



## The Risk Management Practices and Organisational Performance in Public Institutions: A Case of DUWASA and TANESCO in Dodoma

Maguja Y. Nestory\*, Ester Ugulumu and Oscar Mpasa

Department of Rural Development and Regional Planning, Institute of Rural Development Planning, Dodoma

\*Corresponding author email: [mnestory@irdp.ac.tz](mailto:mnestory@irdp.ac.tz)

### Abstract

*This paper assesses the risk management practices and organizational performance of public institutions. Specifically, the paper assessed, the types of risks faced by public institutions, the strategies used in managing them and the role of risk management practices in improving organizational performance. Probability and non-probability sampling techniques were employed to select employees from TANESCO and DUWASA. Both descriptive (multiple responses) and inferential statistics (ordinal regression) were used for data analysis. The findings revealed that public institutions face procurement risks, financial risks, and unethical risks. Risk reduction, risk transfer, and risk acceptance were the preferred strategies to manage risks within organizations. The "Spearman's Rank Correlation" results show that there is a significant and positive correlation between risk treatment ( $r= 0.735$ ,  $p= 0.05$ ), risk identification ( $r=0.528$ ,  $p=0.01$ ), and organizational performance in TANESCO while there is a significant and positive correlation between risk treatment ( $r=0.683$ ,  $p=0.01$ ), risk identification ( $r=0.461$ ,  $p=0.05$ ), risk analysis ( $r=0.450$ ,  $p= 0.05$ ) and organization performance in DUWASA. Ordinal regression results show that risk management processes (establishing scope, context and criteria = 2.678, risk identification =2.766, and risk treatment= 3.930) were a significant and positive predictor of organizational performance in TANESCO at the one percent level, while risk identification (1.619) and risk treatment (2.158) were significant and positive predictors of organizational performance in DUWASA at the one and five percent levels respectively. Therefore, public institutions should integrate risk management processes with other core functions of the organization if organizational objectives are to be achieved.*

**Keywords:** Risk, Risk management practices, Public institutions, Organisational performance

## 1.0. Introduction

Risk can be defined as the effect of uncertainty on objectives. An effect is a deviation from what was expected. It can be positive, negative, or both, and can address, create or result in opportunities and threats (Project Management Institute, 2009). Risk Management is a set of coordinated activities to direct and control an organization's risk (Bartlett, 2004). ISO 31000:2018 has identified steps on which the risk management process should be based which are establishing Scope, Context, and Criteria (SCC), risk assessment (risk identification, risk analysis, and risk evaluation), risk treatment, recording and reporting, monitoring and review, and communication and consultation as cited by Nketekete *et al.* (2016) and Ibrahim *et al.* (2019). Different studies acknowledge that risk management helps an organization to improve its performance both in financial and non-financial aspects as it can reduce unexpected and costly surprises, ensure effective allocation of resources, improve communication, and provide senior management with a concise summary of threats an organization is likely to face, thus ultimately helping in better decision making, Carvalho and Junior, (2015), Likhitrungsilp *et al.* (2017), Smit (2012), Durst *et al.* (2019), Zou (2015), Singh and Hong, (2020), Kpodo *et al.* (2015), Aritua *et al.* (2011), Shibani *et al.* (2022), Ibrahim *et al.* (2019), Alawattegama (2018), Okonjo *et al.* (2016), Tang *et al.* (2007), Ayudhya and Kunishima, (2019), Nasret *et al.* (2019) and Cooper (2010).

In Tanzania, risk management practices have been challenged by various factors such as lack of awareness of risk management processes, lack of

experience, lack of information in contract management, lack of stakeholder involvement in risk management, inadequate monitoring and control of risks within the organization and cost implementations and time constraints (Kikwasi, 2012). Furthermore, Chileshe and Kikwasi (2014) urged that teamwork, communication, awareness of the risk management process as well as management style were the key critical success factors for implementing risk assessment and risk management in construction projects in Tanzania. But also, Masenene (2015) found that operational risk management among Tanzania financial institutions was not well implemented and revealed various reasons such as a lack of a strong risk management department and weak rules and principles that affect the operational performance of the organization.

Despite the challenges in risk management practices and by recognizing the importance of risk management practices, the Tanzania government introduced the National Guideline on Risk Management (2012) and the Public Sector Risk Management Framework (PSRMF) by National Treasury Circular No. 12 of 2012/13 which provide a general guide for the implementation of risk management strategies in the public service and suggest that risk management is a formal step-by-step process that can be applied at all levels of a department. Furthermore, the government through the Ministry of Finance introduced the use of the Tanzania National Electronic Procurement System (TANePS) in executing procurement functions for all public procuring entities as the means of

reducing risks such as corruption, delays, quality defects and cost overruns hence improved services to its public as a result of achieved value for money (Alphonce, 2020).

Therefore, the interest of this study comes from the fact that there is a need to understand the risk management practices and organizational performance in public institutions in Tanzania as most studies were conducted in developed countries and what might be considered by an organization to be a risk and therefore manageable in a developing country could be different from an organization operating in a developed country, where the industry is structured differently or has a different legal framework. Specifically, the paper assessed, the types of risks faced by public institutions, the strategies used in managing risks by public institutions and the role of risk management practices in improving organizational performance.

## 2.0. Methodology

This study was conducted in Dodoma City at two selected public institutions, namely; Tanzania Electric Supply Company Limited (TANESCO) and Dodoma Urban Water Supply and Sanitation Authority (DUWASA). These institutions were purposively selected because they are among public institutions that strive to improve

organization performance in terms of quality service delivery, compliance with government regulations, improved decision-making, stakeholder confidence, robust planning, and resource utilization, by instituting risk management best practices to realize value for money (URT, 2011). A probability sampling procedure, simple random sampling was used to obtain information from those individuals who deal with risk management whereby each individual within the selected departments and sections was given an equal chance to be selected. (Saunders *et al.*, 2009).

A cross-sectional research design was employed where data were collected from a representative sample at a single point in time (Majid, 2018). This study targeted population comprises employees from TANESCO and DUWASA. A sample size of 60 respondents of which 35 were from TANESCO and 25 from DUWASA was used from a total population of 116 employees of which 68 were from TANESCO and 48 were from DUWASA (Table 1). The sample was representative because for a statistical analysis study, a sample size of 30% and above is suggested since it results in a sampling distribution that is close to a normal distribution (Mugenda and Mugenda, 2008).

**Table 1. Sample size distribution**

Section	TANESCO			DUWASA		
	Targeted Population	Sample size	Percentage (%)	Targeted Population	Sample size	Percentage (%)
Planning Department	8	4	50	7	4	57
Finance department	10	5	50	6	3	50
Procurement unit	14	6	42.8	8	4	50
Audit section	10	6	60	6	3	50
Engineering department	8	4	50	10	5	50
ICT Unit	8	4	50	3	2	66
Human resource and administration	10	6	60	8	4	50
<b>Total</b>	<b>68</b>	<b>35</b>	<b>51.5</b>	<b>48</b>	<b>25</b>	<b>52</b>

Both structured and unstructured questionnaires were used to collect primary data while a checklist was used to collect secondary data from published and unpublished documents related to the study. The study measured qualitative variables using a five-point

Likert-type scale starting from (1) = strongly disagree to (5) = strongly agree. The mean score was established for each variable used in the study. The study has two variables, risk management practices as the independent variable and organizational performance as the dependent variable (Table 2).

**Table 2. Summary of measurement of study variables**

Variable	Operational indicators	Measure
Organizational performance	The mean score of organizational performance parameters (Quality service delivery, Compliance with government requirements, Improved decision-making, Stakeholder's confidence, and Robust planning and resource utilization)	5- point Likert scale-type questions
Risk management practices	The mean score for the risk management process (establishing scope, context and criteria, communication and consultation, risk identification, risk analysis, risk evaluation, risk treatment, risk reporting, monitoring, and review)	5- point Likert scale-type questions

Data analysis was done using descriptive analysis where frequency and percentage were generated. The relationship between risk management practices and organizational

performance was examined using Spearman's Rank Correlation. The correlation coefficient value ( $r$ ) range of 0.10 to 0.299 is considered weak, 0.30 to 0.49 is considered moderate and 0.50 to

1.0 is considered strong (Wong and Hiew, 2005). However, the correlation coefficient should not go beyond 0.8 to avoid multi-collinearity (Kakiya *et al.*, 2019). Inferential statistics (the ordinal regression model) was employed to

determine the impact of risk management practices on organizational performance because the data set of the variables was not normally distributed (Wong and Hiew, 2005). The model used is shown in Equation 1.

$$OP = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \varepsilon_i \quad (1)$$

Where,

OP= Organisational performance,

$\beta_0$  = Constant,  $\beta_1$ - $\beta_8$  = estimated parameters of the explanatory variables

$X_1$ - $X_8$ = explanatory variables

$\varepsilon_i$ = disturbance term

$X_1$ = Communication and consultation,  $X_2$ = Scope, context and criteria,  $X_3$ = Risk identification

$X_4$ = Risk analysis,  $X_5$ = Risk evaluation,  $X_6$ = Risk treatment,  $X_7$ = Risk reporting,

$X_8$ = Monitoring and review.

### 3. Research findings

#### 3.1. Demographic Descriptive Statistics

The findings in Table 3 reveal that 71% and 68% of the employees were male from TANESCO and DUWASA, respectively, while female respondents were 28.6% for TANESCO and 32.0% for DUWASA. This implies that in public institutions there is no gender difference in performing tasks rather than qualifications, which these findings conform to (Kazare, 2019).

The findings in Table 3 further revealed that 77.2% of TANESCO and 80% of DUWASA of the respondents aged from 26 years to 60 years. This is the age of the workforce and can contribute relevant skills, knowledge, and understanding concerning risk management in their organizations which in turn increases the performance of risk management. These findings conform to the findings of Chaponde (2020), who argued that most workers in public institutions aged above 26 years.

The results in Table 3 indicated that the majority of the respondents had a Bachelor's degree level 57.1% for TANESCO and 60.5% for DUWASA, followed by Diploma Level 25.7 for TANESCO and 12.0% for DUWASA. This implies that public institutions constitute different levels of education. The results resemble those of Kazare (2019) who argued that practitioners in public institutions constitute people with different levels of education and sometimes most of them have a limited level of education, especially at lower levels (wards and village level).

The findings in Table 3 show that most of the respondents in both institutions have working experience between 6-15 years, 65.7% for TANESCO and 64% for DUWASA. This implies that most of the respondents have enough experience so the information regarding the role of risk management practices in improving organizational performance was provided by experienced individuals.

**Table 3. Demographic characteristics of respondents**

Characteristics	Category	TANESCO		DUWASA	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Gender	Male	25	71.4	17	68.0
	Female	10	28.6	8	32.0
Age	18-25	8	22.8	5	20.0
	26-35	12	34.3	8	32.0
	36-60	15	42.9	12	48.0
Education level	Diploma	9	25.7	3	12.0
	Degree	20	57.1	15	60.5
	Master's/PhD	6	17.2	7	28.0
Working experience	Less than 1 year				
	1-5 years	9	25.7	5	20.0
	6-15 years	23	65.7	16	64.0
	Above 15 years	3	8.6	4	16.0

### 3.2. Types of Risks Commonly Faced by TANESCO and DUWASA

#### 3.2.1. Procurement risks

The results in Table 4 revealed that both TANESCO and DUWASA face procurement risk as lack of transparency in the bidding 97.1% and 100% was the most significant procurement risk factor for TANESCO and DUWASA respectively. Similar results were obtained by Likhitrungsilp *et al.* (2017) who argued that lack of transparency in the bidding was the most critical risk factor pointed out by both the public and private sectors in Vietnam which resulted in the selection of contractors with low capacity to deliver the expected results and led to organisation's failure to meet their objectives.

#### 3.2.2. Financial/ Economic Risks

The results in Table 4 revealed that both TANESCO and DUWASA face financial risk as the problem of liquidity 94.3% in TANESCO and the problem of payment delays by the organization to the subcontractors 96.0% in DUWASA were the most significant financial risk factors.

Similar results were obtained by Ayudhya and Kunishima (2019) who identified liquidity, payment delays, credit, and loans, as the main financial risk factors that public and private construction institutions face in Thailand. The presence of these risk factors can lead to significant problems such as an increase in cost, and legal disputes among different stakeholders, and affect the performance of the organization.

#### 3.2.3. Unethical risks

The results in Table 4 revealed that both TANESCO and DUWASA face unethical risks as the problem of theft by institution employees was 71.4% and 84.0% were the most prevalent unethical risk factor in TANESCO and DUWASA respectively. The occurrence of this problem is mostly caused by the illegal connection of electricity and water by some customers through *Vishoka* which in turn leads to a loss of revenues for the organisation. Similar results were obtained by Ibrahim *et al.* (2019) who argued that most projects implemented in Nigeria by public

institutions face the risks of bribery, theft, and fraud which in turn lead to poor project performance in terms of

scope, schedule, and customer satisfaction.

**Table 4. Risks faced by TANESCO and DUWASA**

Types of risks faced by an organization		TANESCO		DUWASA	
Risk categories	Risk factors	Frequency	Percentage (%)	Frequency	Percentage (%)
Political risk	Corruption	20	51.1	21	84.0
	Constraints on customs and imports	22	62.9	15	60.0
	Changes in government	8	22.9	10	40.0
Legal risk	Legal disputes among parties of the contract	28	80.0	20	80.0
	Delayed disputes resolution	30	85.7	22	88.0
	Change in laws and regulations	25	71.4	15	60.0
Procurement risks	Conflicting or imperfect contract	30	85.7	21	84.0
	Lack of transparency in the bidding	34	97.1	25	100.0
	Breach of contract by a subcontractor	12	34.3	15	60.0
Financial/ Economic Risk	Payment delays	32	91.4	24	96.0
	Liquidity	33	94.3	21	84.0
	Credit and loan	10	28.6	8	32.0
	Material price increase	30	85.7	20	80.0
Unethical practices	Fraud	4	11.4	5	20.0
	Theft	25	71.4	21	84.0
	Bribery	15	42.9	15	60.0

\*Based on Multiple responses

**3.3. Strategies used in managing risks by TANESCO and DUWASA**

The results in Table 5 indicated that both TANESCO and DUWASA use reduction strategies 85.7% and 84.0% as means of reducing the probability of risk occurrence and the impact resulting from the risk occurring on the objective achievements respectively. Specifically,

TANESCO and DUWASA use contingency planning, contract terms and conditions, crisis management and disaster recovery plans, training, routine auditing and inspections, and upgrading skills among employees as the means to reduce the probability and impacts of risks faced by these institutions. These findings are similar to the study of Tang

et al. (2007), Fisayo and Nwankwo (2015) who argued that reducing the probability and impacts of risks is the most used risk response by construction organizations in China and small and medium enterprises in Nigeria. A risk

reduction strategy was preferred as it provides a sound basis to establish an open communication process for risk management process among all parties involved in risk management.

**Table 5. Strategies used in managing risks by TANESCO and DUWASA**

Risk strategy	TANESCO		DUWASA	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Avoidance	24	68.6	15	60.0
Reduction	30	85.7	21	84.0
Acceptance	22	62.9	16	64.0
Transfer	25	71.4	13	52.0
Enhancement	9	25.7	5	20.0

\*Based on Multiple responses

### 3.4. Role of risk management practices in improving organization performance

#### 3.4.1. Correlation results

For finding the strength of the relationship between several variables, “Spearman's Rank Correlation” was used, this is because the data set of the variables was not normally distributed (Wong and Hiew, 2005). For the case of TANESCO, the findings in Table 6 indicate that there is a significant and positive strong correlation between risk treatment and organizational performance ( $r= 0.735, p= 0.05$ ),

showing that effective risk treatment is crucial in improving organizational performance. Also, the findings indicate that there is a significant and positive strong correlation between risk identification and organizational performance ( $r=0.528, p=0.01$ ) which implies that risk identification is a key step for ensuring proper management of risk. The findings are similar to those of Saleem and Abideen, (2011), Saeidi et al.(2019), and Kakiya et al.(2019), who argued that effective risk management practices improve organizational performance.

**Table 6. Spearman's Rank Correlation of Variables for TANESCO**

	OP	CC	SCC	RI	RA	RE	RT	RR	MR
OP	1								
CC	-.051	1							
SCC	.264	.359	1						
RI	.528**	.432*	.293	1					
RA	-.418*	.019	-.161	-.641**	1				
RE	-.002	.027	.014	.157	-.188	1			
RT	.735*	.091	.116	.540**	-.521**	.135	1		
RR	-.253	.225	-.067	.121	-.168	-.030	-.118	1	
MR	.219	.194	.402*	.104	.136	.012	.176	-.233	1

**Notes:** \*\*Significant at 0.01 level (2-tailed). \*Significant at 0.05 level (2-tailed).



For the case of DUWASA, the findings in Table 7 indicate that there is a significant and positive strong correlation between risk treatment and organizational performance ( $r= 0.683, p= 0.01$ ), showing that effective risk treatment is crucial in improving organisational performance, followed by a moderately significant and positive correlation between risk identification and organizational performance ( $r=0.461, p=0.05$ ) as well as moderate significant and positive correlation exists between risk analysis and organisational performance ( $r = 0.450, p =0.05$ ). This

implies that effective risk responses result in minimized threats and maximized opportunities, optimizing the organization's chances of achieving its objectives. This implies that for effective risk management, the organization should pay attention to developing and implementing risk treatment options. The findings are similar to those of Ahmed (2021) who argued that risk control activities improve organizational performance by improving customer satisfaction in the industrial sector in Sudan.

**Table 7. Spearman's Rank Correlation of Variables for DUWASA**

	OP	CC	SCC	RI	RA	RE	RT	RR	MR
OP	1								
CC	-.176	1							
SCC	.035	.121	1						
RI	.461*	.084	.146	1					
RA	.450*	.313	.083	.440*	1				
RE	-.085	.003	.151	.000	-.387*	1			
RT	.683**	.059	.117	.559**	.415*	-.057	1		
RR	.420*	-.225	.363*	.496**	.252	-.172	.412*	1	
MR	.062	-.018	.208	.144	-.138	.270	.089	.059	1

**Notes:** \*\* Significant at the 0.01 level (2-tailed). \*Significant at the 0.05 level (2-tailed).

### 3.4.2 Ordinal regression results

Organization performance depends on various factors that reduce the uncertainties of achieving the desired objectives of the respective organization. In determining the role of risk management practices in improving organisation performance, risk management practices were used as independent variables. Using Ordinal regression analysis the results in Table 8 indicate that the independent variables included in the model are a good predictor of the organizational

performance through risk management practices in TANESCO (Nagelkerke  $R^2=78.4\%$ ). The results in Table 8 indicate that establishing scope, context and criteria was a significant positive predictor of organization performance at the one percent level (*coefficient = 2.678, p=0.008*). The results indicate that for every one-unit increase in clarity of risk management scope, the context of risk operation and the criteria for risk management will increase organizational performance by 2.678 units which means the variable has a strong impact on organizational

performance. The findings conform with Nguyen and Tran (2021), and Pimchangthong and Boonjing (2017) who stressed that objective setting is very crucial for any risk management practices to have a meaningful impact on organisational performance.

Furthermore, results in Table 8 indicate that risk identification and risk treatment were significant positive predictors of organization performance at the one percent level (*coefficient = 2.766, p=0.000* and *3.930, p= 0.008*) respectively. The results indicate that for

every unit increase in risk identification will increase organizational performance by 2.766 units, and for every one-unit increase in risk treatment options will increase the organisational performance by 3.930 units. This means that these variables are having a strong impact on improving organizational performance. These results concur with the studies of Ahmed, (2021), and Rasid *et al.*(2017), who argued that the adoption of risk management practices improves organizational performance in the long run.

**Table 8. Parameter estimates for TANESCO**

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OP = 3.40]	-5.733	8.911	.414	1	.520	-23.199	11.733
	[OP = 3.60]	-1.623	8.792	.034	1	.854	-18.855	15.610
	[OP = 3.80]	.558	8.715	.004	1	.949	-16.523	17.639
	[OP = 4.00]	2.253	8.681	.067	1	.795	-14.761	19.268
	[OP = 4.20]	4.290	8.702	.243	1	.622	-12.767	21.346
	[OP = 4.40]	6.069	8.782	.478	1	.490	-11.143	23.282
Location	CC	-.248	.567	.192	1	.661	-1.359	.862
	SCC	2.678	1.011	7.009	1	.008	.695	4.660
	RI	2.766	.751	13.560	1	.000	1.294	4.239
	RA	.798	1.161	.472	1	.492	-1.478	3.074
	RE	-1.495	.658	5.162	1	.023	-2.785	-.205
	RT	3.930	1.487	6.980	1	.008	1.014	6.845
	RR	-5.364	1.635	10.756	1	.001	-8.569	-2.158
	MR	-2.474	1.109	4.976	1	.026	-4.648	-.300

Goodness-of-Fit: Pearson = 1, Deviance = .625  
 Pseudo R-Square: Nagelkerke = .784  
 Test of Parallel Lines: .360

Using Ordinal Regression analysis results in Table 9 indicate that the

independent variables included in the model are a good predictor of the

organizational performance through risk management practices in DUWASA (Nagelkerke  $R^2=58.6\%$ ). Results in Table 9 indicate that risk identification and risk treatment were the significant positive predictor of organisation performance at one percent and five percent levels respectively (*coefficients* = 1.619,  $p=0.002$  and 2.158,  $p= 0.023$ ). The results indicate that for every unit increase in risk identification will increase organisational performance by

1.619 units, and for every one-unit increase in risk treatment options will increase the organizational performance by 2.158 units. This means that these variables are having a strong impact on improving organizational performance. These results concur with those of Girangwa *et al.*(2020), who argued that effective risk management practices influence organizational performance in state-owned corporations in Kenya

**Table 9: Parameter estimates for DUWASA**

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[OP = 3.00]	5.188	6.668	.605	1	.437	-7.881	18.256
	[OP = 3.20]	6.711	6.638	1.022	1	.312	-6.299	19.722
	[OP = 3.40]	7.620	6.655	1.311	1	.252	-5.424	20.664
	[OP = 3.60]	8.941	6.695	1.783	1	.182	-4.181	22.062
	[OP = 3.80]	10.064	6.736	2.233	1	.135	-3.137	23.266
	[OP = 4.00]	11.004	6.778	2.636	1	.104	-2.280	24.288
	[OP = 4.20]	12.372	6.853	3.260	1	.071	-1.059	25.804
	[OP = 4.40]	13.306	6.903	3.716	1	.054	-.223	26.835
	CC	-2.629	1.259	4.364	1	.037	-5.096	-.163
	SCC	.169	1.051	.026	1	.872	-1.891	2.229
Location	RI	1.619	.510	10.055	1	.002	.618	2.619
	RA	.551	.816	.456	1	.500	-1.049	2.150
	RE	-.008	.684	.000	1	.991	-1.348	1.333
	RT	2.158	.953	5.132	1	.023	.291	4.025
	RR	.143	1.039	.019	1	.891	-1.894	2.180
	MR	.517	.503	1.058	1	.304	-.468	1.502

Goodness-of-Fit: Pearson = 1, Deviance = .963

Pseudo R-Square: Nagelkerke = .586

Test of Parallel Lines: .894

### 5.0. Conclusion and Recommendations

Based on the study’s findings, it is concluded that TANESCO and DUWASA face a variety of risks in their operations which include political risks, procurement risks, financial risks, legal risks, and unethical risks that affect their performance. The findings also revealed that risk reduction which includes

reducing the probability of a risk occurring and reducing the impacts of the risk if it occurs is the main risk treatment option preferred by both TANESCO and DUWASA. The findings also revealed that in TANESCO six out of eight risk management processes have a significant impact on organizational performance. These processes are establishing scope, context and criteria,

risk identification, risk evaluation, risk treatment, risk reporting, and monitoring and review while in DUWASA only three risk processes namely; communication and consultation, risk identification, and risk treatment had a significant impact on organisational performance. The policy implications of this stance call for the need for public institutions to pay more attention to risk management processes and integrate them with the core functions of the organisation if organizational objectives are to be achieved. They also should pay attention to the risks associated with political, financial, procurement, legal, and unethical risks that affect organisational performance.

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