Journal DOI: 10.36713/epra1013 | SJIF Impact Factor (2024): 8.431 ISSN: 2347-4378
EPRA International Journal of Economics, Business and Management Studies (EBMS)
Volume: 11 | Issue: 10 | October 2024 -Peer-Reviewed Journal

MODERATED -MEDIATION EFFECT OF REGULATORY FRAMEWORK AND VALUE CHAIN MANAGEMENT ON THE RELATIONSHIP BETWEEN INTEGRATIVE LEADERSHIP AND PERFORMANCE OF FRESH TOMATO AGRIBUSINESS IN KENYA LAKE REGION ECONOMIC BLOC

Muguna Stephen Bundi[1], Emmanuel Awuor[2], Paul Machoka[3]
[1]Research Scholar, School of Management and Leadership, The Management University of Africa
[2]Professor (Associate), School of Management and Leadership, The Management University of Africa
[3]Senior Lecturer, School of Management and Leadership, The Management University of Africa

ABSTRACT
Sub-Saharan Africa tomato losses caused by poor packaging averaged 35%. In 2021, Kenya lost approximately 20% of tomato produce partly because of poor packaging, which is equivalent to Ksh.4.6 billion losses to the fresh tomato agribusinesses (FTAs). The target population for the study was 297 consisting of 269 registered FTA (suppliers, wholesalers and retailers), 14 county crops officers and 14 county trade officers in KLREB. A pilot study included 17 respondents from Kisumu County. Primary data was collected using a structured questionnaire. Correlation and regression analysis were used to examine relationship between IL and performance, and moderated effect of VCM, RF and P of FTA while Sobel test was used to establish mediation. Results showed that 76.7.0% of FTAs used heaped crates and 23.3% used flat crates. Moderated mediation effect of RF and VCM reduced the effect of IL on performance of FTA by 5.7%. The current study, affirmed that appropriate and proper packaging protects horticultural materials (tomatoes) from damages resulting from impact, handling, exposure and transport vibrations. Nevertheless, the study revealed that inappropriate packaging and heaping fresh tomatoes behold the crate/box edge expose the produce to damaging that leads to subsequent food loss. This study did not only investigate the drawbacks of using inappropriate packaging but also established the benefits of using appropriate packaging. This study established that heaped crates generated between 12.1% and 14.7% damaged tomatoes while flat crates generated between 1.5% and 2.6% damaged tomatoes. Therefore, effective/appropriate packaging reduced damages that cause food loss by between 79% and 90%. This study, established that damages caused by heaping are equivalent to the difference between damages incurred from inappropriate packaging and damages incurred from appropriate packaging along the supply chain adding up to 13.2% (14.7% from heaped 50kg crates- 1.5% from 30kg flat crates). To enhance performance of FTAs in the Kenya Lake Region Economic Bloc, the study recommends that there is need for concerted efforts to involve FTA owners in formulating policies geared towards fostering collaborative partnerships to ensure adoption of appropriate packaging that optimise performance and review of the current act concerning appropriate packaging.
KEY WORDS: *Agribusiness Management, Food security, Value chains, Value Chain Management*

INTRODUCTION

Economically, tomato agribusiness earn high profit margins to all actors therefore contributing positively to economy by reducing poverty, hunger, malnutrition, creation of employment and gross domestic product, hence an important food crop to study on how to improve its performance (Nkamigbo & Isibor, 2019). Globally, different economic systems regulate packaging and standards of food, as in the case of global Good Agricultural Practices (GAP) requirements and standards in various countries of the European Union markets (Drahos, 2017). On Global performance of fresh tomato agribusinesses in 2021, the world produced over 189.1 million metric tonnes, earning agribusinesses over 112.09 billion Dollars equivalent to 16.477 trillion Kenya shillings (FAO, 2022). In 2021, continentally Asia led with 63% (119 million metric tonnes), followed from a distance by America with 13% (23 million metric tonnes), Europe 3rd producing 13% (22.7 million metric tonnes), Africa 4th producing 11% (21 million metric tonnes), earning agribusinesses in Africa over 13.07B Dollars, with Oceania producing negligibly (FAO; Science Agriculture, 2021). On production per country, China led the world in 2021 with 65.54 million metric tonnes while India was a distance second with 21.18 million metric tonnes in 2021 (FAO, 2022). Turkey followed third with 13.1 million metric tonnes in 2021. In the same report, Egypt ranked 6th internationally,

Journal DOI: 10.36713/epra1013 | SJIF Impact Factor (2024): 8.431 ISSN: 2347-4378
EPRA International Journal of Economics, Business and Management Studies (EBMS)
Volume: 11 | Issue: 10 | October 2024 -Peer-Reviewed Journal

leading Africa with 6,731,220 metric tonnes, followed by Nigeria with 3,693,722 metric tonnes (10th internationally) and Kenya ranked 7th in Africa with 686,667 metric tonnes that earned agribusinesses 23.4 billion Kenya shillings but ranked in the category of 'others' internationally (FAO, 2022). Kenya led East Africa in production of fresh tomatoes followed by Tanzania and Uganda (FAO, 2022) in that order.

LITERATURE REVIEW

Integrative leadership is a crosscutting aspect (Sergio, 2010) that influence administration of value chain management and adherence to regulation, focuses on adding (Carter et al., Social Network Approaches to Leadership: An Integrative Conceptual Review, 2015) and sustaining value in the growth of actors in a network, thereby impacting on performance as it is the case with Fresh Tomato Agribusinesses in Kenya Lake Region Economic Bloc. Integrative leaders determine or influence organizational value chain management approaches according to Zhang *et al*. (2018) and regulatory framework for the network of actors to ensure high-quality products and services are effectively coordinated within the given framework and that the customers' needs are met (Bolin, 2019).

Positivism is the research philosophy that was adopted by this study because it promises unambiguous and assures accurate knowledge. The researcher focused on strict scientific method designed to yield pure data and facts not influenced by human interpretation or bias with all the data sources being real, natural, external, independent and true reality according to Saunders *et al*. (2019). This study used cross-sectional research design that enabled the exploration of relationships among variables through bivariate and multivariate analyses. The 269 fresh tomato agribusinesses registered by the 14 county governments in KLREB were sourced from the official records and databases maintained by the respective county governments in KLREB and a unit of analysis of 126-registered fresh tomato agribusinesses was selected through the sampling process. From each agribusiness, the owner was interviewed and 28 government officers were interviewed forming a unit of observation of 154 respondents. Unit of observation (respondents) are the individual/entities under examination (Casteel & Bridier, 2021).

RESEARCH METHODOLOGY

Kaiser-Meyer-Olkin (KMO) test is a measure that has been intended to measure the suitability of data for factor analysis, and it tests the adequacy of the sample size by measuring sampling adequacy for each variable in the model and for the complete model (Shrestha, 2021). KMO values between 0.8 to 1.0 indicate the sampling is adequate, between 0.7 to 0.79 are middling and values between 0.6 to 0.69 are averagely adequate (Shrestha, 2021). KMO values less than 0.6 indicate the sampling is not adequate and the remedial action should be taken (Shrestha, 2021). If the value is less than 0.5, the results of the factor analysis undoubtedly won't be suitable for the analysis of the data (Shrestha, 2021). If the sample size is < 300 the average communality of the retained items has to be tested (Shrestha, 2021). An average value > 0.6 is acceptable for sample size < 100, an average value between 0.5 and 0.6 is acceptable for sample sizes between 100 and 200 (Shrestha, 2021)

All 14 crops officers and all 14 trade officers were interviewed hence the sample for agribusinesses was 165-14-14=137 as in Table 6. Sample of agribusinesses per county were distributed proportionally to enable a minimum of 5 traders (1 supplier farmer, one supplier to wholesaler, one wholesaler, one supplier to retailer and one retailer) hence all the counties that had less than 15 agribusinesses were allocated 5 to 7 registered traders to be interviewed. Kisumu was allocated the whole sample of 31 agribusinesses which were divided into two, where 17 were interviewed in pilot study and 14 were interviewed by during the main study. After this distribution of the sample, that remaining 56 agribusinesses were shared equally among the remaining counties namely Transnzoia, Vihiga, and Nandi Counties because they had almost the same number of agribusinesses.

Sample size and sample distribution

S/NO.	Target Counties	Registered Fresh Tomato Agribusinesses	Sample size per county	County Crops officers	County Trade officers
1.	Kisumu County	57	14	1	1
2.					
3.	Trans-Nzoia County	46	19	1	1
4.	Vihiga County	44	18	1	1
5.	Nandi County	47	19	1	1
6.	Kakamega County	7	7	1	1
7.	Siaya County	7	7	1	1

Journal DOI: 10.36713/epra1013 | SJIF Impact Factor (2024): 8.431 ISSN: 2347-4378
EPRA International Journal of Economics, Business and Management Studies (EBMS)
Volume: 11 | Issue: 10 | October 2024 -Peer-Reviewed Journal

8.	Nyamira County	9	7	1	1
9.	Bomet County	8	7	1	1
10.	Kisii County	10	6	1	1
11.	Kericho County	5	5	1	1
12.	Bungoma County	7	7	1	1
13.	Busia County	8	7	1	1
14.	Homabay County	7	7	1	1
15.	Migori County	7	7	1	1
	Total	**269**	**137**	**14**	**14**

FINDINGS OF THE STUDY

This study established that regulatory framework and value chain management not only moderated the relationship between integrative leadership and performance but also mediated the relationship between integrative leadership and performance. The study established direct effect of 4.9% earned by moderated integrative leadership (IL) through regulatory frame work (RF) (IL*RF) to performance (P) while indirect effect of 1.5% was earned by moderated integrative leadership (IL) i.e. IL*RF through value chain management (VCM) to performance (P) that yielded a total effect of 6.4% (total effect of moderated mediated relationship).

In Nigeria, poor packaging cause 23% (Kitinoja L. et al., 2019) to 55% loss of food before it gets to the consumers (Bwade et al., 2019) and the current study, affirms that poor packaging in Kenya Lake Region Economic Bloc cause losses 13.5% (14.7% from heaped 50kg crates- 1.5% from 30kg flat crates) loss of fresh tomatoes. As established by this study, 76.7% of fresh tomato traders use heaped crates despite the fact that they generate higher damages causing more food loss. Packaging materials are very vital for minimizing damage to horticultural materials resulting from impact and transport vibration (Bwade et al., 2019). The current study, affirmed that appropriate and proper packaging protects horticultural materials (tomatoes) from damages resulting from impact, handling, exposure and transport vibrations. In SSA, 24% of the population is undernourished, and an efficient way to solve a part of the food insecurity is to reduce food waste, because around 50% of food is lost before it reaches SSA consumers (FAO; IFAD; UNICEF; WFP; WHO., 2021).

This analysis involved three phases. The first phase involved regressing the moderator IL*RF on VCM as in Table 112, the second phase involved the use of Sobel test as in Figure 30 to assess the direct and indirect effects of IL*RF on performance of fresh tomato agribusiness and the third phase involved examining the moderation and mediation effects of VCM.

OLS Results for Moderator RF and VCM

Model		**Unstandardized Coefficients**		**T**	**Sig.**
		B	Std. Error		
1	Constant	.137	.037	3.737	.000
	IL	.049	.013	3.769	.000
	IL*RF	-.010	.003	-3.333	.001

a. Dependent Variable: VCM

Results tabulated above showed a constant of 0.137, a coefficient of 0.049 for IL with t-statistic 3.769 > 2 having p-value 0.000 < 0.05 and a coefficient of -0.010 for IL*RF with t-statistic -3.333 < -2 having a p-value 0.001 < 0.05 producing regression equation below

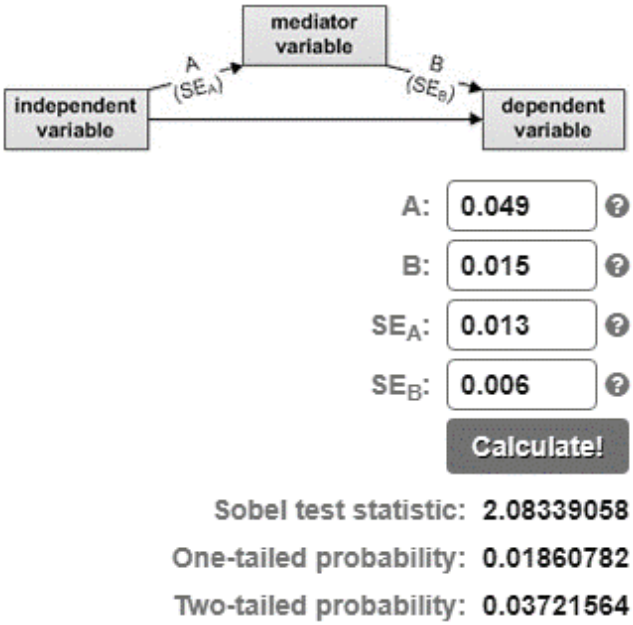
$$VCM = 0.137 + 0.049\,IL - 0.010\,IL * RF$$

The results implied that there was a negative and significant relationship between IL*RF and VCM such that moderation effect of regulatory framework on integrative leadership reduced the effect of IL on value chain management by 1.0%. The second phase involved regressing VCM on P where as in Table 105 results there was as significant positive relationship between VCM and P given that the regression coefficient of VCM was 0.015 with p-value 0.008 < 0.05.

The third phase involved the use of a Sobel test to examine the mediation effect of VCM on moderated IL relationship (IL*RF) and P. The Sobel test involved use of an online Sobel Mediation calculator where the coefficient and standard error of IL regressed on VCM i.e. -0.049(0.013) as in Table 109 and coefficient and

Journal DOI: 10.36713/epra1013 | SJIF Impact Factor (2024): 8.431 ISSN: 2347-4378
EPRA International Journal of Economics, Business and Management Studies (EBMS)
Volume: 11 | Issue: 10 | October 2024 -Peer-Reviewed Journal

standard error of VCM regressed on P i.e. 0.015 (0.006) as in Table 113 were input in the online Sobel calculator displayed in Figure 34 that reproduced Table 114 results.



Sobel Moderated Mediation Test

In Figure 1.0 and table 1.0 denotes the coefficient for relationship between moderated independent variable-(IL*RF) and mediator (VCM) and B denotes the coefficient for relationship between mediator (VCM) and dependent variable (P) while SE is the standard error for the respective variables.

Sobel Mediation Test Results for IL*RF

Variable		Regression Coefficient	Direct Effect Coefficient	Indirect Effect Coefficient	Total Effect Coefficient
Independent	IL*RF	0.049	0.049	0.015	0.064
Mediator	VCM	0.015			

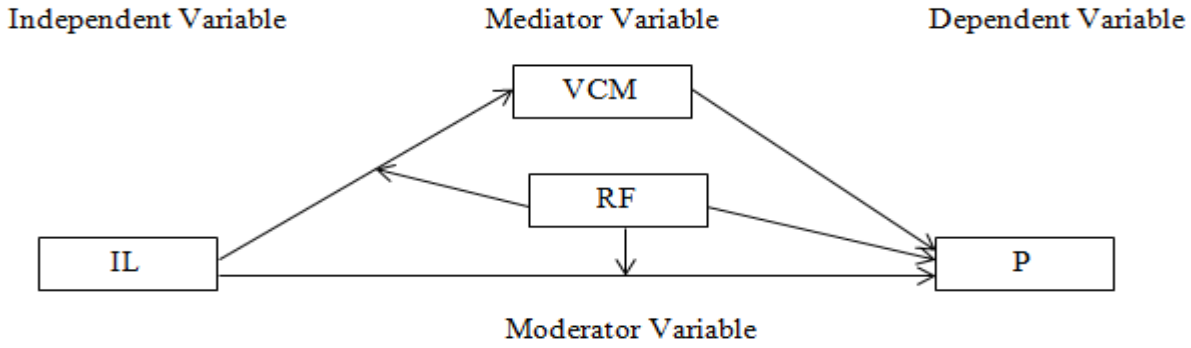
Dependent P

Results in Figure 2.0 indicated a Sobel test statistic of 2.083 having a p-value of 0.037 < 0.05. This implied that moderated mediating effect of regulatory framework and value chain management was significant at 5% level of significance i.e. IL*RF had direct and indirect effects on performance of fresh tomato agribusiness in the Kenya Lake Region Economic Bloc. The indirect effect of moderated mediated integrative leadership through value chain management to performance was 1.5% while the direct effect was 4.9% yielding a total effect of 6.4%, a reduction of 5.7% in relation to the 12.1% obtained by regressing integrative leadership on performance (objective 1).

DISCUSSION OF RESULTS

The fourth objective of the study was to investigate the moderated mediating effect of regulatory framework and value chain management on the relationship between integrative leadership and performance of fresh tomato agribusiness in Kenya lake Region economic bloc. As established that RF and VCM not only moderated the relationship between integrative leadership and performance but also mediated the relationship as depicted in the figure below. The direct effect of 4.9% was the movement from moderated IL (IL*RF) to P while indirect effect of 1.5% was the movement from moderated IL i.e. IL*RF through VCM to P that yielded a total effect of 6.4%. The findings conform to Bolin (2019), Zhang et al. (2018) and Udeze and Ugwu (2018), who argued that effective integrative leadership in administration of regulatory requirements and value chain management is a forerunner of performance and ensuring high-quality products in a chain of actors. Similarly, the findings from this study confirms that effective integrative leadership in administration of regulatory requirements and VCM is a forerunner of performance, enhanced high-quality products and reduced cost among fresh tomato supplier farmers, supplier to wholesalers, wholesalers, supplier to retailers and retailers (chain of actors) in Kenya Lake region economic bloc.

Journal DOI: 10.36713/epra1013 | SJIF Impact Factor (2024): 8.431 ISSN: 2347-4378
EPRA International Journal of Economics, Business and Management Studies (EBMS)
Volume: 11 | Issue: 10 | October 2024 -Peer-Reviewed Journal



Moderated mediated effect conceptual framework

SUMMARY OF THE FINDINGS

The main purpose of the study was to evaluate the effect of integrative leadership, value chain management and regulatory framework on performance of fresh tomato agribusiness in Kenya's Lake Region economic bloc. This was investigating through moderated mediating effect of RF and VCM on the relationship between integrative leadership and performance of fresh tomato agribusiness in Kenya lake Region economic bloc

The study's sample size was 154, which is 93.3% of the targeted sample of 165 respondents hence acceptable in terms of delivering desirable results since it was above the threshold of 80% response. The tomato traders in Kenya Lake Region Economic Bloc are neither identified nor characterised but general information findings indicated that agribusiness owners in the Kenya Lake Region Economic Bloc were categorized into wholesalers, supplier farmers, retailers, suppliers to wholesalers, and suppliers to retailers. In summary, 83.4% fresh tomato traders in Kenya lake region economic bloc (31.7% use 30kgs heaped crates, 25.4% use 50kg heaped crates, 20.9 % use 100kg heaped crates, and 4.4% use 100kg flat crates) packaged their fresh tomatoes in crates that generally carried approximate weight of 100 Kgs, and even when they used smaller crates they heaped them to reach their desirable weight of above 100 Kgs,. The desire for agribusiness owners is to pack tomatoes to approximately 100kgs hence they heap 30kg crates and 50kg crates that are legalised under Kenya constitution to achieve an approximate of 100kg per package. Only 16.6% of the traders use 30kgs and 50kg crates and fill them flat as required by law in Crops (Food Crops) Regulations, 2019, Regulation 36 sub-regulation 3. The current study focused on the regulation of packaging materials as per the act of parliament the Crops (Food Crops) Regulations, 2019, Regulation 36 sub-regulation 3 stating that the maximum weight for the packaging of each single unit of any food crop shall be fifty kilograms (Kenya Parliament, 2019) but the findings show this law is still not enforced. The preference for 100 Kg crates was as a result of reduced transportation cost where the 100 Kg crate cost per kg per km was 4 times lower than the 30kg and 50 Kg crates transportation cost. 30 Kg crates had the highest cost of transport per kg per km. Also, agribusiness owners informed the researcher that the cost per unit of loading and offloading the 100 Kg crates was less compared to the 50 Kg and 30 Kg crates. Further, the 30 Kg heaped crate are more difficult to handle during loading and offloading, reduced space utilization in transporting vehicles and stores, and added more cost on packaging that included carton boxes and ropes besides the wooden packaging box.

The findings of the current study are supported by the findings that in Sub-Saharan Africa, tomato losses caused by poor packaging range between 20% and 50% of produce transported to markets with poor packaging accounting for 30% to 50% of the losses (Tapsoba et al., 2022). Tomato losses mostly linked to mechanical damage due to shocks and exposure resulting from poor packaging, and vibrations due to poor road conditions stand at 23% of the total produce that was transported to the market (Kitinoja L. et al., 2019). Tabsoba et. Al (2022) and Kitinoja et. al., (2019) did not specify the amount of loss caused by poor packaging and that was caused by vibrations but the current study has established similar findings with more precision where 30kg wooden crates generated losses/damages of tomatoes of between 13% (Heaped) and 2.2% (flat) but 30kg plastic crates yielded 1.5% damaged tomatoes when flat. This indicates that the damages caused by poor packaging mainly due to heaping is between 79% to 90% of damages on fresh tomatoes carried in heaped crated in Kenya Lake Region Economic block is due to heaping and poor packaging. Fresh tomato traders in Kenya Lake Region Economic Bloc said that 30 kilograms plastic crates are commonly not heaped because they are relatively weak and burst on transit when heaped.

Fifty kilograms wooden crates generated losses/damages of tomatoes of between 14.7% (Heaped) and 2.6% (flat) but 30kg plastic crates yielded 2.0% damaged tomatoes when flat. This means that 82.3% to 86.4% of damaged

tomatoes is caused by heaping of 50kg crates. Hundred kilograms wooden crates yielded 12.1% damaged tomatoes when heaped and 1.8% when flat shown that 85.1% of damaged tomatoes was caused by heaping. This study established that 79% to 90% of damaged fresh tomatoes in Kenya Lake region economic bloc is caused by carrying excess weight of food (tomatoes) in crates through heaping, while 10% to 21% of damages on fresh tomatoes can be associated to vibrations due to poor road conditions and other factors such as roughness of the inner surface of the crates/boxes. This means that if appropriate packages are fully adopted by the traders, losses incurred from damaged tomatoes will be reduce by 79% to 90%.

In the year 2022, Kenya produced 616,617 MT worth KES 22.52 billion (AFA-HCD 2023) tomatoes were traded in Kenya. About 47% of the total funds needed to get rid of hunger in SSA countries should be directed towards reduction of postharvest losses in order to make available more food for human consumption (FAO-World Bank 2010) through all means including use of appropriate packaging and supportive regulatory framework. Assuming in 2022 the traders across Kenya were using the same crates and filling the same way they filled at the point this study was done, then traders of fresh tomato agribusinesses in Kenya incurred damages on tomatoes caused by heaping caused them loss of between 63,511MT worth 2.31956 B to 78,310MT worth 2.8575B kes. Food losses in developing countries mostly occur before reaching the consumer due to technical, financial, and value chain management drawbacks during harvesting, storage, transportation, and sale of the food produce (Gustavsson et al. 2013; Kitinoja et al. 2019; Olumuyiwa et al, 2017). Current study demonstrates similar findings that fresh tomato losses were caused by technical drawbacks such as crate inner surface roughness that caused damages of between 0.6% and 0.7%, and value chain management decisions such as choosing to heap tomatoes on crate that has potential of reducing overall performance by 6.2% if not enhanced.

The current study established that 77.3% of improvement in performance of fresh tomato agribusinesses in Kenya Lake region economic bloc was explained by the change in the three (IL, VCM and RF) variables combined.

There existed negative and significant relationship between moderated integrative leadership i.e. IL*RF given a coefficient of -0.010 and value chain management such that the moderation effect of regulatory framework on integrative leadership reduced the effect of integrative leadership on value chain management by 1.0%, which is an indication that integrative leaders (wholesalers) lead other chain actors away from legal requirements. Additionally, the traders reported that the legal requirement of 50kg or less crates affect their businesses negatively due to high cost of handling smaller crates. Retailers reported that they are never involved in determining the crates or level of filling but only accept what wholesalers supply, which suggests that they constantly make their decision in relation to what they find in the market each day, and that include transport decision among others decision after confirming what is available with wholesalers on each particular market day. However, the law holds wholesalers back from not adversely interfering with activities of other agribusinesses along the supply chain. Sobel test results showed that the moderated mediating effect of regulatory framework and value chain management was significant at 5% level of significance. The moderated independent variable-(IL*RF) had direct and indirect effects on performance of fresh tomato agribusiness in the Kenya Lake Region Economic Bloc. The indirect effect of moderated mediated integrative leadership through value chain management to performance was 1.5% while the direct effect was 4.9% yielding a total effect of 6.4% that was smaller than the total effect of 12.1% obtained by regressing integrative leadership on performance (objective 1). Therefore, the moderation mediation effect regulatory framework and value chain management reduced the effect of integrative leadership on performance of tomato agribusiness by 5.7%. For example, after purchasing heaped packaged fresh tomatoes, some agribusinesses owners choose to repackage into flat packages to reduce damages and allow stable stacking and maximum utilization of space in transporting vehicles. Some of the suppliers to wholesalers also reported that they fill their crates flat despite the direction by the wholesalers to heap tomatoes on their crates. Therefore, such independent choices among others autonomous practices contribute to reducing the control of the integrative leaders and manipulation of other value chain actors such as supplier farmers, supplier to wholesalers, retailers and supplier to retailers who reported that wholesalers as the integrative leaders in the chain almost always dictate the packaging and level of filling in the whole supply chain. Retailers lamented that they suffer most since they absorb most of the damages resulting from heaped packaging along the supply chain. They said wholesalers grade tomatoes when they are buying from farmers but for when buying from wholesalers they are not allowed to grade hence paying even for the damaged tomatoes. Further, retailers highlighted that they always have no choice since they buy what is availed by the main market suppliers who are the wholesalers. Nevertheless, the callousness in the fresh tomato value chain in the Kenya Lake Region Economic Bloc might be attributed to lack of sensitization and involvement by authorities during the enactment of packaging regulations that are geared towards enhancing performance as opposed to reducing the effect of integrative leadership on performance.

Journal DOI: 10.36713/epra1013 | SJIF Impact Factor (2024): 8.431 ISSN: 2347-4378
EPRA International Journal of Economics, Business and Management Studies (EBMS)
Volume: 11 | Issue: 10 | October 2024 -Peer-Reviewed Journal

CONCLUSION

There was a negative moderated mediated effect of regulatory framework and value chain management on the relationship between integrative leadership and performance of fresh tomato agribusiness in the Kenya Lake Region Economic Bloc. The conclusions culminated into the inferences of rejecting null hypotheses per study's specific objective. The null hypothesis that No significant moderated mediating effect of RF and VCM on the relationship between IL and performance of fresh tomato agribusiness in Kenya lake Region economic bloc is rejected at 95% level of confidence.

The current study established that by use of appropriate packaging, food loss (wastage) can be significantly reduced from 13% for 30 Kgs heaped wooden crate to 2.2% when packaged in 30 Kgs wooden crate and 1.5 % in 30 Kg flat plastic crates, 14.7% in 50 Kgs heaped crates to 2.0% in 50 Kgs flat crates, and 12.1% in 100kgs heaped to 1.8% in 100 Kgs flat crates. Overall outcome show that food loss can be reduced by between 79% and 90% if efficient/appropriate packaging is done in packaging fresh tomato agribusinesses.

RECOMMENDATIONS

Contribution of the study to policy Development or Improvement

County governments in Kenya Lake Region Economic Bloc and behold can have a policy to establish centralized crate making centres and guidelines concerning the dimensions of the packaging crates to be followed by carpenters and ensure all traders source their packaging crate from those establishments. This will enable eliminate inappropriate crates and make regulation of fresh tomato packages more convenient for regulating authorities and traders. This will also ensure crates used are uniform and have them used as units of measure. The artisans who make these crates can plane timber surfaces facing inside of the wooden crates to reduce damage due to roughness since plastic crates shown reduced damage of fruits mainly due to smoothness of their inner surface.

Contribution of the study to practice in Packaging of Fresh Tomato Agribusinesses.

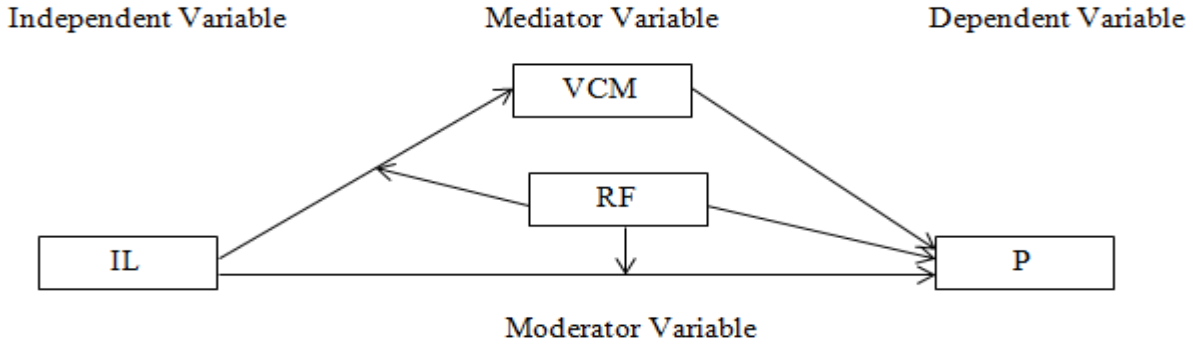
Considering the many reasons for reducing food wastage and making it more available and accessible to the population, the county governments in KLREB and behold should move swiftly and end the culture of heaping fresh tomatoes on packaging crates/boxes.

Adoption of crates that has internal surfaces that are smooth and adherence to ethics of filling crates below the upper edge are some of the decisions that needs to be made in value chain management and enforced by regulators to ensure reduced food and economic losses. This will ensure that appropriate packaging that promotes efficient inbound and outbound logistics hence improving performance of fresh tomato agribusinesses.

Fresh Tomato Agribusiness in the Kenya Lake Region Economic Block need to be identified, characterized and documented in traders' data base, which would enable ease of accessing them whenever government or any other organization seeks their involvement in research, support, training, developments agendas, feedback, and for any other reason.

Contribution of the Study to Research Methodology

The study developed the following Conceptual Frameworks that can be used in future research.
Moderated Mediating Effect of Regulatory Framework and Value Chain Management on the relationship of Integrative Leadership & Performance



Moderated mediated effect conceptual framework for this research

Areas of Further Research

The study established that there are gaps in fresh Tomato packaging practices and regulation hence a need for farther research in other economic bloc to have recommendations on enhancement of practices in packaging and

regulation of both packages and packaging. This will be critical in guiding counties' specific policy framework since business environments vary from one county to another.

REFERENCES

1. *Bolin, J. D. (2019). The Use of Integrative Leadership in Providing Excellent Patient Care While Overcoming Hospital Challenges. Journal of Nuclear Medicine Technology, 47(2), 93-96. https://doi.org/10.2967/jnmt.118.219212*
2. *Bwade, E., Umar, B., & Abba, M. (2019). Tomato post-harvest losses and mitigation measures: A Review. International Journal of Engineering, Business and Enterprise Applications (IJEBEA), 2279(39), 9-15. https://doi.org/http://www.iasir.net/*
3. *Carter, D., DeChurch, L., Braun, M., & Contractor, N. (2015). Social Network Approaches to Leadership: An Integrative Conceptual Review. Journal of Applied Psychology, 100(3), 1-81. https://doi.org/http://dx.doi.org/10.1037/a0038922*
4. *Carter, D., DeChurch, L., Braun, M., & Contractor, N. (2015). Social Network Approaches to Leadership: An Integrative Conceptual Review. Journal of Applied Psychology, 100(3), 1-81. https://doi.org/http://dx.doi.org/10.1037/a0038922*
5. *Casteel, A., & Bridier, N. L. (2021). Describing populations and samples in doctoral student research. International Journal of Doctoral Studies, 16, 339-362. https://doi.org/10.28945/4766*
6. *Chimeziem, C., Gabriela, & Ugwu, J. N. (2018). Value Chain Manangement and Industrialization in Africa. Nizik Journal of Business, 1(2), 108-116. https://doi.org/http://dx.doi.org/10.36108/unizikjb/8102.10.0211*
7. *David, F. (2017). Strategic management: concepts and cases. Pearson Prentice Hall, Upper Saddle River.*
8. *Drahos, P. (2017). Regulatory theory: Foundation and application. Australia National University Press. https://doi.org/https://doi.org/10.22459/RT.02.2017*
9. *FAO. (2022). Worldwide (total fresh) tomato production in 2021. FAO.*
10. *FAO; IFAD; UNICEF; WFP; WHO. (2021). The State of Food Security and Nutrition in the World 2021. FAO; IFAD; UNICEF; WFP; WHO. The State of Food Security and NutriIn Transforming Food Systems for Food Security, Improved Nutrition and Affordable Healthy Diets for All;. Rome, Italy: FAO.*
11. *FAO; Science Agriculture. (2021, 11 24). The Science Agriculture. Retrieved from https://scienceagri.com: https://scienceagri.com/top-10-worlds-biggest-tomato-producing-countries/*
12. *Gulati, A., Wardhan, H., & Sharma, P. (2022). Agricultural Value Chain in India. Springer Singapore.*
13. *Kenya Parliament. (2019). Crops regulations, 2019 crops ACT No.16 of 2013, regulation 36 sub-regulation 3. Nairobi: Kenya Gazette Supplement No. 211.*
14. *Kenya Parliament. (2019). Crops regulations, 2019 crops ACT No.16 of 2013, regulation 36 sub-regulation 3. Nairobi: Kenya Gazette Supplement No. 211.*
15. *Kitinoja, L., Motunrayo, O., Dubey, N., Musanase, S., & Gill, G. (2019). Commodity System Assessment Studies on the Postharvest Handling and Marketing of Tomatoes in Naigeria, Rwanda and Maharashtra. India J. Hortic. Postharvest Res, 2(Special Issue), 1-14. https://doi.org/https://doi.org/10.22077/jhpr.2019.2060.1040*
16. *Kitinoja, L., Motunrayo, O., Dubey, N., Musanase, S., & Gill, G. (2019). Commodity System Assessment Studies on the Postharvest Handling and Marketing of Tomatoes in Naigeria, Rwanda and Maharashtra. India J. Hortic. Postharvest Res, 2(Special Issue), 1-14. https://doi.org/https://doi.org/10.22077/jhpr.2019.2060.1040*
17. *Nkamigbo, D., & Isibor, A. (2019). Inter-market price spread and determination of net farm income in watermelon marketing in Anambra state. International Journal of Agriculture Policy and and Research, 7(4), 100-107. https://doi.org/https://doi.org/10.15739/IJAPR.19.011*
18. *Porter. (1998). The Competitive advantage: Creating and sustaining superior advantages. New York: New York Free Press.*
19. *Porter., M. (2012, 3 7). Strategy and the new competitive advantage: Creating shared value. Retrieved from https://www.hbs.edu/ris/Publication: https://www.hbs.edu/ris/Publication%20Files/20120307%20-%20Ford%20Canada%20Strategy%20CSV%20Presentation%20-%20FINAL_f2b61b6f-4e9c-4a45-80cb-d29dd2e138b2.pdf*
20. *Sergio, F. Y. (2010). Exploring the link between integrated leadership and public sector performance. The Leadership Quarterly, 21(2), 308-323. https://doi.org/http://dx.doi.org/10.1016/j.leaqua.2010.01.009*
21. *Shrestha, N. (2021). Factor Analysis as a Tool for Survey Analysis. American Journal of Applied Mathematics and Statistics, 9(1), 4-11. https://doi.org/DOI:10.12691/ajams-9-1-2*
22. *Tapsoba, L., Kiemde, S., Lamond, B., & Lepine, J. (2022). Potential of Packaging for Reduced Fruit and Vegetable Losses in Sub-Saharan Africa. https://doi.org/10.3390/foods11070952, 11(7), 1-12. https://doi.org/http://dx.doi.org/10.3390/foods11070952*
23. *World Bank. (2008). Agriculture for development. World Bank Group.*
24. *World Bank. (2008). Agriculture for Development. World Bank Group.*
25. *Zhang, D., Sun, X., Liu, Y., Zhou, S., & Zhang, H. (2018). The Effect of Integrative Leadership on the Enterprise Synergy Innovation Performance Supply Chain Cooperative Network. Sustainability, 10(7), 1-20. https://doi.org/http://dx.doi.org/10.3390/su10072342*