposure to risk and uncertainty has been proven over time (Babu & Kachana, 2014). Some of the risks include failure of project completion, non-payments of funds to contractors and/or

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subcontractors, contractors' failure to return advance payments, poor work quality and physical injuries of personal involved in the implementation of a construction project, among others (Jones, 2017). Globally, risks associated with construction processes tend to be insured. This provides protection both for the insured, and for the party to whom the insured has a liability (Cantor, 2020). For construction projects funded by the Zambian government, it is a requirement by law for contractors to have securities and insurance covers including performance security (PS), advance payment (AP) security and contractors' all risk insurance (CAR) (ZPPA, 2012a). However, there are no such known laws governing non-government funded construction projects.

The National Council for Construction (2020) registered more than 10 000 contractors, suppliers of construction materials, manufacturers of construction materials and equipment in Zambia. These different players are exposed to construction related risks. It is expected that they should be knowledgeable about insurance and securities so as to effectively and efficiently protect themselves against risks, more so because government serves as the principal client for many of them (International Labour Organisation, 2015). Lack of knowledge about securities and insurance can potentially result in not utilising or ineffectively implementing them. It can also result in full exposure to risks. It was reported by Parera et al. (2008) that poor knowledge and experience about risk management among local contractors resulted in 34 % of insurance claims that were undersettled or rejected by insurance companies. The cause can be directly linked to the level of knowledge and implementation of securities and insurance among players in the ZCI which is still not known.

This study evaluated the knowledge about securities and contractors' all risk insurance (CAR) and their implementation among personnel in the ZCI in both government and the private sector. Further, the study evaluated the use of systems for monitoring compliance to securities and CAR, and the effectiveness of the available systems.

1. LITERURATURE REVIEW

As highlighted in the introduction, the construction industry is a multi-party industry, involving stakeholders which are interested in protecting their interest first; hence, there is the need for securities. Insurance protects the contractor against loss in the course of construction, while contract bond provides assurance that the parties involved in a contract will perform all their obligations (Northwest Territories, 2010). Securities also assure the parties involved that a financial institution providing the security is creditworthy to satisfy the security in the event of contractors' default (Guy, 2013). The major benefit of using securities is that the parties can normally be assured that the institution has the creditworthiness to satisfy the security in the event of default.

In other words, while a surety bond covers the obligee (owner) against the risk of contractors' default, an insurance policy guarantees that the insured or a third party will be compensated by the insurance company when a covered loss occurs (Oke et al., 2013). A surety bond is a contract to manage risk, but among three

parties. The bond guarantees that the principal (contractor) will perform, and if they do not, the obligee can recover their losses from the surety. A surety bond must be paid back by the principal if the surety company is forced to pay a claim to the obligee. In contrast, insurance does not need to be repaid by the policyholder as a result of a claim. Types of securities and insurance covered by this investigation includes AP, PS, RS and CAR insurance.

1.1. Advance Payment Bond

In an Advance Payment (AP) bond, a contractor assures a client through a written statement that they will repay an AP made to them before project commencement/award of a contract (Hussin & Omran, 2009; Oke et al., 2013). Should the contractor default, an AP bond protect the money advanced to the contractor at the start of the project when the pressure is on the contractor's cash flow (Oke et al., 2013). The guarantee remains effective until the AP has been repaid in full (ZPPA, 2012b).

1.2. Performance Security (PS)

PS is a security product that protects the principal (employer) against the risk of the contractor not performing or complying with the terms of the contract (ZIL, 2013). It is provided either as a guarantee or a bond by a bank or insurance company, respectively (ZPPA, 2012a). It provides for the recovery of financial loss up to the stated amount, often framed as a percentage of the contract price (Guy, 2013). The successful bidder submits the security within twenty-eight (28) days of the receipt of notification of award from the employer, in accordance with the conditions of contract (ZPPA, 2012b). The validity of the security shall continue until the contractor has executed and completed the work and remedied any defects in accordance with the contract (Koksal, 2011). The contractor's failure to furnish or maintain the bond entitles the employer to withhold or deduct an amount of payment due to the contractor equal to the performance bond.

1.3. Retention Security (RS)

RS is security that covers clients against defects that may be noted after completion / hand over of a construction project (Rynerson, 2017). It is usually in the form of cash withheld by the client, but can be substituted by bank guarantee or insurance bond. In the ZPPA (2012a), the employer will retain from each payment due to the contractor the proportion indicated in the specific conditions of the contract until the completion of all the work. Like other securities, retention security can come in a form of a bond or a guarantee. Rynerson (2017) further suggests that a retention bond is a type of performance and it includes an expiry date, so there will be no confusion as to when contractors have been released from their obligations.

1.4. Contractors' All Risk Insurance (CAR)

CAR insurance is a policy that covers all risks associated with a construction project, and it is commonly issued under the joint names of a contractor and a

principal client (Cantor, 2020). It covers the risks related to the loss or physical damage to materials and equipment kept on a site, consequences of an event of force majeure, except events explicitly specified in an insurance policy (Tworek & Tomerki, 2012). It is said to be the most prominent method for managing the identified risks (Odeyinka, 2010). CAR insurance is usually submitted after award of a contract and it covers from the start date to the end of the defect liability period (ZPPA, 2012b). The requirements of the client and the conditions of the contract are the most important factors influencing contractors to obtain a CAR insurance policy. Another factor that makes the policy work effectively is that insurance companies and contractors should maintain a cordial relationship through active communication, especially between underwriters, contractors' management staff, insurance broker and agent (Babu & Kachana, 2014).

1.5. Securities and Contractors' All Risk Insurance Compliance

Compliance is defined as the process of acting according to set standards (Merriam-Webster, 2020). Generally, compliance to sureties and insurance is poor in most countries, except those whose governments effectively enforce it (Zou et al., 2007). Also, key players' knowledge (or the lack of it) about bonds and sureties influences their implementation (Parera et al., 2008). Lack of knowledge among contractors and lack of enforcement of regulations by authorities were reported as a cause of poor risk management practices for a mixed group of respondents (Dorji & Hadikusumo, 2006). The same authors mentionned the lack of financial resources as a reason among government officials, thus hindering securities and CAR insurance compliance for the construction stakeholders.

Apart from regulation and knowledge among key players, other reasons for ineffective risk management are the lack of formal risk management systems and mechanisms for joint risk management by the parties established that companies have informal and unsystematic risk management practices, clients sometimes offer incentives for effective risk management practices; and there is a widespread lack of knowledge and skills in quantitative risk analysis (Choudhry & Iqbal, 2013; Tembo & Khathleli, 2016; Ngoy et al., 2023). Collaboration among key stakeholders and proper systems are cardinal in risk management during project implementation.

Formulation and enforcement of laws are necessary to ensure effective risk management practices. Education of key players in the risk management process is also imperative to ensure effective identification and management of inherent risk (Chileshe & Kiwasi, 2013). Knowledge and enforcement are prerequisites to successful implementation of risk management. Stakeholders are supposed to be well aware of all the associated information and procedural requirements of risk management for effective implementation.

2. MATERIALS AND METHODS

2.1. Targeted Population and Sample Size Calculation

An exploratory design was used in this investigation supported by a quantitative method of data collection using a structured questionnaire survey as instrument. A total of 68 construction industry personnel from both government and private institutions, including the Ministry of Works and Supply, the Ministry of Local Government, the Ministry of Housing and Infrastructure Development. The private institutions included consultants, contractors and financial institutions (banks and insurance companies) operating in Lusaka (Zambia); they were purposively selected to participate in the survey. A structured questionnaire was used as an instrument for data collection. Out of the 68 targeted personnel, 43 participants successfully completed the questionnaires. The sample size was calculated using Smith (2010) formula, also used by Ngoy (2019) for an unknown population:

$$\text{Sample Size} = (\text{Zscore})^2 \times (\text{StdDev})^2 / (\text{Margin of error})^2,$$

where:

Zscore: Corresponds to the confidence level (CL)

This study used the 90 % CL = 1.645 confidence

StdDev: Standard deviation

This study utilised a standard deviation of 0.5

Margin of error: This study used a margin of error of ±10 %

Therefore, the sample size has a 90 % CL, 0.5 StdDev, and a Margin of error of ± 10 %. The sample size is as follows:

$$\text{Sample Size} = [(1.645)^2 + 0.5^2] / (0.1)^2$$
$$= (2.706 \times 0.25) / 0.01$$
$$= 0.6765 / 0.01$$
$$= 67.65$$
= 68 respondents were needed.

2.2. Data Analysis Method

The obtained data were organised and coded using Excel and transferred to SPSS version 21 for analysis. The analysis compared the frequency of knowledge and utilisation of four securities between GRZ and private construction industry personnel. The four categories included AP security, PS, RS and CAR-insurance. Comparisons were done of the status of securities using Chi-square or Fischer's exact tests where appropriate during project implementation. The frequency of projects with successful implementation of securities, the availability of systems for monitoring securities and the effectiveness of the monitoring systems between the two categories (GRZ, Private) embodied the essential part of the data analysis.

Categorical variables were compared using the Pearson χ^2 test, or Fisher exact test, where appropriate. A *p*-value of less than 0.05 was considered significant.

3. RESULTS

3.1. Sector Distribution of Participants and Years of Work Experience

In the demographic characteristics, participants were mainly from the private sector (67 %), where contractors accounted for 37 % followed by private consultants (14%) and financial/insurance institutions (14 %). The government personnel accounted for 33 % as seen in Fig. 1.

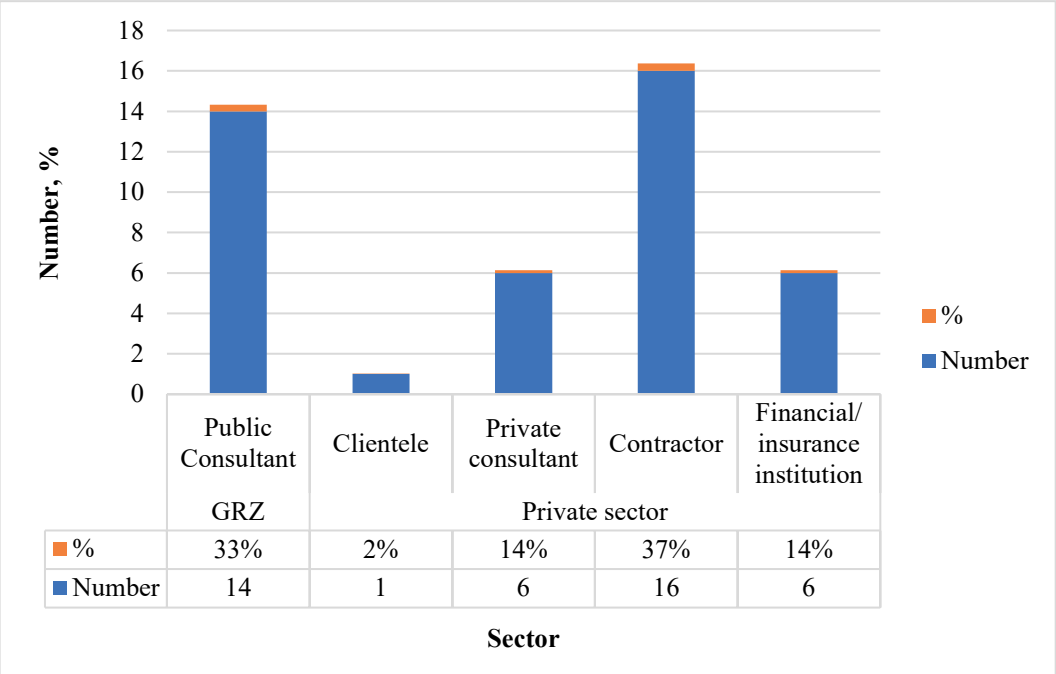

Fig. 1. Distribution of participants according to the sector.

Further, in the demographic characterization, results show that a majority of participants had more than five years of work experience (70 %). Personnel from the private sector were more likely to have had five or more years of work experience than those of the public sector (86 % vs 36 %, $p = 0.001$) as described in Table 1.

Table 1. Work Experience of Respondents

		All participants	GRZ	Private	*P* value*
Work experience	Years of experience		*N*, %		
	< 5 years	13 (30)	9 (64)	4 (14)	0.001
Work experience	≥ 5 years	30 (70)	5 (36)	25 (86)	

**All P values are from Fischer's exact test*

3.2. Professional Background of Participants

In the professional background grouping, the dominant group in percentage was composed of quantity surveyors (42 %) followed by engineers (16%). Accountants were the least represented group (7 %) as seen in Fig. 2. The rest included architects and insurance underwriters among others.

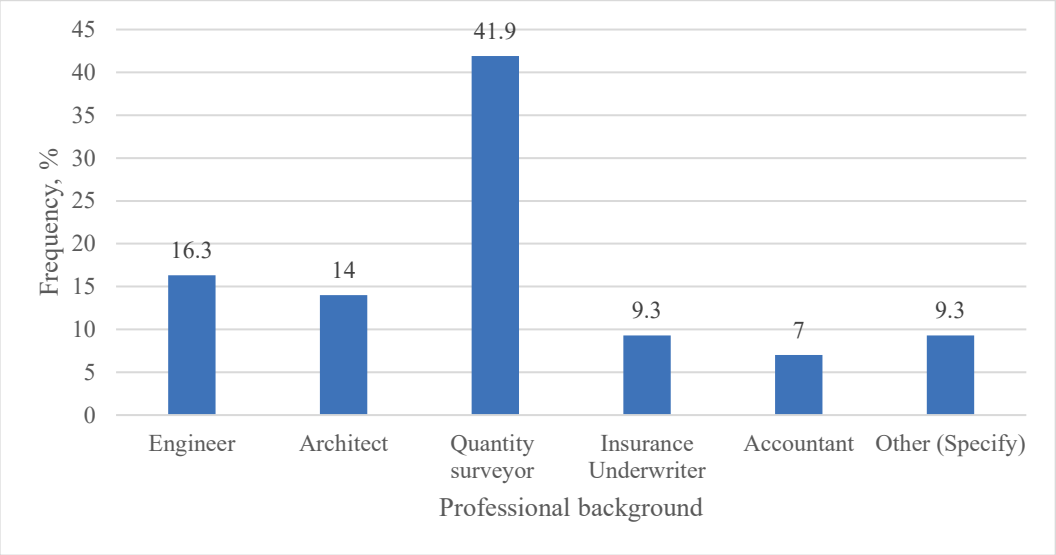

Fig. 2. Professional background of respondents.

3.3. Knowledge of Securities among GRZ and Construction Personnel of the Private Sector

Nearly all the participants stated that they knew about AP (93 %), PS (95 %), RS (88 %) and CAR (91 %), and there was no statistically significant difference between GRZ and private sector personnel (p = 1, 1, 0.151 and, 1 respectively) as highlighted in Table 2.

Table 2. Knowledge of Securities

Type of securities	Response	All participants	GRZ	Private	*P* value*
			N, %		
Advance Payment	Do not know	3(7)	1(7)	2(7)	1
	Know	40(93)	13(93)	27(93)	
Performance Sec	Do not know	2(5)	0	2(7)	1
	Know	41(95)	14(100)	27(93)	
Retention	Do not know	5(12)	0	5(18)	0.151
	Know	37(88)	14(100)	23(82)	
CAR Insurance	Do not know	4(9)	1(7)	3(10)	1
	Know	39(91)	13(93)	26(90)	

**All P values are from Fischer's exact test*

3.4. Use of Securities among GRZ and the Construction Personnel of the Private Sector

Out of 43 participants, only 31 responded to the question on the use of securities and CAR insurance. Out of 31 respondents, three quarters (74 %) reported that they had used AP in one or more projects and no noticeable statistically difference between GRZ and the personnel of the private sector ($p = 0.676$) was observed.

Out of 28 participants who responded about PS, nearly all (93 %) reported that they had used PS in one or more projects with no statistically significant difference between GRZ and the personnel of the private sector ($p = 0.524$). Only four participants responded about the use of RS, all of them were the representatives of the private sector. Three of them reported having used RS in at least one project.

Out of 27 participants nearly two thirds (67 %) reported having used CAR insurance in at least one project. Personnel from GRZ institutions were more likely to have used CAR insurance in one or more projects than those from the private sector (100 % vs 47 %, $p = 0.009$) as shown in Table 3.

Table 3. Projects with Securities

Type of securities		All participants	GRZ	Private	*P* value*
			N, %		
	None	8(26)	2(18)	8(30)	0.676
Advance Payment (*N* = 31)	≥ 1 project	23(74)	9(82)	14(70)	
	None	2(7)	0	2(11)	0.524
Performance Sec (*N* = 28)	≥ 1 project	26(93)	10(100)	16(89)	
	None	1(25)	0	1(25)	N/A
Retention Sec (*N* = 4)	≥ 1 project	3(75)	0	3(75)	
	None	9(33)	0	9(53)	0.009
CAR Insurance (*N* = 27)	≥ 1 project	18(67)	10(100)	8(47)	

**All P values are from Fischer's exact test*

3.5. Status of Securities during Project Implementation and Projects with Securities Implementation

The majority of the participants reported that they had valid RS (92 %), CAR insurance (90 %), AP (83 %) and PS (79 %). The highest frequency of expired securities was those of PS (21 %) followed by AP (17 %) as summarized in Table 4.

Table 4. Status of Securities and CAR Insurance during Project Implementation

Type of securities	**Status of security**	All participants	GRZ	Private	*P* value
		N, %			
Advance payment Security	Valid	29(83)	11(85)	18(82)	1
	Expired	6(17)	2(15)	4(18)	
Performance Security	Valid	30(79)	8(62)	22(88)	0.094
	Expired	8(21)	5(38)	3(12)	
Retention Security	Valid	22(92)	9(100)	13(87)	0.511
	Expired	2(8)	0(0)	2(13)	
CAR insurance	Valid	28(90)	8(89)	20(91)	1
	Expired	3(10)	1(11)	2(9)	

Approximately three out of four participants reported that they had greater or equal to one project with successful implementation of PS (90%), AP (82%), RS (76%) and CAR insurance (74%). The highest frequency of unsuccessful implementation of securities were those of CAR insurance (26%) followed by RS (24%) as shown in Table 5.

Table 5. Frequency of Projects with Successful Implementation of Securities
Number of projects with successful implementation of securities and CAR

Type of securities	Number of projects	All participants	GRZ	Private	*P* value
		N, %			
Advance Payment security	None	7(18)	1(8)	6(23)	0.388
	≥1 project	32(82)	12(92)	20(77)	
Performance Security	None	4(10)	1(7)	3(12)	1
	≥1 project	36(90)	13(93)	23(88)	
Retention Security	None	9(24)	2(14)	7(29)	0.438
	≥1 project	29(76)	12(86)	17(71)	
CAR Insurance	None	10(26)	2(15)	8(32)	0.441
	≥1 project	28(74)	11(85)	17(68)	

3.6. Compliance of Stakeholders, and Models of Monitoring Securities and Their Effectiveness

The frequency of participants who reported a high level of compliance among consultants, insurers / banks, clients, and contractors was as follows: 80 %, 72 %, 68 % and 55 %, respectively. The highest frequency of participants reporting low compliance was among contractors (44 %) followed by banks / insurers (22 %) as

shown in Table 6. No statistically significant difference between government and the private sector was observed.

Table 6. Stakeholders' Compliance

Compliance of stakeholders	Compliance	All participants	GRZ	Private	*P* value
		N, %			
Consultant	High	31(80)	11(85)	20(77)	0.694
	Low	8(20)	2(15)	6(23)	
Client	High	26(68)	8(67)	18(69)	1
	Low	12(12)	4(33)	8(31)	
Insurers / Bank	High	28(72)	8(62)	20(77)	0.453
	Low	11(28)	5(38)	6(23)	
Contractor	High	21(55)	5(39)	16(64)	0.178
	Low	17(44)	8(61)	9(36)	

The participants who reported that they had models for monitoring securities were as follows: PS (58 %), AP (54 %), RS (47 %) and CAR (41 %). At least 80 % of the participants reported that the tools for monitoring securities were effective. This includes AP (90 %), PS (89 %), RS (87 %) and CAR insurance (80 %) as shown in Table 7. There was no statistically significant difference in these findings between government and the private sector.

Table 7. Availability of the Model for Securities Monitoring and their effectiveness

Availability of the model for monitoring the use of securities		All participants	GRZ	Private	*P* value
		N, %			
Type of securities	Availability of model				
Advance Payment Security	Yes	21(54)	6(50)	15(56)	1
	No	18(46)	6(50)	12(44)	
Performance Security	Yes	22(58)	6(50)	16(62)	0.725
	No	16(42)	6(50)	10(38)	
Retention Security	Yes	16(47)	5(42)	11(50)	0.729
	No	18(53)	7(58)	11(50)	
CAR Insurance	Yes	14(41)	3(25)	11(50)	0.275
	No	20(59)	9(75)	11(50)	

The participants who reported the effectiveness of models for monitoring securities were as follows: PS (58 %), AP (54 %), RS (47 %) and CAR (41 %). At least 80 % of the participants reported that the tools for monitoring securities were effective: AP (90 %), PS (89 %), RS (87 %) and CAR insurance (80 %) as seen in

Table 8. There was equally no statistically significant difference in these findings between government and the private sector.

Table 8. Effectiveness of the Model

Effectiveness of the Model		All participants	GRZ	Private	*P* value
		N, %			
Type of securities	Effectiveness				
Advance payment security	Effective	17(90)	4(80	13(93)	1
	Ineffective	2(10)	1(20)	1(7)	
Performance security	Effective	16(89)	3(75)	13(93)	0.405
	Ineffective	2(11)	1(25)	1(7)	
Retention security	Effective	13(87)	4(80)	9(90)	1
	Ineffective	2(13)	1(20)	1(10)	
CAR insurance	Effective	12(80)	1(33)	11(92)	0.081
	Ineffective	3(20)	2(67)	1(8)	

4. DISCUSSION

4.1. Knowledge about Securities and Contractors' All Risk Insurance

The aim of a demographic characterisation was to evaluate the heterogeneity of the population, identify the most influential group of respondents and further draw conclusions. The pattern showed that the personnel of the private sector were more dominant in the sector distribution.

The high frequency of participants with knowledge about the securities and CAR insurance may be because the government is a primary client for most contractors, and in construction projects sponsored by the government securities are mandatory under Zambian construction contract laws (International Labour Organisation, 2015) (ZPPA, 2012a). To secure their projects and consequently their businesses, contractors have no choice but to obtain securities and CAR insurance. These findings show a relationship with the study by Chipozya et al. (2013) but not to the same extent. They indicated that sharing of risks in the Zambian construction industry is often done, and it was acknowledged as one of the best ways of mitigating risks. Their findings revealed that 35 % of construction professionals in Zambia preferred risks to be transferred, while 41 % preferred sharing risks. Other contemporary studies, including the Ghanaian Graphic (2017), Chiponde (2015) and Musundire & Aigbavboa (2015), confirmed that risk transfer remained one of the best ways to mitigate construction risks in Ghana, Zambia and South Africa. It can therefore not be concluded that securities and CAR insurance are the main drivers for using these risk management tools as it seems to be a result of the government requirement. Other possible reasons should be evaluated in further research.

The higher frequency of participants with knowledge about PS more than the other securities, namely AP, RS and CAR insurance, was consistent with previous

reports proving that PS was the most common form of guarantee (ZIL, 2013). The use of securities and CAR insurance in the respondents' projects is another way to confirm that the Zambian construction industry was knowledgeable, but this requires further quantitative detailing as other researchers in various regions indicated that the lack of awareness among construction actors of the use of securities and insurance was one of the main challenges in acquiring these financial risk management tools (Ombati, 2002; Wang et al., 2007; Ngoy et al., 2023).

4.2. Use of Securities and Contractors' All Risk Insurance

The high frequency of respondents who reported the use of AP, PS and CAR insurance among GRZ employees is reflective of the legal requirement under ZPPA to have these securities for government funded projects (ZPPA, 2012b). The lack of the use of RS among government players may be due to the fact that this is not mandated under Zambian construction contract laws. The lack of regulation of the private sector by ZPPA explains the relatively higher frequency (compared to government) of participants who did not implement securities and CAR insurance. This shows that despite the importance given to these financial risk management tools, contractors still reason with a business mind and are guided by search for profit first. They often act to meet requirements and not primarily to mitigate risks. However, infrastructure projects that require the installation or building of physical assets, especially in developing countries like Zambia are not generally directly state funded. African contemporary infrastructure projects are generally loan driven through grant term-financing in different forms, such as Public Private Partnership (PPP) non- recourse loan, Private Finance Initiative (PFI) etc., from cooperative partners. Projects might appear as government funded but, in reality, the funds come from the private sector. Public funded projects and foreign financed projects must eventually be repaid in which ever form by the host countries. Thus, there is the need to structure the security and insurance market through regulations and empowering policies to assure the complexion of projects, at the same time ensuring the protection of contractors' businesses and quality service delivery to the general public.

GRZ personnel were more likely to use CAR insurance than those from the private sector. Some of the factors previously reported to impact the use of CAR insurance included client's requirements, conditions of contract, contractors' interest, knowledge and experience (Parera et al., 2008). The reported high level of knowledge was not consistently comparable to the use of the securities and CAR insurance because some of the respondents who earlier responded that they knew about certain securities and CAR insurance could not answer the follow-up question on their use.

These findings show that regulations assist in the implementation of securities and CAR insurance. They also show that while there was a high frequency of both government and private sector players who had knowledge about securities and CAR, implementation may have been influenced by the Zambian construction contract laws which apply only to government funded projects. Drawing a parallel with Wang's et al. (2007) survey, it confirms that laws and regulations are one of the areas where a major improvement is needed. Regulatory framework is the most

important driver for an efficient use of securities and insurance. This development was earlier emphasized by Liu et al. (2007) who found that approximately 60 % of their survey respondents thought that the statutory system was the most important driver to influence the development of construction insurance.

4.3. Status of Securities during Project Implementation, Projects with Securities Implementation, Compliance of Stakeholders, and Models of Monitoring Securities and their Effectiveness

The findings of this study regarding the status of securities during project implementation, project security implementation, compliance of stakeholders, and models of monitoring securities and their effectiveness have not been previously described in the Zambian context to establish a valid basis for comparison. The frequency of participants who reported having valid securities was high, though some had expired ones. The presence of expired securities, especially PS, and AP, entails that the participants' organisation was not protected from risks. Reasons for having expired securities reported by participants included the high cost of renewing securities, the lack of knowledge about when securities would expire, and the long procedures for renewal. A similar conclusion was drawn by Liu et al. (2007) who studied key issues and challenges of risk management and insurance in the Chinese construction industry. They pointed at cultural considerations, perception and attitude of contractors as playing an important role in inhibiting proper implementation of risk management practices in general in China's construction industry. The mentioned elements revolved around four focal challenges, namely, the lack of knowledge, the contactors' attitude, the legal system and the construction insurance market.

In Iran, five more challenges were identified by Sayareh & Moodi (2017), not different but related to the ones that had been described before by other researchers and this investigation. The following factors were considered as factors to be ameliorated for the development of insurance in the Iranian construction industry, including the gap in the statutory system, the insurance service quality, cost of insurance, contractors' attitude, knowledge and expertise, and the funding sources of the construction insurance premium.

Successful use of the securities and CAR insurance implied acquiring them at the right time, maintaining their validity, renewal when necessary and withdrawing them after the intended use. The reasons for unsuccessful implementation of securities were not extensively explored, but neglecting factors mentioned in the previous sentence would certainly lead to the failure in the use of securities and CAR. Unsurprisingly, participants who reported having expired securities also reported unsuccessful implementation of securities.

The relatively high frequency of participants with low compliance to securities among contractors and insurance companies is an expression of the need to have knowledgeable construction professionals having the necessary skill to make decision and take action. Reaching a high level of risk management compliancy (to sureties and CAR insurance) also includes the ability to assess the extent of the gravity of a risk, its impact on the project, and decide on the necessity of transferring it to a third party or not. As argued by Firmenich (2017), the emphasis is on the

enhancement of project players' skills in setting up an effective project risk management process and make decision accordingly each time a risk arises. Some of the reasons cited in other regions among contractors and government officials are similar to the ones identified in the status of securities during project implementation. They were the lack of knowledge, the lack of regulation enforcement and inadequate / lack of financial resources (Dorji & Hadikusumo, 2006).

The findings exposed almost a one-to-one ratio of participants who had systems for monitoring performance of securities to those who did not have. While the majority of those who reported having a system for monitoring performance of securities attested that their systems of monitoring were effective, the validity of their affirmation might need to be evaluated and confirmed by further contextualized research. Managing risks through securities and CAR insurance is a process intending to help project players identify, assess and minimise risks to the project while maximising cost certainty (Firmenich, 2017). Hence, there is the need for relevance of establishing an adequate monitoring system capable of generating reliable feedback to help make adjustment in each phase of project implementation.

CONCLUSION

Stakeholders acknowledge having knowledge about securities and CAR insurance, with variation in their use. The majority had high levels of compliance to procedural requirements of securities and CAR insurance in the ZCI. There was a variation in the availability of monitoring systems for securities and CAR insurance in the ZCI. The study established that the use of securities and CAR insurance in Zambia did not fully match with the knowledge levels. Hence, there is the need for more studies to fill this gap. There is the need for the enhanced level of awareness (knowledge) and an adequate legal framework to regulate not only public funded projects but also private ones as vital features to the sucesssful implementaion of risk management through securities and CAR insurance in the Zambian construction industry.

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