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EFFECT OF INSTITUTIONAL FORCES ON THE INTENTION TO ENGAGE IN RAINWATER HARVESTING IN TANZANIA

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ABSTRACT

This study examined the effect of institutional forces on intention to engage in rainwater harvesting in Tanzania, East Africa. The study aimed to examine specifically, (i) the effect of coercive mechanism on intention to engage in rainwater harvesting, (ii) the effect of mimetic mechanism on intention to get involved in rainwater harvesting and (iii) the effect of normative mechanism on intention to engage in rainwater harvesting. A quantitative type, explanatory research design and random sampling were applied by this study. The study collected data using structured questionnaire to 390 community members. Data analysis involved the application of descriptive and multiple linear regression analysis through the employment of IBM SPSS. The results indicated a positive and significant effect of institutional forces on the community's intention to engage in rainwater harvesting. The present study concludes that coercive, mimetic and normative mechanisms are predictors of the intention to engage in rainwater harvesting by the Tanzanian community. Hence, it is recommended that executives, investors, ministry of water and irrigation and other water stakeholders in Tanzania should strategically apply institutional forces to solve the prevailing water scarcity problem facing communities in various areas in the country.

Keywords: Coercive mechanism, Mimetic mechanism, Normative mechanism, Rainwater harvesting, Water scarcity.

1. INTRODUCTION

Water is among the natural resources which is of critical significance for life of all the living organisms. Rainwater harvesting is defined as the concentration, collection of rainwater from the catchment, and storing it for future use (Ahmed *et al*., 2013). Mainly, life depends on water. The sources of water are rainfall and underground water sources in forms of springs, streams, and rivers which pours the water in lakes and oceans (Campisano, 2017; Kiran & Kumar, 2023; Muyukeni *et al*., 2023). In many areas of Tanzania including Nkasi District, rain falls almost every year from November to May (In the best knowledge of the researchers). This is an opportunity for engaging in rainwater harvesting by the Tanzanian communities. Rainwater harvesting improves water availability and security in regions facing water scarcity and mitigates the rate of soil erosion attributed by flowing of unharvested rainwater through washing thus leading to land destruction (Kiran & Kumar, 2023; Muyukeni *et al*., 2023). Rainwater harvesting and storing programmes are safe for serving future water uses (Alrawi *et al*., 2023; Khatakho & Koju, 2017). Hence, water harvesting is regarded as a means to solve water scarcity problem which threatens the life and economic development of the individuals and country at large (Ahopelto *et al*., 2019; Campisano, 2017).

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Water scarcity is the insufficiency of water resources for meeting standard water demands for the living (Ahopelto *et al.*, 2019). This problem is mainly caused by human and animals to some extent due to their social activities to satisfy their daily needs (Ahopelto *et al.*, 2019; Alrawi *et al.*, 2023). These activities include keeping animals, cutting trees, destroying the water sources like springs by cultivating on them, increasing global warming through industrialization, environmental degradation through burning bushes and forests, and many more other activities (Alrawi *et al.*, 2023; Mahoo *et al.*, 2015; Masifia & Sena, 2017). These social activities make the available water sources to be unsafe and hence escalate the problem. Therefore, the social activities that threaten the sustainability of water thus resulting to water scarcity need be controlled by the government for the betterment of the safety of the water in Tanzania. During dry season, the problem of water becomes bigger to the majority of communities (Islam, 2023) including those in Tanzania. Consequently, communities such as in the study area (Nkasi District in Rukwa region) have been digging pit holes to get water. However, these holes cause negative impacts like injuries and damages in these communities and to the environment (Iqbal, 2023). As a means to solve this problem, some scholars have made a call for the community to engage in harvesting rainwater and reserving for their future demands (Campisano *et al*, 2017; Masifia & Sena, 2017).

Despite the importance of rainwater harvesting and the calls made by diverse scholars, limited studies have been done on the search for information regarding how the community engage in harvesting water for their usage especially in dry seasons when the majority of the areas face this problem. The majority of studies regarding rainwater harvesting have been done in the developed countries such as Italy, Hawaii, India, Brazil, Ethiopia and South Africa but have left behind the developing world in particularly Tanzania under searched. Moreover, there is paucity of studies that highlight institutional forces in Tanzania regarding their role for successful implementation of rainwater harvesting projects (Campisano *et al.*, 2017; Mengistu, 2021; Sahin & Manioglu, 2019; Timothy *et al.*, 2022). Hence, this study aimed at bridging these gaps using the institutional forces of the institutional theory. Specifically, the current study delved into the effect of institutional forces on the intention to engage in rainwater harvesting in Tanzania.

In so doing, this study theoretically contributes to the strengthening of the theoretical foundation of the institutional theory with regards to how can be utilized to enhance rain water harvesting in areas facing water scarcity. The study adds new knowledge and description of the relationships of variables namely coercive mechanism, mimetic mechanism and normative mechanism on the intention to engage in rainwater harvesting. The practical implication of this study is that, it helps the policy makers and the government to make use of the coercive, mimetic and normative mechanisms to improve the community's intention to engage in rainwater harvesting. This can be done through investing in developing policies, laws and regulations which promote rainwater harvesting by the community. This also needs the government and non-government organizations to promote and provide subsidies in order to attract the interest of the majority to engage in practicing rainwater harvesting in communities.

Moreover, this study used institutional theory propounded in 1940s by Philip Selznick who purported to make social life stable. The theory was further developed by scholars like Meyer in

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1970s, DiMaggio and Powell in 1983; 1991 who moved the theory from old institutionalism to new institutionalism (Hallett, 2019; Lammers & Garcia, 2017; Wooten & Hoffman, 2016). The institutional theory comprises the mechanisms namely coercive mechanism, mimetic mechanism and normative mechanism which constrained the motion of this study from general to a specific research problem that is water scarcity problem (Latif *et al*., 2019; Milinga *et al*., 2023). Coercive mechanism is the social order that have effect on the harvesting of rainwater or driving forces in the form of orders, rules, laws, regulations and conditions, that are geared towards facilitating the same. The mimetic mechanism is a social exchange or cognitive understanding that comprises of learning and coping ability, and the normative mechanisms are the repetitive social behaviours concerning maintaining acquired profession skills (Lammers & Garcia, 2017; Latif *et al*., 2020; Millinga, 2019.

The institutional theory mechanisms have the capacity to effect changes to communities towards meeting their demands through either being driven, pushed, mimicking and or making the normal practices (Latif *et al*., 2019). The institutional theory's capacity of effecting is associated with the coercive mechanism, mimetic mechanism and normative mechanism that can drive people towards complying to the stimuli for action in responding to pressure (Lammers & Garcia, 2017; Latif, *et al*., 2019). Thus, institutional forces create the isomorphism between the successful and the suffering ones by learning and practicing as a consequence of the coercive, mimetic and normative mechanisms of the institutional theory (Masocha & Fatoki, 2018; Wooten & Hoffman, 2016). Nevertheless, the weakness of the institutional theory is on the forces comprised in the coercive mechanism that is, it is not friendly to people in the communities. This is because; the majority are not willing to be forced. However, the institutional forces can be used as a motivation tool to make the community people interested in engaging in rainwater harvesting without forcing them (Alziady & Enayah, 2019). Thus, forcing them should be the last resort for those who are not willing and not easily motivated to engage in rainwater harvesting. The current study established that the institutional forces of institutional theory could be utilized to enhance sustainable rainwater harvesting in areas such as Nkasi district of Tanzania where water availability is a great problem.

On the other hand, the conceptual framework was developed to explain the connection between the interplay of independent variables and a dependent variable. Informed by insights from the literature and theory, the conceptual framework in Figure 1 depicts the direct connection of institutional forces, including coercive mechanism, mimetic mechanism and normative mechanism on the intention to engage into rainwater harvesting. The study predicted that the institutional forces influence the intention to engage in rainwater harvesting by the communities in Tanzania. From these relationships, the study hypothesized that H1: Coercive mechanism has significant effect on the intention to engage in rainwater harvesting, H2: Mimetic mechanism has significant effect on the intention to engage in rainwater harvesting and H3: Normative mechanism has significant effect on the intention to engage in rainwater harvesting.

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Conceptual Framework of the Study

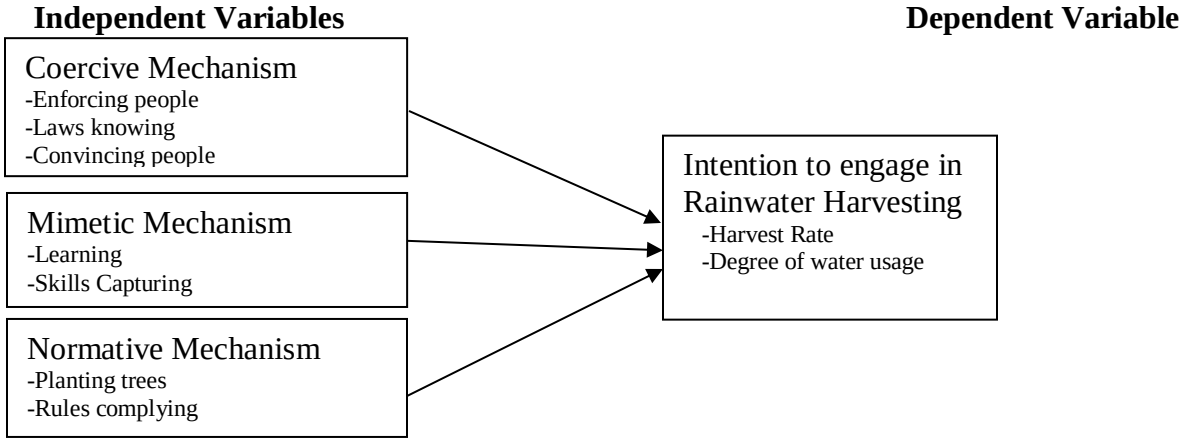

Figure 1 Research Conceptual Framework

Source: Researchers, 2023

2. MATERIALS AND METHODS

This study used explanatory research design (Johnson & Christensen, 2014; Saunders *et al*., 2019). The purpose of using explanatory research design is generally to explain the cause and effects amongst the tested hypotheses (Brough, 2019; Cohen *et al*., 2018). Cross-sectional survey design was adopted by this study to enhance primary data collection. The population comprised of 15,123 community members in Nkasi District, Rukwa region of Tanzania. In this study, 390 respondents were statistically determined using Taro Yamane's formula: $\mathbf{n = N/(1+N(e)^2)}$ of 1967.

The study employed a simple random sampling method, where every member of the community has an equal opportunity to be chosen for participation in the study survey (Saunders *et al*., 2023). A 5-point Likert like scale questionnaire was employed to gather primary data with values ranging from 1 for strongly disagree to 5 for strongly agree. The validity of the study instrument was assessed through factor analysis with a threshold set at 0.5. Cronbach's Alpha method was used to test the reliability of the study instrument adhering to the recommended threshold of 0.5 (Field, 2019). Subsequently, the collected data underwent analysis using both descriptive and multiple linear regression analyses methods. The tested multiple linear regression model of this study was:

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon}$$

Where:
Y = Dependent variable (Intention to engage in rainwater harvesting),
β = Standardized regression coefficient,
X_1 = Coercive mechanism (An independent variable),
X_2 = Mimetic mechanism (An independent variable),
X_3 = Normative mechanism (An independent variable),
ε = Error term.

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3. RESULTS

In this study the researchers distributed 390 questionnaires to the respondents and all were completed and collected. The demographic analysis was based on age, gender, occupation, education and location. The study findings in Table 1 show that out of the 390 respondents, 186 (47.7%) were aged 18 to 20 years, 84 (21.5%) aged 21 to 25, 37 (9.5%) aged 26 to 30 years, 28 (7.2%) aged 31 to 35 and 55 (14.1%) aged 36 years and above. These results reveal that a significant portion of the respondents in the study belonged to the youth demographic, with ages ranging from 18 to 35. The remaining 14.1% comprised the elderly population. These results suggest that, if the project of harvesting rain water is sensitized in the studied area, the community have enough labour to participate in this task as youths are energetic enough to carry out various activities. Rain water harvesting project can also be sustainable in this area as there is a possibility of this young generation to stay longer in that locality. Regarding the gender of the respondents, 176 (45.1 %) were males while 214 (54.9%) were females. This implies that the majority of respondents for this study were females.

On the case of education level of the respondents, the findings show that 37 (9.5%) had primary school, 245 (62.8%) had secondary school, 55 (14.1%) had certificate, 22 (5.6%) had diploma, 29 (7.4%) had degree, 2 (0.5%) had master degree. This connote that, the majority of respondents had education level which made them to understand what was asked and respond accordingly. On respondent's occupation, the findings show that 71 (18.2%) were employed, 283 (72.6%) were farmers and 36 (9.2%) were businessmen and businesswomen. These findings depict that, the majority of respondents were farmers and that these farmers can wholeheartedly engage in rainwater harvesting so as to get water for home use and others for irrigation. Lastly, it was the location of the respondents of which the study findings show that 42 were located in urban and 348 (89.2%) were located in rural areas. These results connote that the majority of respondents are villagers and commonly faced with water scarcity problem as in most areas water problem persist in the rural areas than in urban areas. Hence, these respondents are more likely to engage in rainwater harvest project in the studied area.

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Table 1: Demographic statistical information of the respondents

Items	Frequencies	Percentages
Age Groups		
18 -20	186	47.7
21 -25	84	21.5
26 -30	37	9.5
31 - 35	28	7.2
36 and Above	55	14.1
Gender		
Male	176	45.1
Female	214	54.9
Education Level		
Primary school	37	9.5
Secondary School	245	62.8
Certificate	55	14.1
Diploma	22	5.6
Degree	29	7.4
Master	2	0.5
Occupation		
Employed	71	18.2
Farmer	283	72.6
Business	36	9.2
Location		
Urban	42	10.8
Rural	348	89.2

Source: Researchers' Data Analysis, 2022

In research, the validity of the study instrument is often examined and evidenced by employing Factor Analysis (FA) (Brough, 2019; Field, 2019; Hahs-Vaughn, 2017). This study considered the validity of the study survey instrument by employing factor analysis using IBM SPSS version 26. Factor analysis was used for determining which among the study items suited the study to be retained and which ones to be excluded from the study for the purpose of regression analysis and interpretation (Cohen *et al.*, 2018; Ghoodjani, 2022). This current study conducted factor analysis for the study instrument to determine which among them loaded below 0.5 on factor loading extraction for regression analysis and interpretation of the results. Principal Component Analysis was utilized for extraction, as the result indicated by the Kaiser-Meyer-Olkin measure of sampling adequacy, which was 0.908, and Bartlett's Test of Sphericity, yielding a significance level of 0.000. From the factor analysis, the variables included were coercive mechanism which had 5 items, mimetic mechanism had 2 items, normative mechanism had 3 items, and finally intention to engage in rainwater harvesting had 2 items as shown in Table 2. Scale items having factor loadings below 0.5 were excluded in the study because they tend to disturb the appearance of the desired structure.

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Table 2: Factor Loading, KMO and Bartlett's Test of Sphericity

Component Matrix

		Component				
		1	2	3	4	Explanation
CM	CM4	0.715				Valid
	CM5	0.685				Valid
	CM2	0.653				Valid
	CM3	0.648				Valid
	CM1	0.645				Valid
MM	MM2			0.784		Valid
	MM1			0.642		Valid
NM	NM4		0.788			Valid
	NM2		0.683			Valid
	NM6		0.540			Valid
RWHI	RWHI4				0.652	Valid
	RWHI3				0.648	Valid

Source: Researchers, 2023

Table 3 of this study present the results of the reliability test. The findings show that the research instrument was reliable as revealed by the Cronbach's Alpha Coefficient values of 0.766 for coercive mechanism, 0.600 for mimetic mechanism, 0.698 for normative mechanism and 0.693 for intention to engage in rainwater harvesting. These reliability values met the required threshold value of 0.5 which are strong and close to 1.00. Strong reliability value is close to 1.00 and weak is less than 0.5 or close to 0.000 (Cronk, 2018; Field, 2019; Sekaran & Bougie, 2016).

Table 3: Reliability Statistical Results of the Study Variables

S/N	Construct	Items Used	Alpha Level (α)	Remark
1	**Coercive Mechanism**	5	0.766	Reliable Accepted
2	**Mimetic Mechanism**	2	0.600	Reliable Accepted
3	**Normative Mechanism**	3	0.698	Reliable Accepted
4	**Intention to engage in Rainwater Harvesting**	2	0.693	Reliable Accepted

Source: Researchers, 2023

Regression analysis, Diagnostic test of the study variables

The diagnostic tests for normality, linearity, multicollinearity, autocorrelation, homoscedasticity, and outliers to meet the required assumptions for multiple linear regression analysis were run to avoid biased findings (Field, 2019; Sarstedt & Mooi, 2019). The normality test results were found normal at a Skewness and Kurtosis which ranged in the critical points of +3 and -3, as suggested

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by Field (2019). The normality test results for coercive mechanism were Skewness -1.549 and kurtosis 3.081, mimetic mechanism Skewness -1.812 and Kurtosis 2.083, normative mechanism was Skewness of -1.530 and Kurtosis 3.179. This is shown by the results which range between +3 and -3, hence approximately normally distributed. The linearity tested results for the independent variables were significant at a Pearson correlation value of 0.000 for coercive, mimetic and normative mechanisms respectively. Thus, linearity assumption was met. The autocorrelation results based on Durbin-Watson test was 1.894, that was not less than 1 and greater than 3 according to Field (2019). The homoscedasticity was tested using scatter plots which demonstrated that the points were close to the graph line thus indicating that the linearity assumption was met. Variance inflation factor was run to test if it exceeded 10 thus negatively affecting the study results. The results were all found below 10 the threshold value (Brough, 2019; Field, 2019; Sarstedt & Mooi, 2019). The variables considered for variance factor analysis were coercive mechanism, mimetic mechanism, and normative mechanism. All these three were independent variables. In addition, tolerance value assumption required is > 0.1 for unbiased results (Field, 2019; George & Mallery, 2019). Table 4 shows the findings of both variance inflation factor and tolerance values which suit the multiple linear regression analysis of the required assumptions.

Table 4: Variance Inflation Factor (VIF) and Tolerance Values

S/N	Independent Variables	Tolerance Value	VIF Value	Conclusion Results
1	Coercive Mechanism	0.544	1.837	No multicolinearity
2	Mimetic Mechanism	0.575	1.741	No multicolinearity
3	Normative Mechanism	0.385	2.596	No multicollinearity

Source: Researchers, 2023

In this study, the three variables namely coercive mechanism, mimetic mechanism and normative mechanism were tested in order to check their effecting capacity on intention to engage in rainwater harvesting. Based on the results in Table 5, it was found that both the three variables exerted positive and statistically significant effect on the intention to engage in rainwater harvesting activities. Hence hypotheses H_1, H_2 and H_3 were all accepted.

Table 5: Tested Study Variables

Variables	β	t	ρ
Coercive Mechanism	0.187	3.325	0.000
Mimetic Mechanism	0.289	6.279	0.000
Normative Mechanism	0.347	7.098	0.000

Source: Researchers, 2023

Table 6 indicates the summary of the hypotheses tested, the results and the decisions made after the findings.

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Table 6: Relationships of the Hypotheses, Results and Decisions

Code	Hypothesis	Relationship	Effect Relation	Results	Decision
H_1:	Coercive mechanism has a significant effect on the intention to rainwater harvesting	Direct	CM →RWHI	Significant	Accepted
H_2:	Mimetic mechanism has a significant effect on the intention to rainwater harvesting	Direct	MM→RWHI	Significant	Accepted
H_3:	Normative mechanism has a significant effect on the intention to rainwater harvesting	Direct	NM→RWHI	Significant	Accepted

Source: Researchers, 2023

4. DISCUSSION

To address the proposed hypotheses, in the first query, the researchers hypothesized that **H_1:** Coercive mechanism has a statistically positive significant effect on the intention to engage in rainwater harvesting. The results of the study found that coercive mechanism had statistically positive significant effect on the intention to engage in rainwater harvesting. Basing on these results, it indicates that an increase in coercive mechanism causes an increase in the level of the intention to engage in rainwater harvesting. The results align with those of Timothy *et al*., (2022), who carried a study that aimed at analysing factors effecting the adoption of Charco-dam rainwater harvesting technology among smallholder vegetable producers in Nzega district, Tabora region, Tanzania. The study highlighted the significance of socioeconomic, farm-level, and information sharing factors in enhancing the adoption of Charco-dam technology. Similar supportive outcomes were observed in the study by Raimondi *et al*., (2023) who aimed to review papers on rainwater harvesting and treatment which found that regulations and laws encourage rainwater harvesting and reuse. Additionally, Rhamadita *et al*., (2023) studied on the daily volume of rainwater harvested for the purpose of determining the reservoir capacity for the harvested rainwater. The analysis results identified that the quantity of harvested rainwater was influenced by factors such as rainfall, catchment area, and runoff coefficient.

However, this current study's findings contradict those by the study of Fairuz *et al*., (2023) whose study aimed at seeing the effect of media thickness and contact time on each media to improve rainwater quality in Indonesia. The results identified that there was insignificant effect of filtration media in reducing the value of contamination of rainwater water. Moreover, the results of the present study are contradicting with those of Muyukani *et al*., (2023) whose findings indicated that the cost of rainwater harvesting technology served as a barrier to the adoption of rainwater harvesting.

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In the second query the researchers hypothesized that **H_2**: Mimetic mechanism has a statistically positive significant effect on the intention to engage in rainwater harvesting. The study uncovered a positive and significant association between normative mechanism and the intention to engage in rainwater harvesting. These findings are consistent with the findings by Islam, (2023) whose study aimed at examining the factors effecting the economic benefit of rainwater harvesting in Bangladesh. The study found that income, storage capacity, water price, age of rainwater harvesting and total cost had positive impact on the economic benefit of rainwater harvesting. Also, these findings are consistent with the study of Nadupuru and Shewale, (2023) who examined every rainwater harvesting system established. The focus was on the sustainability and effectiveness of rainwater harvesting system. The study indicated that rapid urbanisation significantly decreases the amount of rainwater that soaks into the subsurface and replenishes ground water. The study insisted on the need of additional supply in order to satisfy the demand of water. Further, it was suggested that adoption of rainwater harvesting systems and constructing natural percolation pits can increase the groundwater level, soil moisture and soil fertility.

According to the findings of the current study, there is positive and significant effect of mimetic mechanism on intention to engage in rainwater harvesting. The findings imply that an increase in mimetic mechanism leads to increase in intention to engage in rainwater harvesting. In other words, mimetic mechanism was a positive predictor of intention to engage in rainwater harvesting in Nkasi district. Hence, H2 which stated that mimetic mechanism has significant effect on the intention to engage in rainwater harvesting activities was accepted. Under institutionalized environment organizations have more chance of success and survival (Cormier & Gutierrez, 2017). On the other hand, Umukiza *et al*. (2023) aimed at highlighting the benefits, opportunities and challenges associated with rainwater harvesting in Africa. In the analysis of the review it was noted that a promise solution to water scarcity problem is rainwater harvesting. These researchers recommended to policy makers to invest in mass education in order to adopt rainwater harvesting. According to Rastiarsa *et al*. (2023), awareness of consequences affects people's attitudes towards harvesting rainwater. Based on this study, it was suggested that people who are aware of the consequences of not harvesting rainwater tend to be positive towards harvesting rainwater. In the same regard, the intention to engage in rainwater harvesting is influenced by perceived sense of responsibility and public attitude towards harvesting rainwater.

However, the current study's findings are inconsistent with the study of Alrawi *et al*., (2023) who studied suitable areas for rainwater harvesting in Syria west, where no study were conducted on rainwater harvesting before. The study found that high sloped areas were unsuitable for rainwater harvesting. In addition, the majority of the study area was found unsuitable for rainwater harvesting. This implies that the rest of the study area which was small; was suitable for rainwater harvesting. Also, the inconsistent results were found in the study of Jacque *et al*., (2023) who investigated on the hydrological viability of rainwater harvesting. The study indicated that rainwater harvesting potential was constrained for gardens located in dry regions. Consistent to this current study, the researchers suggest that to reduce the water scarcity problem in Nkasi district, decision makers should motivate the community people towards mimicking harvesting rainwater from others which may help in sustainable accessibility to water in their localities.

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Besides, the researchers hypothesized that H_3**:** Normative mechanism has a significant effect on intention to engage in rainwater harvesting. The study established that, there is substantial and statistically significant connection between normative mechanisms and the intention to engage in rainwater harvesting. These outcomes are in harmony with Nzilano's (2017) study where it was observed that the use of information and communication technology contributes to the organizational efficiency of water supply utilities in Tanzania. The results of this current study are in line with a study conducted by Sahin and Manioglu (2019) who studied on water conservation through rainwater harvesting with various building forms in different climatic regions. The study determined that the gathered rainwater fulfilled the annual water requirements for toilet flushing and bathrooms. Supporting findings to this study were also those of the study by Mengistu (2021) who studied on how farmers understood rainwater harvesting technology. The study identified that the adoption of rainwater harvesting technology among farmers in Ethiopia was influenced by factors such as education, farm size, and off farm income. Based on the present study's positive significant results, contradicting results on rainwater harvesting were found in the study of Mengistu (2021) on the effects of distance to the farm land and farmers training centre who determined that there was a significant and negative effect on adoption of rainwater harvesting technology in Ethiopia. Also, contrary to previous studies and this current study, Alonso-Almeida and Rodriguez-Anton, (2020) concluded that the role of coercive pressure was functioning but not normative pressure that slows down the implementation.

5. CONCLUSION AND RECOMMENDATIONS

This study sought to investigate the effect of institutional forces on the intention to engage in rainwater harvesting in Nkasi district, Rukwa region in Tanzania. The study specifically aimed at determining the effect of coercive mechanism, mimetic mechanism and normative mechanism on intention to engage in rainwater harvesting in Nkasi district, Rukwa region in Tanzania. The findings show that the institutional forces namely coercive mechanism, mimetic mechanism and normative mechanism positively and significantly influenced the intention to engage in rainwater harvesting. Based on these findings, we conclude that coercive mechanism, mimetic mechanism and normative mechanism are predictors of the intention to engage in rainwater harvesting by the community in the studied area. With regard to these findings, this study recommends the implementation of coercive, mimetic and normative mechanisms for improving rainwater harvesting for solving the water scarcity problem in Nkasi district and Tanzania at large. To achieve this, the policy makers for instance, should make initiatives for rainwater harvesting through inclusion of conditions that make harvesting rainwater to be a must for any building and where runoffs exist. Also, the government should promote rainwater harvesting through providing facilitations that can make the community interested in rainwater harvesting projects.

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