

Actuarial Risk Management Practices, Underwriting Risk and Performance of P & C Insurance Firms in East Africa

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Abstract

The purpose of the study was to establish the intervening effect of underwriting risk (loss ratio) on the relationship between actuarial risk management practices (ARMP) and performance of property and casualty (P & C) insurance underwriters in East Africa. Findings from primary and secondary data gathered from 82 general insurers from Kenya, Uganda and Tanzania show that there is a significant positive relationship between ARMP and non-financial performance and that loss ratio significantly mediates this relationship. The relationship with financial performance was however insignificant. The implication is that P & C insurance firms should keenly watch their loss ratios in order to improve their non-financial performance by correctly underwriting, pricing and reinsuring their risks in order to influence their claims ratio and also have a strategic claims management program in place that controls costs and leads to better firm reputation, which in turn will have ripple effect in increasing business volumes and performance. It is recommended that further empirical studies be carried out to establish other factors that especially influence financial performance.

Keywords: Actuarial Risk Management Practices, Loss Ratio, Firm Performance, Property & Casualty Insurance Firms

Introduction

Insurers bear actuarial risk which stems from the very nature of insurance business. Actuarial risk includes: under-pricing risk which occurs when premiums are too low to cover claims and insurer's expenses (Santomero and Babbel, 1997); underwriting losses (premiums less claims) risk, where actual losses may be in excess of those projected due to faulty assumptions on the frequency and severity of losses; reinsurance risk, which occurs when there is insufficient or inappropriate reinsurance coverage (Grondin *et al.*, 2001; Fernández, 2009) and, catastrophe risk like major earthquakes, floods or hurricanes, severe market disruption, and severe mortality affecting the financial and economic stability of countries (Udaibir *et al.*, 2003). The various measures employed by insurers to deal with actuarial risk include a combination of a robust underwriting process, pricing that is sufficient for profitability, correctly evaluated and fair claims management that is in line with pricing and a reinsurance process that is entirely appropriate for the portfolio (Ashby *et al.*, 2013). A structured risk management approach is therefore essential for achievement of better organizational results (Babbel & Santomero, 1996).

Underwriting risk refers to the chance of loss on a risk evaluation activity whereby policy premiums do not adequately cover claims. It is the ratio of net benefits (claims) paid to net premiums earned (i.e. loss ratio) (Adams & Buckle, 2000). For P & C insurers, the loss ratio denotes the quality of business underwritten and is an important indicator of whether the pricing policy of the firm is correct. Claims paid represent all costs related to payment to claimants during the period, irrespective of when the loss occurred. Underwriting risk can take the form of underestimated liabilities from unpaid (expired) past policies or underpriced current business. It could arise from incorrect or inaccurate underwriting, wrong or inaccurate assumptions on the frequency and severity of losses or from factors wholly beyond the underwriter's control. It could also be due to much of the total written premiums remaining outstanding for long periods and turns out to be uncollectible (Shiu, 2004). While it is not realistic to eliminate it completely, underwriting risk is at the centre of key risk management efforts of an insurer and mitigation of this risk is therefore very vital for the long term profitability of the firm (Yusuf & Dansu, 2012).

Firm performance is measured by assessing actual results against intended outputs and may be looked at from financial as well as non-financial perspectives (Kaplan and Norton (1996). The indicators of financial performance include overall profitability as represented by various ratios such as return on assets, return on equity, return on investment, return on sales, and profit margin (Almajali *et al.*, 2012; Ross *et al.*, 2009; Zender, 2004). Profitability for insurers is the excess of revenues from underwriting

activities over the costs incurred in generating them. Non-financial parameters some of which may be difficult to quantify objectively include operational performance (efficiency, new product introduction and innovation, market share and product or service quality) and overall effectiveness including reputation, survival, achievement of goals, and perceived overall performance relative to competitors (Lewin & Minton, 1986). In assessing performance, there is need therefore to consider both quantitative and qualitative aspects in order to achieve an acceptable degree of reliability for a measure of firm performance (Udaibir *et al.*, 2003).

Property and Casualty insurers otherwise known as Non-Life or General Insurance Companies form part of the larger insurance industry in East Africa. The Insurance sectors of the East African nations comprising Kenya, Uganda and Tanzania, face many challenges including lack of sufficient capacity in risk management skills. With an increase in the number of mergers, acquisitions and other restructuring activities of insurance companies in the region there is an opportunity to create synergies and leverage on innovation to improve their risk management practices and thus performance. (IRA, 2014; TIRA, 2014, IRA-U, 2014)

Literature Review

Actuarial risk management practices (ARMP) involve systematic handling of the risks contained in the products offered to customers through various techniques to protect against insurance risk. Underwriting involves a detailed and systematic analysis of identifying and measuring a potential insured's risk exposures in order to price the insurance in accordance with its associated risk. Actuaries use stochastic models and sophisticated regression analysis and data mining tools to take into account, severity and frequency of claims uncertainty and inflation as they all impact on premiums (Baranoff *et al.*, 2009). An insurance claim is a demand by the insured for recovery or benefit from an insurer for a loss that an insurance policy might cover (IRA-U, 2014). According to Barth and Eckles (2009), claims erode earnings and, its costs highly influence the profitability of P & C insurers. Yusuf and Dansu (2012) assert that good claims management requires courteous dealings with claimants and should result in payment of legitimate claims, accurate reserving, avoidance or reduction of protracted litigation and reduction in the insurer's expense.

Reinsurance is the transfer of a risk, wholly or partially from an insurer to a reinsurer and is one of the most important tools that cater for claims. Retention ratio (net premiums/gross premiums) is that portion of risk not passed on to the reinsurers and reflects the overall underwriting strategy of the insurer (Charumathi, 2012). Reinsurance caters for large losses by protecting against catastrophic exposures, risk concentration and the

volatility of underwriting results of the cedant (Udaibir *et al.*, 2003). Reinsurers also provide both expertise and underwriting capacity and are often systemically important to the primary insurance market (Cummins & Trainar, 2009). Berger and Udel (1993) note that disciplined observance of underwriting guidelines and execution of a comprehensive program of reinsurance are both critically essential in management of catastrophe risks.

Lax underwriting standards and poor claims management practices often lead to higher loss ratios. This in turn would lead to poorer performance and may point to a need for better underwriting and claims management policies to guard against future possible payouts leading to improved performance. The opposite effect would hold if underwriting standards were stricter (Harrington & Danzon, 1990; Barth and Eckles, 2009). A robust actuarial risk management program would often lead to an optimal retention ratio, low loss ratio and better underwriting profits or lower underwriting losses which in turn influence performance. Cummins (1991) asserts that if insurers perform their underwriting and reinsurance programs well and price the underlying risks correctly this will lower the loss ratio and increase underwriting performance, which in turn leads to better performance. According to Ahmed *et al.* (2011) loss ratio, among other factors, has a significant influence on profitability of insurance firms.

A number of related studies in this area include Hoyt *et al.* (2011) in the US who established that enterprise risk management practices are positively related to firm performance. Mwangi and Murigu (2015) in Kenya found no relationship between underwriting risk and financial performance. Cummins (1991) and Chen and Wong (2004) for Asian companies established loss ratio as one of the factors that is a significant determinant of profitability of insurance firms. Kim *et al.* (1995), using a dynamic statistical model to predict failures of U.S. P & C insurers established that several variables, including pricing, loss reserves and reinsurance recoveries were significant predictors.

Research Problem

A weak actuarial risk management program by a general insurer may lead to its failure. The insurer may resort to uncompetitive underwriting practices, price undercutting and inappropriate reinsurance arrangements in order to survive the competition. Insurers in the East African region face many challenges including lack of clear policy guidelines, liquidity issues and industry competition leading to poor underwriting practices with insurers succumbing to altering their pricing assumptions and resort to price undercutting in order to survive the competition. Very little effort is geared towards product innovation, service delivery methods and distribution

channels (IRA, 2014). There is therefore need to ensure that optimal actuarial risk management practices are adopted for enhanced performance.

A number of empirical studies have been carried out in various countries to explore the relationship between various firm specific factors and financial performance of general insurers. However, few studies have concentrated on the relationship between ARMP and firm performance, nor tested the influence of underwriting risk on this relationship. Such studies are especially lacking in the context of developing countries. This necessitates a study of this nature especially in the East African region. The study hypothesizes that there is a significance influence of underwriting risk on the relationship between ARMP and firm performance of P & C insurance firms in East Africa.

Data and Methodology

The study adopted a descriptive research design and was carried out in three East African countries' insurance industries (Kenya, Uganda and Tanzania) targeting all the 82 P & C firms as at December, 2015. Primary data on ARMP practices as well as non-financial performance was collected from the relevant managers of these companies while secondary data (net income before tax, total assets, premium growth rates and loss ratios) were obtained from the annual financial reports of the insurance companies for the period 2010-2014.

The dependent variable in this study is Financial Performance represented by ROA and premium growth rate composite score, and Non-Financial Performance represented by measures for service quality, innovation and reputation. The independent variable is ARMP represented by underwriting, pricing reinsurance & retention and claims management scores. These were derived from the likert type questions that were administered to the respondents. The variables were measured on a 5-point Likert scale whereby respondents were expected to either: "strongly agree", "agree", "be neutral", "disagree" or "strongly disagree". For each question, the response that represented the most favorable response for the practices was accorded 5 points, followed by 4, 3, 2, and 1 for the least favorable respectively. The same rating was adopted for non-financial performance viz: "excellent performance"(5), "good performance" (4), "average performance"(3), "poor performance"(2) or "very poor performance" (1) in respect of the various aspects.

Research Hypotheses

It is expected that optimal ARMP (independent variable) are associated with better firm performance in terms of return on assets and premium growth rates as well as efficiency in service, innovative practices

and better reputation. The study tested the following research hypotheses (using models in step 1 below): -

H1a: There is a significant relationship between actuarial risk management practices and financial performance of property and casualty firms in East Africa.

H1b: There is a significant relationship between actuarial risk management practices and non-financial performance of property and casualty firms in East Africa.

The relationship between the independent variable and the dependent variable is not direct, but mediated by the intervening variable of underwriting risk (loss ratio). Lax underwriting standards, inappropriate reinsurances and poor claims management practices would lead to higher loss ratios, which in turn would lead to poorer performance and may point to a need for better actuarial risk management policies for improved performance. The opposite effect would hold if underwriting standards were stricter. The effect of intervening variable on the relationship between the independent and dependent variable was tested using the following hypotheses (depicted in models in steps 2-4 below): -

H2a: Underwriting risk has a significant intervening effect on the relationship between actuarial risk management practices and financial performance of property and casualty firms in East Africa.

H2b: Underwriting risk has a significant intervening effect on the relationship between actuarial risk management practices and non-financial performance of property and casualty firms in East Africa.

The following were the linear regression models developed for this study:

Step 1

$$FP = \alpha + \beta_1 (UW) + \beta_2(PR) + \beta_3 (RR) + \beta_4(CM) + e \dots\dots\dots (i)$$

$$NFP= \alpha + \beta_1 (UW) + \beta_2(PR) + \beta_3 (RR) + \beta_4(CM) + e \dots\dots\dots (ii)$$

Step 2

$$LR= \alpha + \beta_1 (UW) + \beta_2(PR) + \beta_3 (RR) + \beta_4(CM) + e \dots\dots\dots (iii)$$

Step 3

$$FP= \alpha + \beta_1 (LR) + e \dots\dots\dots (iv)$$

$$NFP= \alpha + \beta_1 (LR)+ e \dots\dots\dots (v)$$

Step 4

$$FP = \alpha + \beta_1 (UW) + \beta_2(PR) + \beta_3 (RR) + \beta_4(CM) + \beta_5(LR) + e \dots\dots\dots (vi)$$

$$NFP= \alpha + \beta_1 (UW) + \beta_2(PR) + \beta_3 (RR) + \beta_4(CM) + \beta_5(LR) + e \dots\dots\dots (vii)$$

Where:

FP = Financial performance of insurance firms (ROA and premium growth rate composite score)

NFP = Non-Financial Performance of insurance firms (represented by quality of service, innovation and reputation composite score)

UW= Underwriting Score

PR= Pricing Score

RR= Reinsurance Score

CM= Claims Management Score

LR= Underwriting risk (Loss Ratio) score

α = Intercept, a sample-wide constant

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = coefficient for the respective determinant

Data on ARMP was analyzed using descriptive statistics of mean and standard deviation while regression analysis was employed in establishing the relationship between the variables.

Results and Discussion

57 out of the 82 firms (70%) responded on the variables of interest. Table 1 and 2 show a summary of the descriptive statistics which show that on average, the respondent firms optimally apply the underwriting, pricing, claims management and reinsurance practices. The non-financial scores details (details in appendix) results also indicate that the firms have performed well in reputation and service quality but average on innovation. The linear regression results at 95% level of confidence are shown in Tables 3-7.

Table 1: Summary of Mean Scores for actuarial Risk Management Practices

Actuarial Risk Management Practice	Mean	SD	SK	KU	CV
Underwriting Practices	3.86	.982	-.788	-.356	0.26
Pricing Practices	3.75	.994	-.993	.974	0.27
Reinsurance Practices	3.83	.775	-1.232	2.197	0.20
Claims management practices	3.98	.846	-.698	-.809	0.23

N = 57: SD is standard deviation, SK is skewness, KU is kurtosis CV is coefficient of variation

Source: Research Data

Table 2: Summary: Non-Financial Performance

Performance Indicator	Mean	SD	SK	KU	CV
Financial Performance (ROA & Premium growth Rate) (%)	16.1	18.7	3.462	15.190	1.16
Non-financial performance(Innovation, reputation, Service quality)	3.93	.838	-.773	.936	0.22

N = 57: SD is standard deviation, SK is skewness, KU is kurtosis CV is coefficient of variation

The results of standard linear regression model with financial performance as the dependent variable and ARMP as predictors are reported in Table 3 (a-c) for model summary, goodness of fit and coefficients respectively.

Table 3: Regression Results for (Hypothesis 1a): Relationship between Actuarial Risk Management Practices and Financial Performance

a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.304 ^a	.093	.002	14.025

a. Predictors: (Constant), Reinsurance & Retentions, Pricing practices, Claims management practices, Underwriting practices.

b) ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	804.103	4	201.026	1.022	.408 ^b
Residual	7868.349	40	196.709		
Total	8672.452	44			

a. Dependent Variable: Firm Performance (Financial)

b. Predictors: (Constant), Reinsurance & Retentions, Pricing practices, Claims management, Underwriting practices

c) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.982	25.865		.038	.970
Reinsurance & Retentions	.000	.000	.237	1.463	.151
1 Underwriting practices	-6.315	5.935	-.201	-1.064	.294
Pricing practices	3.090	5.074	.113	.609	.546
Claims management practices	4.210	5.598	.124	.752	.456

a. Dependent Variable: Firm Performance (Financial)

The model reveals a statistically insignificant relationship ($P > .05$) between financial performance and ARMP (underwriting, pricing, reinsurance & retentions and claims management practices) with $R^2 = .002$, $F(4,40) = 1.022$, and a standard error of 14.025. ARMP account for 0.2% of the variance in financial firm performance. The model coefficients are shown in Table 3(c) with all variables being insignificant predictors of financial firm performance. This may be due to the fact that there are several other variables that affect financial performance of an insurance firm which were not considered in this study.

The results of standard linear regression model with non-financial performance as the dependent variable and ARMP as predictor are reported in Table 4(a-c) for model summary, goodness of fit and coefficients respectively.

Table 4: Regression Results for (Hypothesis 1b): Relationship between Actuarial Risk Management Practices and Non-Financial Performance

a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.596 ^a	.355	.298	.363

a. Predictors: (Constant), Reinsurance & Retentions, Claims management practices, Underwriting practices, Pricing practices

b) ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	3.262	4	.815	6.195	.000 ^b
	Residual	5.924	45	.132		
	Total	9.185	49			

a. Dependent Variable: Firm performance (Non-Financial)

c) Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.1558	.642		2.1063	.040
	Reinsurance & Retentions	.141	.072	.071	1.961	.050
	Underwriting practices	.147	.133	.160	1.107	.274
	Pricing practices	.242	.125	.277	1.928	.031
	Claims management practices	.355	.143	.321	2.478	.017

a. Dependent Variable: Firm performance (Non-Financial)

The model reveals a statistically significant relationship ($P \leq .05$) between non-financial performance and ARMP with $R^2 = .298$, $F(4, 45) = 6.195$, and a standard error of .363. ARMP account for 29.8% of the variance in non-financial firm performance. Model coefficients in table 4(c) show pricing ($\beta = .242$, $p \leq .05$), reinsurance practices ($\beta = .141$, $p \leq .05$) and claims management ($\beta = .355$, $p \leq .05$) as significant predictors of non-financial firm performance.

The analytical model is thus specified as: $NFP = 1.558 + .242PR + .141RR + .355CM$

Step 2 above was carried out to test the mediating effect of loss ratio on the above significant relationship between ARMP and non-financial firm

performance (Hypothesis 2b). The relationship with financial performance (Hypothesis 2a) was not tested further since no significant relationship was established in the first place. The results are reflected in Table 5 (a-c)

Table 5: Regression Results for the relationship between Loss Ratio as Dependent Variable and Actuarial Risk Management Practices as Predictor Variable

a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.430 ^a	.185	.113	16.167

a. Predictors: (Constant), Underwriting practices, Pricing practices, Claims management practices, Reinsurance & Retentions

b) ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	2669.657	4	667.414	2.553	.050 ^b
Residual	11762.129	45	261.381		
Total	14431.786	49			

a. Dependent Variable: Loss ratio

b. Predictors: (Constant), Underwriting practices, Pricing practices, Claims management practices, Reinsurance & Retentions

c) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.039	.319		.122	.083
Reinsurance & Retentions	-.113	.155	.238	.728	.470
Underwriting practices	.039	.593	.001	.007	.995
Pricing practices	-.022	.558	.169	.924	.361
Claims management practices	.459	.638	.281	1.429	.160

a. Dependent Variable: Loss ratio

The results for step 2 regressions between ARMP predictor variables and underwriting risk (loss ratio) as the dependent variable as reflected in Table 5(a-c) show a statistically significant relationship between loss ratio and ARMP with. $R^2 = .113$, $F(4, 45) = 2.553$, and $p \leq .05$. ARMP account for 11.3% of the variance in loss ratio. However, none of the model coefficients was a significant predictor of loss ratio ($p > .05$); their beta coefficients are not different from zero.

In step 3 results with loss ratio as the predictor variable and non-financial firm performance as the dependent variable are shown in Table 6(a-c). The model is statistically significant ($R^2 = .092$, $F(1, 54) = 5.481$ and $p \leq$

.05) implying that that loss ratio significantly influences non-financial firm performance.

Table 6: Regression Results for the relationship between Loss Ratio as Predictor and Non-Financial Firm Performance as Dependent Variable

a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.304 ^a	.092	.075	.409

a Predictors (constant), Loss ratio.

b) ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.915	1	.915	5.481	.023 ^b
Residual	9.016	54	.167		
Total	9.931	55			

a. Dependent Variable: Firm performance (Non-Financial)

b. Predictors: (Constant), Loss ratio

c) Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.452	.175		19.739	.000
	Loss ratio	.008	.003	.304	2.341	.023

a. Dependent Variable: Firm performance (Non-Financial)

The last step regression was performed with non-financial firm performance as the dependent variable and ARMP and underwriting risk as the predictor variables. Table 7(a-c) reflects the results of the standard linear multiple regression. The model reveals a statistically significant relationship between non-financial firm performance and both ARMP and loss ratio ($p \leq 0.05$), with $R^2 = .284$, $F(5, 44) = 4.887$.) ARMP and loss ratio account for 28.4% of the variance in non-financial firm performance.

Table 7: Regression Results for the relationship between Non-Financial Firm Performance as Dependent Variable and Actuarial Risk Management Practices and Loss Ratio as Predictors

a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.598 ^a	.357	.284	.366

a. Predictors: (Constant), reinsurance and retentions, Underwriting practices, Loss ratio, Claims management practices, Pricing practices

b) ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	3.279	5	.656	4.887	.001 ^b
Residual	5.906	44	.134		
Total	9.185	49			

a. Dependent Variable: Firm performance (Non-Financial)

b. Predictors: (Constant), Reinsurance & Retentions, Underwriting Practices, Loss ratio, Claims management Practices, Pricing Practices

c) Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.904	.650		1.391	.171
Loss ratio	.001	.003	.049	.364	.717
Underwriting practices	.147	.135	.160	1.096	.279
Pricing practices	.235	.128	.270	1.842	.042
Claims management practices	.344	.148	.311	2.324	.025
Reinsurance & Retentions	.155	.071	.059	.433	.034

a. Dependent Variable: Firm performance (Non-Financial)

Significant predictors of non-financial firm performance are pricing practices as shown by the regression coefficient ($\beta = .235$, $p \leq .05$), claims management practices ($\beta = .344$, $p \leq .05$) and reinsurance and retentions ($\beta = .155$, $p \leq .05$). This therefore indicates that a relationship exist among ARMP, underwriting risk and non-financial firm performance.

From the above ARMP was significantly related to non-financial firm performance. The relationship between loss ratio and non-financial firm performance was also significant and further ARMP still predicted financial performance when loss ratio was in the model. Since loss ratio significantly predicted non-financial performance when ARMP is controlled ($p \leq 0.05$) and ARMP still predicted non-financial performance when loss ratio is in the model, it is concluded that loss ratio has an intervening effect on the relationship between ARMP and non-financial firm performance. Although not comparable directly due to the different methodologies and variables studied, this finding confirms that of Pervan et al. (2012) on loss ratio determining performance, and those of Mwangi & Murigu (2015) who found no relationship of underwriting risk to financial performance. The finding however contradicts that of Adams & Buckle (2003) who found a positive relationship between underwriting risk and financial performance.

Conclusion

The findings show that the relationship between ARMP and financial performances was not significant as theoretically expected. This implies that the insurance practices may not be employed optimally by the firms as would be expected. There are also various other factors like investment yield, financial leverage, earning assets, liquidity and several other macro economic factors like market competition and inflation that affect financial

performance of an insurance firm that were not considered in this study. The relationship between non-financial performance and ARMP was positive and significant as hypothesized. Results revealed that pricing, reinsurance and retentions and claims management practices were significant predictors of non-financial performance. It can therefore be inferred that as these practices improve, non-financial firm performance improves too. Underwriting practices were not found to be significant in predicting non-financial performance of the insurers, which may be attributable to market practice in the region, where underwriting guidelines are flouted due to unhealthy competition as was revealed in the descriptive statistics. The implication of these findings is that with optimal pricing, sufficient and appropriate reinsurance coverage and good claims management practices, there will be enhancement of the quality of service and reputation of the firm, leading to more business and better results.

Loss ratio was found to mediate the relationship between ARMP and performance of the firms. Loss ratio influences non-financial performance even in the absence of optimal ARMP and mitigation of underwriting risk is thus at the centre of an insurers' long term profitability. This implies that firms should keenly watch and reduce their loss ratios (claims paid vs. premiums earned) in order to improve their non-financial performance. This could be achieved through correctly underwriting and pricing the risks in order to influence their claims ratio, ensuring that total written premiums do not remain outstanding for a long time and turn out to be bad debts, and in turn have a strategic claims management programme in place that controls costs and leads to better reputation for the firm. This in turn will have a ripple effect in increasing business volumes and thus performance in the long run.

It is recommended that general insurance firms in the East African region focus more on optimizing their ARMP, especially with respect to risk analysis (underwriting) as a basis for pricing and premium determination to avoid the common practice of price undercutting that is prevalent in all the three markets. Optimal ARMP will translate to better quality service, reputation, enhanced business and better underwriting performance (by lowering the loss ratio) resulting in better performance. The model used in the study focused on ARMP as determinants of firm performance of general insurance firms in East Africa. However, there are other factors such as liquidity, leverage, investment income among others, which may have an influence especially on financial performance which were not covered in this study. It is recommended that future studies consider these variables for more robust and conclusive findings.

References:

1. Adams, M. & Buckle, M. (2003). The determinants of corporate financial performance in the Bermuda insurance market. *Applied Financial Economics*, 13(2), 33-43
2. Almajali, A. Y., Alamro, S. A. & Al-Soub, Y. Z. (2012). Factors affecting the financial performance of Jordanian insurance companies listed at Amman Stock Exchange. *Journal of Management Research*, 4(2), 266-289.
3. Ashby, S. F., Palermo, T. & Power, M. (2013). *Understanding corporate risk culture in insurance*; Centre for Analysis of Risk and Regulation, Think piece series, London.
4. Babbel, D. F. & Santomero, A. M. (1996). *Risk Management by Insurers: An Analysis of the Process*, Working Paper#96-16, Wharton Financial Institutions Centre.
5. Baranoff, E. G. Sager, T. & Shively, T. (2009). Semi-parametric modeling as a managerial tool for solvency. *Journal of Risk and Insurance*, 67(3), 369-396
6. Barth, M. M. & Eckles, D. L. (2009). An empirical investigation on the effect of growth on short term changes in loss ratios. *Journal of Risk and Insurance*, 76(4), 867-885
7. Berger, A. N. & Udell, G. F. (1993). *Securitization, risk and the liquidity problem in banking, in structural change in banking*. M. Klausner and L. J. White, eds., Irwin Publishing, Homewood, IL, p. 227-91
8. Charumathi, B. (2012). On the Determinants of Profitability of Indian Life Insurers – An Empirical Study: *Proceedings of the World Congress on Engineering* 1, 978-988. WCE , London, U.K
9. Chen, R. & Wong, K. A. (2004). The determinants of financial health of Asian insurance companies. *The Journal of Risk and Insurance*, 71(3), 469-499.
10. Cummins, J. D. (1991). Statistical and financial models of insurance pricing and the insurance firm. *The Journal of Risk and Insurance*, 58 (2), 261-302
11. Cummins, J. D. & Trainar, P. (2009). Securitization, insurance, and reinsurance, *Journal of Risk and Insurance*. 76(3), 463–492
12. Fernández, C. (2009). *Risk Management in the Insurance Business Sector*, Everis MFC Artes Gráficas, S.L.
13. Grondin, T. M., Brender, A. & Nunes, E. A. (2001). *Risk Management Practices in the Insurance Industry*, Toronto Spring Meeting, Session 58PD Volume 27(2).

14. Harrington, S. E. & Danzon, E. (1990). *Price cutting in liability insurance markets*, working paper, Department of Insurance and Risk Management. The Wharton School, University of Pennsylvania
15. Hoyt, R.E., Moore, D. & Liebenberg, A. P. (2011). The value of enterprise risk management. *Journal of Risk and Insurance* 78(4), 795-822.
16. IRA. (2014). Kenya Insurance industry Annual Report, available at ira.go.ke
17. IRA-U. (2014). Uganda Insurance industry Annual Report, available at ira.go.ug
18. TIRA. (2014). Tanzania Insurance Industry Annual Report, available at tira.go.tz
19. Kaplan, R. S. & Norton, D. P. (1996). *The Balanced Scorecard: Translating Strategy into Action.*: Harvard Business School Press, Boston
20. Kim, Y. D., Anderson, D. R., Amburgey, T. L. & Hickman, J. C. (1995). The use of event history analysis to examine insurer insolvencies. *Journal of Risk and Insurance*, 62(1), 94 - 110
21. Lewin, A. Y. & Minton J. W. (1986). Determining Organizational Effectiveness: Another look, and an agenda for research, *Management Science*, 32(5),514-538.
22. Mwangi, M. & Murigu, J. W. (2015). The determinants of financial performance in general insurance companies in Kenya; *European Scientific Journal*, 11(1), 288-297.
23. Ross, S. A., Westerfield, R. W., Jaffe, J. & Jordan, B. D. (2009). *Modern Financial Management*. 8th Edition. McGraw-Hill.
24. Santomero, A.M. & Babbel, D. F. J. (1997). Financial risk management by insurers: An analysis of the process, *Journal of Risk and Insurance*, 64 (2), 231-270
25. Shiu, Y. (2004). Determinants of United Kingdom general insurance company performance. *British Actuarial Journal*, 10(5), 1079-1110.
26. Udaibir, S., Das, N. D. & RiPodpiera, R. (2003). Insurance and Issues in Financial Soundness. *IMF Working Paper*.
27. Yusuf, T. O & Dansu, F. S. (2012). The effect of claim cost on insurers' profitability in Nigeria. *International Journal of Business and Commerce*, 3(10), 1-20.
28. Zender, J. F. (2004). *Evaluating Financial Performance*, Leeds School of Business

Appendix

Pricing Practices

Pricing Practices	Mean	SD	SK	KU	CV
Use of stochastic models/regression/data mining tools as guide in determining premiums	3.31	1.034	-.559	-.402	0.31
Determines / modify future premiums by relying on individual and/or group loss experience	4.16	.774	-1.480	4.428	0.19
Use rate classifications for each class of insurance	4.47	.734	-1.587	2.833	0.16
Load base premiums by a certain margin in order to make profits	3.54	1.196	-.594	-.282	0.34
make allowance for reserves to cover future claims	3.67	1.075	-.809	.274	0.29
Perform rate revisions frequently (every year)	3.47	1.136	-.426	-.577	0.33
Adjust resultant revised rates by rule or judgment	3.19	1.060	-.681	-.130	0.33
Experience policy cancellations and/or rewrite some policies if rates regularly fluctuate	3.44	1.195	-.662	-.523	0.35
Consider stability of loss ratio yearly in premium determination	4.00	.926	-.979	1.053	0.23
Premium rates correctly follow overall trends in the company	3.89	.947	-1.244	1.930	0.24
Develop and uses an experience rating system to determine the next year’s premiums	3.81	.990	-1.084	1.071	0.26
Use merit rating (based on loss history) for some classes.	4.02	.855	-1.098	2.011	0.21
N=57: Mean Score	3.75	.994	-0.933	0.974	0.27

Reinsurance Practices

Reinsurance Practices	Mean	SD	SK	KU	CV
Always arrange sufficient and appropriate reinsurance covers for risks as need be.	4.61	.701	2.842	11.703	0.15
Retain a larger percentage of the risks in the lines underwritten	3.42	1.28 1	-.267	-1.267	0.37
Reinsure only the risky classes / those with high loss ratios	2.60	1.32 1	.554	-.886	0.51
Portfolio has not been affected by catastrophic risks due to appropriate reinsurance arrangements	4.05	.895	1.190	1.853	0.22
Reinsurance has helped the firm in : Underwriting volatility reduction, expertise, capacity, monitoring exposures of loss reserves	4.24	.610	-.656	-.054	0.14
N=57: Mean Score	3.83	.775	-1.232	2.179	0.20

Underwriting Practices

Underwriting Practices	Mean	SD	Max	Min	SK	KU	CV
Measure risk exposures in order to determine premiums	4.40	.728	5	2	-1.375	2.395	0.17
Concentrates on risks for which firm has competitive advantage	3.68	1.167	5	1	-.674	-.357	0.32
Select good business and turn down poor ones	3.70	1.117	5	1	-.887	.113	0.30
Avoids business that increases risks	3.98	1.087	5	1	-1.109	.657	0.27
Claim severity and frequency used in the risk assessment and pricing	4.35	.612	5	3	-.367	-.616	0.14
Transfer very risky business through coinsurance and reinsurance	4.09	1.243	5	1	-1.212	.486	0.30
Only underwrite risks which make profits	3.21	1.048	5	1	-.247	-.587	0.33
Use standardized underwriting processes	3.56	.945	5	1	-.578	-.107	0.27
Underwriting process considers competition	4.04	.934	5	1	-1.185	1.501	0.23
Discourage marketing of substandard business	3.37	1.175	5	1	-.357	-.462	0.35
Use risk management models to asses catastrophic events	3.65	1.077	5	1	-.402	-.731	0.30
Use various approaches to counter adverse selection	4.21	.655	5	2	-1.068	1.977	0.16

N =57: SD is standard deviation, SK is skewness, KU is kurtosis CV is coefficient of variation,

Source: Research Data

Claims Management Practices

Claims Management Practices	Mean	SD	Max	Min	SK	KU	CV
Claims department is a separate and autonomous	4.04	1.101	5	1	-1.152	.658	0.27
Regularly analyze, report and minimize unnecessary costs	4.37	.555	5	3	-.101	-.812	0.13
Often charge sufficient premiums to cover claims and expenses	3.61	1.056	5	1	-.581	-.583	0.29
Actual losses are often less than those projected due to correct analysis	3.37	1.029	5	1	-.295	-.483	0.31
Perform loss reserving for each claim under all classes underwritten	4.26	1.009	5	1	-1.963	4.107	0.24
Loss reserves done for long tail lines only	2.30	1.180	5	1	.944	.292	0.51
Use several loss control measures (e.g. large excesses to reduce severity of losses	3.72	1.031	5	1	-.822	.298	0.28
Undertake precautionary measures during underwriting and claims involving unfamiliar risks	3.80	1.052	5	1	-.757	.212	0.28
Try to avoid protracted legal disputes to reduce claim costs	4.12	.734	5	2	-.760	.965	0.18
Handle claims expeditiously and pay valid claims efficiently	4.51	.630	5	2	-1.365	2.904	0.14
Deals with claimants courteously	4.42	.565	5	3	-.293	-.834	0.13
Quality and quantity of customer care is good leading to improved claims settlement record.	4.35	.582	5	3	-.229	-.652	0.13
Review claims performance, monitor claims expense, legal costs and settlement costs	4.46	.600	5	2	-1.113	2.988	0.13
Plans for future payment and avoid disputes in claims payment	4.37	.723	5	2	-1.283	2.271	0.17
Mean Score: N=57	3.97	.378					

SD is standard deviation, SK is skewness, KU is kurtosis CV is coefficient of variation.

Source: Research Data

Non Financial Firm Performance:

Firm Performance- Quality of Service / Market Share	Mean	SD	KU	SK	CV
Firm emphasizes on customer-centre services	4.53	.538	-1.055	-.464	0.12
Provision of high quality services that equals customer expectations.	4.14	.789	1.024	-.935	0.19
Market share has been maintained for the last 3 years.	3.96	.981	-.573	-.633	0.25
Process claims within a 14 day period..	3.72	.959	.123	-.658	0.26
Mechanisms exist to ensure satisfactory resolving of customer complaints	4.21	.590	2.497	-.616	0.14
Quality service enhances referrals from existing customers	4.19	.611	-.392	-.122	0.15
Quality service has led to general increase in our client base	4.26	.791	.649	-.961	0.19
Our competitive advantage has led to firm's improved market share	3.91	.851	1.549	-.909	0.22
We are able to determine portion of revenues from new market segments	3.82	.897	1.251	-1.046	0.23
We are ahead of others in regular development of new /enhanced products	3.61	1.003	.154	-.586	0.28
New product development is takes into account recent events like:					
- Terrorism/Flooding	3.82	1.011	.607	-.831	0.26
- Feedback from customers	4.23	.627	1.705	-.656	0.15
- Actions of competitors	4.00	.779	.607	-.704	0.19
- Changes in regulatory framework	4.02	.813	2.443	-1.067	0.20

Firm Performance- Reputation	Mean	SD	KU	SK	CV
We engage in transparent business practices to enhance public trust	4.44	0.598	2.907	-1.053	0.13
Firm's reputation has not affected by scandals. This has enhanced our performance	4.28	0.921	1.009	-1.309	0.22
We involve ourselves in other activities to ensure interests of all stakeholders is taken care of.	4.26	0.669	1.079	-0.731	0.16
We engages in Corporate Social responsibility (CSR) activities	3.96	0.609	3.872	-1.026	0.15
Claim issues are crucial to our reputation	4.49	0.658	2.329	-1.331	0.15

Firm Performance-Innovation	Mean	SD	KU	SK	CV
Our critical processes are all automated	3.89	.900	-.038	-.701	0.23
Our operations computerized and almost entirely paperless	2.81	1.093	-.801	.144	0.39
There are relevant processes/programs to help us be more competitive.	3.54	.825	.779	-.935	0.23
The claims function is fully automated from	3.00	1.239	-1.027	.000	0.41
Sservice provider functions (claims adjustors, surveyors, engineers, motor assessors) are fully automated	2.81	1.060	-1.092	-.065	0.38
have analysis based programs for improvement of efficiency in all areas including social marketing	3.29	.890	.186	-.514	0.27
All staff have technological tools (personal computers and internet) for efficiency in performing their duties	4.21	.977	1.647	-1.394	0.23
Firm has necessary physical infrastructure, knowledge and skills, for service delivery to all stakeholders.	4.19	.934	3.825	-1.764	0.22
Mean Score	3.91	.838	.936	-.773	0.22

N =57: SD is standard deviation, SK is skewness, KU is kurtosis, CV is coefficient of variation,

Source: Research Data