Examining the Role of Attitudinal Factors in Shaping Fire Prevention Intentions: A Study of Response Efficacy in Public Markets of Tanzania

ABSTRACT

The need of this study was to examine the moderating effects of attitude on the relationship between response efficacy and prevention intention of fire outbreaks in public markets. This research utilized quantitative research methods, surveying 384 participants consisting of traders and market management in the Dar es Salaam Region. A simple random sampling technique was employed to select respondents from 10 markets, and data analysis was conducted using a structural equation model. Findings show that attitudes moderate the relationship between perceived response efficacies towards prevention intention of fire outbreaks in public markets. The result shows that the effects of perceived response efficacy to attitudes (CR = 0.114, P = 0.035 and SRW = 0.480) and path leading from attitudes to prevention intention on outbreaks of fire in public markets was (CR = 0.2.653, P = 0.008 and SRW = 0.931). The study recommends that building attitudes on fire prevention should be a continuous process in public market in Tanzania.

Key words: Perceived Response Efficacy, Prevention Intention of Fire Outbreaks, Attitude, Public Markets, Protection Motivation Theory

1. INTRODUCTION

Market fire outbreaks have become a prevalent concern in both developed and developing nations (Hatmoko & Larassati, 2021; Oneugubu *et al.,* 2021). This trend illustrates a continual increase in fire outbreaks over time (Bushesha and Ndibalema, 2017; William, 2022). For instance, Nigeria faced 39 market fires from 2012 to 2013, resulting in significant losses for traders in terms of properties and capital (Popoola *et al.,* 2016). Between 2015 and 2018, the country experienced four more market fire incidents (Hatmoko and Larassati, 2021). Additionally, Uganda has grappled with nine market fire cases from 2010 to 2022 (VOA, 2011; Daily Monitor, 2021; URN, 2022; The Independent, 2022), while Kenya recorded 12 market fire incidents from 2015 to 2022 (Citizen digital, 2022; Daily Nation, 2022; BBC News, 2018; Hilary *et al.,* 2020; NTV, 2016). In Tanzania alone, there were 28 incidents of market fire threats from 2010 to 2022 (URT, 2022; Mwidege & Rogath, 2014; Hilary *et al.,* 2020; The Citizen, 2020; The Citizen, 2021; The Citizen, 2022; The Citizen, 2023).

Based on the aforementioned evidences, it is evident that fire outbreaks in public markets pose a threat to traders, considering that public markets serve as a primary source of income for many individuals. Various studies have indicated that factors derived from the Protection Motivation Theory (PMT) exhibit robust predictive power in anticipating intentions for preventive measures concerning fire-related disasters, specifically wildfires, residential fires, and bushfires (Kinateder *et al.,* 2014; Martin *et al.,* 2007; Karemaker *et al.,* 2021; Jansen *et al.,* 2020). Jansen *et al.'s* (2020) study discovered that vulnerability predicts prevention intention, while severity and self-efficacy exhibit a weak relationship with prevention intention. However, these findings do not specifically address public markets in Tanzania, particularly in the Dar es Salaam region.

The incidence of fire outbreaks in public markets in Tanzania is on the rise. Nevertheless, the Tanzanian government has undertaken various initiatives to mitigate the impact of fire outbreaks by implementing laws and regulations aimed at enhancing fire safety (URT, 2007). The Fire and Rescue Force (FRF) carries out inspections, training, fire awareness campaigns, and initiatives such as "NINACHO NAJUA KUKITUMIA" to mitigate the occurrence of fire outbreaks (URT, 2017; ITV, 2020). There is a belief that public awareness and preparedness campaigns have improved in recent years (South Australia Country Fire Service, 2015; Jehanzeb *et al.,* 2021). The problem of fire outbreaks has led to 28 reported incidents in public markets from 2010 to 2022, resulting in significant losses for traders in terms of property,

financial capital, injuries, and even fatalities (URT, 2022: Mwidege and Rogath, 2014; Nyankuru *et al.,* 2017; Hilary *et al.,* 2020). Therefore, the researcher will employ PMT as the primary theory for this study, as it has demonstrated robustness in predicting prevention intentions towards fire-related hazards, including wildfires, residential fires, and bushfires (Kinateder *et al.,* 2014; Martin *et al.,* 2009, Martin *et al.,* 2007; Karemaker *et al.,* 2021; Jansen *et al.,* 2020), and self-efficacy has predicted prevention in market fires (Fitria, 2020). Notably, there have been no studies conducted in Tanzania on the effects of perceived vulnerability on the prevention intention of fire outbreaks in public markets. Therefore, this study aims to investigate the effect of perceived vulnerability on enhancing the prevention intention of fire outbreaks in public markets.

2. LITERATURE REVIEW

2.1. Theoretical Literature Review

2.1.1. The Protection Motivation Theory (PMT)

This study is governed by the Protection Motivation Theory (PMT). The theory was introduced by Rogers in 1975 and has found extensive application in predicting behaviors aimed at mitigating risks (Rogers, 1975; Sommestad *et al.,* 2015). PMT suggests that engaging in protective behaviour depends on an individual's motivation for self-defense (Ezati Rad *et al.,* 2021). The theory comprises two appraisals of behaviour change: Threat appraisal, which involves an individual's belief in the severity of a threat (perceived severity) and the estimation of the likelihood of being affected by the problem (perceived vulnerability); and Coping appraisal, which includes Response Efficacy (RE) and Self-efficacy (SE). However, PMT has some weaknesses. It does not account for a comprehensive list of environmental factors, cognitive processes, and moderators that could influence motivation for protection (Rogers, 1975; Marikyan and Papagiannidis, 2022). Additionally, PMT assumes that individuals are rational in decision-making, overlooking the fact that people can be irrational at times (Marikyan and Papagiannidis, 2022). Ezati Rad *et al.* (2021) specifically found that rewards and cost responses inhibit protective (mitigating) behavior. However, in this context, perceived response efficacy from this theory is borrowed to explore its effects under the moderating effects of attitudes on enhancing the prevention intention of fire outbreaks in public markets. The study was done because there is limited literature on the application of PMT in facilitating prevention intention in the context of fire outbreaks in public markets.

2.2. Empirical Literature Review

2.2.1 Perceived Response Efficacy and Prevention intention of Fire

Response efficacy (RE) is one's belief that the recommended behavior will effectively reduce the danger (Rogers, 1983). RE improves the likelihood for individuals to adopt the recommended behavior such as prevention measures against fire disasters (Beatson & McLennan, 2011; Concu *et al.,* 2021; Concu *et al.,* 2023). It is evidenced that, in different risk areas RE have shown positive effects on preventive measures behavior (Bubeck *et al.,* 2012; Gumasing *et al*., 2022). Liu and Jiao (2017) found that coping appraisal i.e. response efficacy and self-efficacy improves fire risk reduction. Furthermore, it has been shown that, information increases perceived RE of preparedness measures (Liu and Jiao, 2017). However, Dupuis (2019) found that RE is not statistically significant to prevention measures. Liu and Jiao (2017) employed path analysis using partial least square (PLS) for analysis. Apart from that this study was done in China.

Lin and Bautista (2016) found that response efficacy showed a mediation effect on self-efficacy and intention to protection measures in the time of haze. However, in this study Lin and Bautista (2016) revealed that affective attitude on haze has substantial predictive power to behavioral intention as compared to RE. On the other hand, trust in a new media showed a positive effect to young Singaporean on their intention to take preventive measures (Lin & Bautista, 2016). The study was conducted in Singapore, mediated by RE and affective attitude and employed PLS as statistical method for data analysis. Eendebak (2019) found that RE is positively related to self-reliant behavior against fire to older adults. On other hand the study was analyzed by utilizing hierarchical multiple regression. The study was done in Netherlands.

2.2.2 Moderating Effect of Attitude

McCaffrey *et al.* (2018) found that efficacy of acting and attitudes to prevent are key factors to fire disaster prevention. Therefore, attitude is a key factor to prevention intention. Musigapong and Phanprasit (2013) found that attitude play an important role on fire prevention measures. Siagel *et al.* (2019) found that, there is an association between attitudes and vested interest (VI) by unfolding main effects for attitude and VI on substance use intention. However, attitude showed the weakest association with prevention substance use intention (Siagel *et al.,* 2019). The study by Siagel and his colleague was researching the prevention intention on substance use while this study aims at studying the intention to prevent fire outbreaks on public markets (FOPM).

The study by Aning-Agyei (2018) found that market fires caused a negative psychological and economic impairment to the traders. Business collapsed because most of their belonging were destroyed forcing them to huge debt (Aning-Agyei, 2018). According to Aning-Agyei (2018) posited that PMT does not reveal how attitudes might impact in the process of evaluating threat and coping mechanisms. Thus, attitude of individuals may motivate their perception on forthcoming threats, severity, self-efficacy and the adoption of prevention intention towards FOPM. The study was pragmatist, mixed method and was done in Ghana. Therefore, this knowledge gap will be filled by this study.

In this study attitude is moderator which will help in understanding whether it has the strength to increase or decrease the relationship on the predictive power of factors of fire outbreaks in public markets and prevention intention. In this regard the gap exists between independent constructs (factors) from PMT and dependent variable (prevention intention) of fire outbreaks in public markets (FOPM). Therefore, attitude was expected to have effect on predictive power to prevention intention of fire outbreak. Therefore, the following hypotheses are developed: ***Null H01:*** *Attitude positively does not moderate the relationship between perceived response efficacy towards prevention intention of fire outbreaks in public markets;* ***Alternative Ha1:*** *Attitude positively moderates the relationship between perceived response efficacy towards prevention intention of fire outbreaks in public markets.*

3. Methodology

This study adopted the positivism research philosophy, which upholds belief in objective truth, facts, and laws, supported by hypotheses to draw conclusions (Mohajan, 2020). Positivism aims to identify, measure, and evaluate any phenomena, providing a rational explanation to initiate causal relationships between variables of the subject, in line with the theories guiding the study, and to generalize findings from structured observed reality (Collins and Hussey, 2009; Cooper and Shindler, 2014; Ragab and Arisha, 2018). A deductive approach was employed in this study because of its quantitative and positivistic nature, demonstrating the relationship between theory and reality. An explanatory research design was used to gain a deeper understanding and to build, elaborate, extend, or test hypotheses (Rahi, 2017). The study was conducted in the Dar Es Salaam region, encompassing traders in public markets as the population of interest. This region was chosen due to the high frequency of fire outbreaks in public markets, with Dar Es Salaam experiencing 16 market fire incidents. The sample size for this study was determined using the formula by Cochran (1977), allowing for a large sample size to reduce sampling error in social research, where a 5% margin of error is deemed acceptable (Taherdoost, 2020). However, it is essential to note that a large sample size does not necessarily ensure precision (Bryman and Bell, 2003). Therefore, the sample size for this study was:

$$N = \frac{t^2 \times (p)\,(q)}{d^2} = \frac{1.96^2 \times (.5)\,(.5)}{.05^2}$$

$$= 384$$

Where N= Sample size, t= value for selected alpha level of .025 in each tail=1.96 (alpha level of .05 indicate the level of risk the researcher is willing to take that the true margin of error may exceed the acceptable margin error), (p) (q) = estimate of variance = .25 and d= error a researcher is willing to accept = .05. Sample selection from the population is regularly used in the view that resources are limited to cover the whole population (Saunders *et al.,* 2012). The

author employed probability sampling technique which included multistage and random sampling to get representative sample for generalization of the findings (Acharya *et al.,* 2013). The sampling frame obtained from the population of traders in the 61 available public markets in Dar Es Salaam with a population of 31,500 traders. The multistage cluster sampling employed to get representative sample of the study (i.e., Ilala, Kinondoni, Temeke, Ubungo and Kigamboni). These trade officers helped the researcher to get the necessary information of the traders in the public markets. In this study the researcher collected primary data through self-administered questionnaire method. The use of questionnaires helped the researcher to minimize cost in the processes of the study. Data entered in IBM Statistical Package for Social Scientists (IBM SPSS) for analysis. Structural equation modeling (SEM) used was to analyse by utilizing IBM AMOS software. SEM was chosen because it is a comprehensive statistical approach for the relationship among observed and latent variables that is shown by multiple measures (Hair *et al.,* 2010; *Hair et al.,* 2016). Therefore, SEM took a confirmatory approach that specified inter-variable relationships, whereas other multivariate technique cannot handle it. The author observed all ethical issues from the first stage up to the last stage of the study. Issues pertained to voluntary participation of respondents, anonymity and confidentiality was highly observed as recommended by Saunders *et al.,* (2019). On the other hand, the researcher was not be associated with data fabrications and falsification in the entire time of the study. Furthermore, the author made proper citation of the published and non-published documents. Apart from that, acknowledgement to other researchers' work was importantly done to avoid plagiarism. Finally, the researcher requested an official permission letter from the respective municipals so as to give chance to access the traders in the public markets. All these procedures insured the issues of validity and reliability of the study.

4. RESULTS AND DISCUSSION

4.1. Measurement Models

4.1.1 Measurement Model for Responsive Efficacy (RE)

Response efficacy was run based on the accepted item from exploratory factor analysis namely RE5, RE6, RE2, and RE3. After initial specification of the model, maximum a likelihood estimate was run using IBM AMOS 20 which created the following model fit indices: CMIN/DF= 0.355, GFI=0.999, AGFI=0.995, CIF = 1.00 and RMSEA is 0.00. These shows adequate model fit as suggested by Byrne (2013) and Schumacker and Lomax (2004) as indicated in Table 1 from these findings all four variables was accepted in confirmatory factor analysis after initial run. These factors include RE5, RE6, RE2, and RE3 as expressed in figure 1.

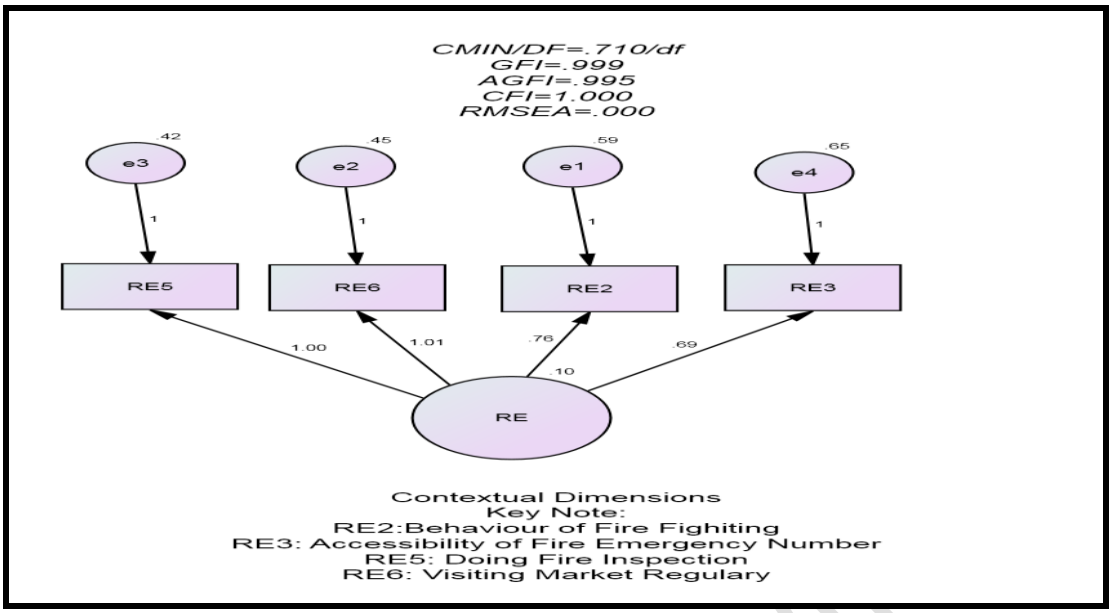

Figure 1: RE Mesurement Model

Source: Researcher (2023)

4.1.2 Measurement Model for the Prevention Intention (PI)

In the confirmatory factor analysis, the measurement model for assessing prevention intention included the observed variables PI4, PI3, PI2, and PI1. The confirmatory factor analysis was conducted using IBM Amos 20 with maximum likelihood estimation. The results following the analysis indicated the following findings: CMIN/df = 2.430, GFI = 0.993, AGFI = 0.967, CFI = 0.965, and RMSEA = 0.065, as illustrated in Figure 2.

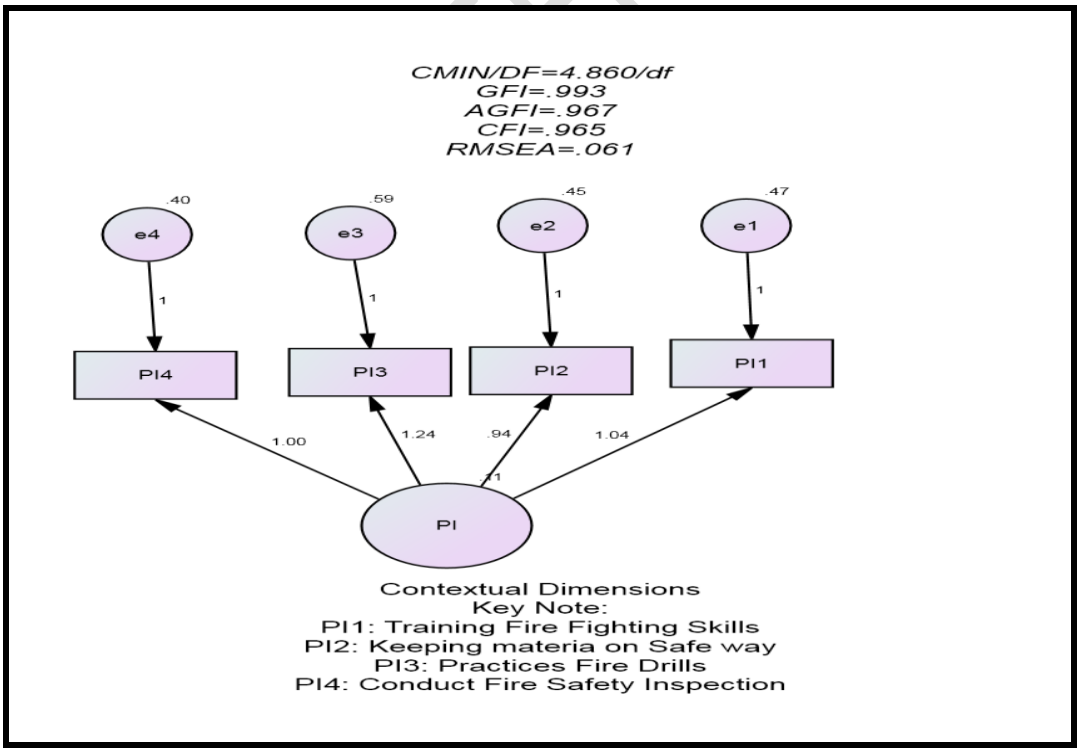

Figure 2: The PI Measurement Model

Source: Researcher (2023)

4.1.3 Measurement Model for Attitude (AT)

Initially, confirmatory factor analysis was run using IBM Amos 20 to test and confirm the measurement model for attitude base on the following observed variable namely AT2, AT1, AT3. The following result was found after running the confirmatory factor analysis: CMIN/df = 2.001, GFI= 0.997, AGIF = 0.979, CFI = 0.957 and RMSEA= 0.051. These findings indicate that attitude fitted well according to the criteria of model fitness. According to Hoe (2008) the model fitness model fitness was required to have CFI greater than 0.90 which indicates good fit, RMSEA should be less than 0.08 indicates acceptable fit, and commonly used χ2 statistic (χ2/ df ratio of 3 or less. Based on these findings no further running of the model was done as shown in Figure 3.

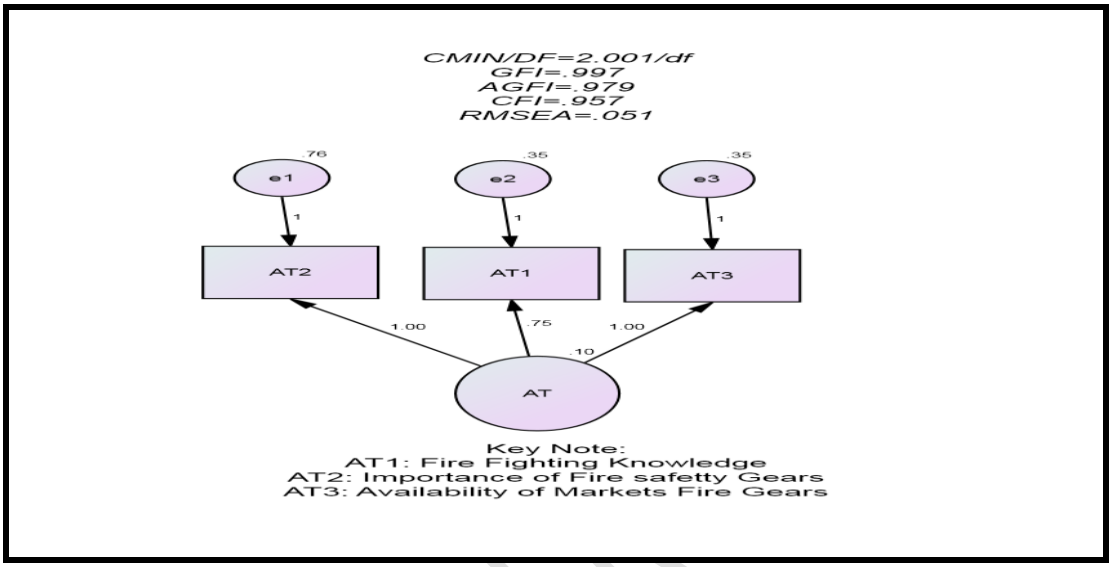

Figure 3: Attitude Measurement Model

Source: Researcher (2018)

4.2. Summary of Measurement Model on CFA

Summary of the measurement model all variables under the study are presented in confirmatory stage. The following result was found after running the confirmatory factor analysis. Some were fitted during the initial run and some were fitted after second run. The minimum result which required as per threshold level as argued by Hoe (2008) that the model fitness was required to have CFI greater than 0.90 which indicates good fit, RMSEA should be less than 0.08 indicates acceptable fit, and commonly used χ2 statistic (χ2/ df ratio of 3 or less. From this condition the accepted result as expressed in Table 1.

Table 1 Summary of Measurement Model on CFA

Items	Initial Stage of CFA Indicating Unsatisfactory Measurement Model Fit					Remarks
	CMID/Df	GFI	AGFI	CFI	RMSEA	
RE	0.355	0.999	0.995	1.00	0.00	Accepted in 1st run
PI	2.430	0.993	0.967	0.965	0.065	Accepted in 1st run
AT	2.00	0.997	0.979	0.957	0.051	Accepted in 1st run

Source: Researcher (2023)

4.3. Testing Moderation Role of Attitudes on Response Efficacy and PI of Fire

In order to test this hypothesis, descriptive statistical analysis was run first to profile the influence of each attribute of perceived response efficacy on prevention intention on outbreaks of fire in public markets. These attributes of perceived response efficacy which influence the and prevention intention on outbreaks of fire in public markets were: RE2: Behavior of Fire

Fighting; RE3: Accessibility of; Fire Emergency Number; RE5: Doing Fire Inspection; RE6: Visiting Market Regularly as illustrated in Table 2. Among the four variable of perceived response efficacy RE6 had high effect on prevention intention on outbreaks of fire in public markets. This RE6 yields a high mean value of 5.30993 with median 5.00 followed by RE5 which yield a mean value of 5.2760 with median 5.00; RE3 had a mean value of 5.1927 and median of 5 and the and the least is RE2 with mean value of 5.1823again with median 5.00. The greater the mean indicates high stimulus on prevention intention on outbreaks of fire in public markets.

Table 2: Effects of Response Efficacy on Enhancing PI of Fire

Variable	RE2	RE3	RE5	RE6
N	384	384	384	384
Mean	5.1823	5.1927	5.2760	5.3099
Std. Error of Mean	.04100	.04423	.03657	.03816
Median	5.0000	5.0000	5.0000	5.0000
Mode	5.00	5.00	5.00	5.00
Std. Deviation	.80345	.86676	.71671	.74771

Source: Researcher (2023)

On view of Attitude, descriptive statistical analysis was run first to profile the influence of the three attributes of attitudes on predicting its Prevention Intention of Fire Outbreaks in Public Markets. The attitudes attributes were as follows: AT1: Fire Fighting Knowledge; AT2: Importance of Fire Safety Gears; AT3: Availability of Markets Fire Gears. Among the three measurements of attitudes in Table 2, AT3 had high impacts on moderation role with mean value of 5.6172 and median of 5.00, followed by AT3 which had mean value of 5.4271and median of 5.00 and the last was AT1 with mean value of 5.2656 and median of 5. The higher mean the mean value found indicates the higher the mediation role as illustrated in Table 3.

Table 3: Direct relationship between Attitude and Prevention Intention

Variable	AT1	AT2	AT3
N	384	384	384
Mean	5.2656	5.6172	5.4271
Median	5.0000	5.0000	5.0000
Mode	5.00	5.00	5.00
Std. Deviation	.63597	.93486	.66615
Variance	.404	.874	.444

Source: Researcher, (2023)

4.4. Testing Moderation Role of Attitudes on Response Efficacy and PI of Fire

To confirm the moderating effects of attitude on the relationship between Response Efficacy towards prevention intention of fire outbreaks in public markets the study hypothesized the following: **Null H01**: Attitude positively does not moderate the relationship between individual response efficacy towards fire outbreaks on public markets and prevention intention of fire outbreaks in public markets. **Alternative Ha1**: Attitude positively moderates the relationship between individual response efficacy towards fire outbreaks on public markets and prevention intention of fire outbreaks in public markets. In order to test this hypothesis, analysis was conducted using structural equation model to determine the significant relationship between perceived response efficacy and prevention intention on outbreaks of fire in public markets. Through SEM standardized regression weight was conducted to determine the relationship of variables as shown in Table 4.

Table 4 Regression Weights and Standardize Regression Weight

Path			Estimate	S.E.	C.R.	P	SRW	Remarks
AT	**<---**	**RE**	**.297**	**.141**	**2.114**	**.035**	**.480**	Accepted
PI	**<---**	**AT**	**1.434**	**.541**	**2.653**	**.008**	**.931**	Accepted
RE3	<---	RE	1.000				.499	Accepted
RE2	<---	RE	.497	.190	2.618	.009	.268	Accepted
RE6	<---	RE	.539	.192	2.809	.005	.312	Accepted
AT1	<---	AT	1.000				.420	Accepted
AT3	<---	AT	.480	.216	2.223	.026	.193	Not Accepted
AT2	<---	AT	1.050	.348	3.018	.003	.300	Accepted
	Conclusion: RE to AT = (CR = 0.114, P = 0.035 and SRW = 0.480) AT to PI = (CR = 0.2.653, P = 0.008 and SRW = 0.931							

Source: Researcher, (2023)

Path leading from RE to AT and attitudes to prevention intention on outbreaks of fire in public markets in Table 4 used to examine the moderating effects of attitudes. The result shows that the effects of RE to AT was *(CR = 0.114, P = 0.035 and SRW = 0.480)* indicating that severity ha significant effects on attitudes towards. The path leading from attitudes to prevention intention on outbreaks of fire in public markets in Table 4. had the following result (CR = 0.2.653, P = 0.008 and SRW = 0.931). The result indicates that attitudes have positive and significant effects on prevention intention on outbreaks of fire in public markets. According to Hoe, (2008) who argued that a standardized path coefficient (γ) should be at least 0.2 in order to be considered significant and meaningful for discussion for all path on moderation effects consideration. Likewise, Hox and Bechger (2014) argued that a relationship, which has yielded a critical ration greater than 1.96 and p-value less than 0.05 is considered significant.

Therefore, for the matter of moderation attitudes, all two paths were required to be significant (RE to AT and AT to PI). Since the two-path had positive and significant result, the study concludes that attitudes do moderate the relationship between RE and PI as suggested in hypothesis.

The result indicates that attitudes have positive and significant effects on prevention intention on outbreaks of fire in public markets. This study finds that the attitudes increase effectiveness response efficacy thereby enabling mutual responsiveness to provide support during fire incidence. Becoming familiarized with the knowledge requires the appropriate frequency of training and enhancement of the staff's awareness of fire prevention and emergency response, which is the most important key to learning effectiveness. Based on the findings in the current study confirms that attitudes moderates' relationship between individual response efficacy and prevention intention on outbreaks of fire in public markets.

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

Findings show that attitudes moderate the relationship between perceived response efficacies towards prevention intention of fire outbreaks in public markets. The result shows that the effects of perceived response efficacy to attitudes (CR = 0.114, P = 0.035 and SRW = 0.480) and path leading from attitudes to prevention intention on outbreaks of fire in public markets was (CR = 0.2.653, P = 0.008 and SRW = 0.931). Due to these findings the Null hypothesis which states that attitude positively does not moderate the relationship between perceived response efficacy towards prevention intention of fire outbreaks in public markets was rejected while the alternative hypothesis which states that attitude positively moderates the relationship between perceived response efficacy towards prevention intention of fire outbreaks in public markets was accepted. Thus, it is important to build attitudes for traders in public markets towards prevention intention of fire outbreak in Tanzania.

5.2. Recommendation

On the other side, this study conducted in public market, but it can be conducted at private markets such as shopping mall to know the effects of attitudes on response efficacy and prevention intention. The study used attitudes as a moderator and findings shows result, thus building attitudes on fire prevention are crucial.

REFERENCES

Acharya, A. S., Prakash, A., Saxena, P., & Nigam, A. (2013). Sampling: Why and how of it. *Indian Journal of Medical Specialties*, *4*(2), 330-333

Aning-Agyei, P. G. (2018). *Managing post disaster recovery of market fire victims in Ghana* (Doctoral dissertation, University of Cape Coast).

BBC News (2018). Kenya fire: Several dead in Nairobi market. https://www.bbc.com/news/world-africa-44640504. Accessed on 12th January 2023.

Beatson, R., & McLennan, J. (2011). What applied social psychology theories might contribute to community bushfire safety research after Victoria's "Black Saturday". *Australian Psychologist*, *46*(3), 171-182.

Bubeck, P., Botzen, W. J. W., & Aerts, J. C. (2012). A review of risk perceptions and other factors that influence flood mitigation behavior. *Risk Analysis: An International Journal*, *32*(9), 1481-1495.

Bushesha, M. S., &Ndibalema, A. (2017). Towards sustainable disaster management: An assessment of levels of community awareness on fire outbreaks and safety among public universities in Tanzania. *Huria Journal, Vol. 24, No 1, (2017).*

Citizen digital (2022). More pain for Gikomba traders after another fire incident. https://www.citizen.digital/news/more-pain-for-gikomba-traders-after-another-fire-incident-n309938. Accessed on 11th January 2023.

Collis, J., & Hussey, R. (2009). *Business research: A practical guide for undergraduate and postgraduate students*. Palgrave Macmillan.

Concu, G. B., Detotto, C., & Vannini, M. (2023). *Drivers of intentions and drivers of actions: willingness to participate versus actual participation in fire management in Sardinia, Italy*. Arkadia.

Concu, G. B., Detotto, C., &Vannini, M. (2021). Drivers of intentions and drivers of actions: willingness to participate versus actual participation in fire management in Sardinia, Italy.

Cooper, D. R., & Schindler, P. (2014). *Business research methods*. McGraw-Hill.

Daily Monitor (2021). Vendors count losses as fire guts Masindi Central market. https://www.monitor.co.ug/uganda/news/national/vendors-count-losses-as-fire-guts-masindi-central-market-3518292. Accessed on 13th July 2023

Daily Nation (2022). Isiolo traders suffer losses as fire razes their business. https://nation.africa/kenya/counties/isiolo/isiolo-traders-suffer-losses-as-fire-razes-their-businesses-3923820. Accessed on 13th January 2023

Dupuis, M. J. (2019). Going Back for that One Last Thing in the House on Fire: How Fear, Attentiveness, Sadness, Joviality, and Other Lower Order Dimensions of Affect Influence Our Security and Privacy Behavior. In *2019 IEEE SmartWorld, Ubiquitous Intelligence & Computing, Advanced & Trusted Computing, Scalable Computing & Communications, Cloud &*

Big Data Computing, Internet of People and Smart City Innovation (SmartWorld/SCALCOM/UIC/ATC/CBDCom/IOP/SCI) (pp. 1825-1833). IEEE.

Eendebak, W. A. (2019). *Fire-safety at home and self-reliance of older adults* (Master's thesis, University of Twente).

Ezati Rad, R., Mohseni, S., Kamalzadeh Takhti, H., Hassani Azad, M., Shahabi, N., Aghamolaei, T., & Norozian, F. (2021). Application of the protection motivation theory for predicting COVID-19 preventive behaviors in Hormozgan, Iran: a cross-sectional study. *BMC Public Health*, *21*(1), 1-11.

Fitria, D., Mustikasari, M., &Panjaitan, R. U. (2020). The psychological capital and anxiety felt by post-market fire disaster victims. *JurnalNers*, *15*(1), 1-6.

Gumasing, M. J. J., Prasetyo, Y. T., Ong, A. K. S., & Nadlifatin, R. (2022). Determination of factors affecting the response efficacy of Filipinos under Typhoon Conson 2021 (Jolina): An extended protection motivation theory approach. *International Journal of Disaster Risk Reduction*, *70*, 102759.

Hair, J. F., Babin, J. B., Anderson, R. E. & Black, C. W. (2010). *Multivariate data analysis.* (7th edition). Upper Saddle River. Pearson Prentice Hall.

Hair, J. F., Celsi, M., Money, A., Samoul, P. & Page, M. (2016). *Essentials of business research methods.* (3rd edition). New York: Routledge.

Hilary, R. Philemon, R. Geofrey, A & Sam, A. (2020). Early Detection System in Tanzania Markets. *Eng. Proc.* 2020, 2, 50.

ITV (2020). NINACHO NAJUA KUKIYUMIA. https://www.itv.co.tz/videos/ninacho-na-ninajua-kukitumia. Accessed on 3rd January 2023.

Jansen, P. C., Snijders, C. C., &Willemsen, M. C. (2020). Playing with fire. Understanding how experiencing a fire in an immersive virtual environment affects prevention behavior. *PloS one*, *15*(3), e0229197.3.

Jehanzeb, M., Ilyas, U., & Ahmad, S. R. (2021) Assessment of fire safety management of high-rise buildings in Lahore, Pakistan.

Karemaker, M., Gill, A., Hagen, R. R., van Schie, C. H., Boersma, K., &Ruiter, R. A. (2021). Elderly about home fire safety: A qualitative study into home fire safety knowledge and behaviour. *Fire Safety Journal*, *124*, 103391.

Kinateder, M. T., Kiligowski, E. D., Reneke, P. A., & Peacock, R. D. (2014). A review of risk perception in building fire evacuation NIST. *Technical note1840. Retrieved 2021December, 16 from*

Liu, T., & Jiao, H. (2017). Insights into the effects of cognitive factors and risk attitudes on fire risk mitigation behavior. *Comput Econ.* Doi.10.1007/s10614-017-9727-z

Marikyan, D. & Papagiannidis, S. (2022) Protection Motivation Theory: A review. In S. Papagiannidis (Ed), TheoryHub Book. http://open.ncl.ac.uk

Marikyan, D., Papagiannidis, S., Rana, O. F., & Ranjan, R. (2022). Blockchain adoption: a study of cognitive factors underpinning decision making. *Computers in Human Behavior*, *131*, 107207.

Martin, I. M., Bender, H. W., &Raish, C. (2007b). What motivate individuals to protect themselves from risks: The case of wild land fires. *Risk Analysis, 27(4), 887-900*

Martin, I., Bender, H. W., &Raish, C. (2007a). Making the decision to mitigate risk. In W. E. Martin, C. Raish& B. Kent (Eds), Wildfire risk: *Human Perceptions and Management Implications (pp.117-141). PFF Press.*

Martin, W. E., Martin, I. M., & Kent, B. (2009). The role of risk perceptions in the risk mitigation process: the case of wildfire in high risk communities. *Journal of environmental management*, *91*(2), 489-498.

Mohajan, H. K. (2020). Quantitative research: A successful investigation in natural and social sciences. *Journal of Economic Development, Environment and People*, *9*(4), 50-79.

Musigapong, P., & Phanprasit, W. (2013). Knowledge, attitudes and practices relating to fire prevention among students in the elementary schools of Muang Nakhon Ratchasima, Thailand. *Journal of Educational and Social Research*, *3*(7), 288.

Mwidege, A. M. and Rogath, H. (2014). Social-Economic Effects of Market Fires Outbreaks: An Evidence of Mbeya City Tanzania. *International Journal of Research in Social Sciences, Volume 4, Issue 3, ISSN: 2249-2496.*

NTV (2016). Breaking: Wote market in Makueni County on fire. Cause still unknown. https://twitter.com/ntvkenya/status/777520352759021572. Accessed on 12th January 2023.

Nyankuru O., Omuterema. S., $ Nyandi. S. (2017): Evaluating the effectiveness of fire safety training on occupants' response to fire in selected public buildings in Nairobi County, *International Journal of Sciences: Basic and Applied Research (IJSBAR): 36(5)*: 166-173

Popoola, A.,Adekalu, O. B., Audu, A. A., Adeleye, B. M., &Jiyah, F. (2016). Analysis of Causes and Characteristics of Market Fires in Lagos State, Nigeria.

Ragab, M. A., &Arisha, A. (2018). Research methodology in business: A starter's guide. *Management and organizational studies*, *5*(1), 1-14.

Rahi, S. (2017). Research design and methods: A systematic review of research paradigms, sampling issues and instruments development. *International Journal of Economics & Management Sciences*, *6*(2), 1-5.

Rogers, I. W. (1975). A protection motivation theory of fear appeals and attitude change: *J Psycol. 1975, 91, 93-114 (Cross Ref).*

Rogers, R. W. (1983). Cognitive and psychological process in fear appeals and attitude change. A revised theory of protection motivation. In sourcebook; Cassiopo B. L., Pelly, R.E. EdsGuidford Press: London UK 1983.

Saunders, M. N. K., Lewis. P. & Thornhill, A. (2019). Research methods for business students. (8th edition). Pearson Education Limited.

Saunders, M., Lewis, P. & Thornhill, A. (2012). *Research methods for business students.* (6th edition). England: Harlow Pearson Educational Limit

Taherdoost, H. (2020). Different Types of Data Analysis; Data Analysis Methods and Techniques in Research Projects. *International Journal of Academic Research in Management (IJARM)*, *9*(1), 1-9.

The Citizen (2021). Fire burns down Dar's iconic Kariakoo market. https://www.thecitizen.co.tz/tanzania/news/national/fire-burns-down-dar-s-iconic-kariakoo-market--3468656. Accessed on 22nd may 2023.

The Citizen (2022). Traders counting losses after Karume market is burnt down. https://www.thecitizen.co.tz/tanzania/news/national/traders-counting-losses-after-karume-market-is-burnt-down-3684150. Accessed on 10th October 2023.

The Citizen (2021). Mbagala Market gutted by dawn fire. https://www.thecitizen.co.tz/tanzania/news/national/mbagala-market-gutted-by-dawn-fire--2625570. Accessed on 22nd may 2023

The Citizen (2023). Let us learn from disasters. https://www.thecitizen.co.tz/tanzania/magazines/let-us-always-learn-from-disasters-4397712. Accessed on 9th December 2023.

The Citizen (2020). 5,000 trades in limbo after fire raze market. https://www.thecitizen.co.tz/tanzania/news/national/5-000-traders-in-limbo-after-fire-razes-market-2706774. Accessed on 23rd September, 2021.

The Independent (2022). Traders loses millions as fire guts Elegu market. https://www.independent.co.ug/traders-loses-millions-as-fire-guts-elegu-market/. Accessed on 11th January 2023.

URT (2022). Fire report incidence. The Fire and Rescue Force- Tanzania

VOA (2011). Fire ravages Uganda's largest market. https://www.voanews.com/a/fire-ravages-ugandas-largest-market-126478868/143100.html. Accessed on 11th January 2023.

William, M. L. (2022). Assessment of markets fire emergency preparedness in Tanzania: A case study of 6 markets in Ilala City Council-Dar Es salaam. African Journal of Business and Management (AJBUMA), 7(2), 68-92.