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Talal Mohamed Abadi, Dr. Samson Kitheka, PhD, Dr. Anwar Hood, PhD & Dr. Mary Ibuta, PhD

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¹ Talal Mohamed Abadi, ² Dr. Samson Kitheka, PhD, ³ Dr. Anwar Hood, PhD & ⁴ Dr. Mary Ibua, PhD

¹ PhD student, Department of Business Administration, Technical University of Mombasa, Kenya

² Senior Lecturer, Department of Business Administration, Technical University of Mombasa, Kenya

³ Senior Lecturer, Department of Business Administration, Technical University of Mombasa, Kenya

⁴ Senior Lecturer, Department of Business Administration, Technical University of Mombasa, Kenya

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ABSTRACT

The main objective of this study was to investigate the effect of circular procurement on performance of Kenyan manufacturing firms. Theories used in this study were Resource Dependency and Industrial Symbiosis. Data was collected by the use of a questionnaire in the Likert Type Scale format. The target population included all the manufacturing firms registered by Kenya Association of Manufacturers (KAM). Stratified random sampling was used to ensure a representative sample from each industry, and the appropriate sample size was calculated using Cochran's formula. The hypothesis in this study was tested to determine the P-value. Data was analyzed by use of SPSS (V.20) while presentations were done by use of tables and graphs. The study found out that circular procurement has a significant effect on the performance of manufacturing firms in Kenya.

Key Words: Circular Procurement, Circular Supply Chain

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BACKGROUND INFORMATION

Sustainability and development in sustainable programs are geared to the satisfaction of current needs without impairing or harming the needs of the future generation (WCED, 2017). Sustainability in production and processing is to be considered as a potentiality to limit the degradation and depletion of natural earth's resources threatened by humans' activities (Meadows, 2016; Randers, 2015). Countries under the umbrella of United Nations have proposed Millennium Goals referred to as Sustainable Development Goals (SDG's) based on issues such as gender equality, poverty eradication, sustainable cities among others to be achieved by 2030 (UN, 2015). One of the methodologies of achieving these SDG goals is through circular supply chain since the supply chain has a wider perspective covering from manufacture to consumption (UN Contrade Database, 2018; Ravinaru & Rus, 2019). In reference to report by World Economic Forum (WEF), (2014) and research work by Lewandowski (2016), it was summed that most supply chain operations in most organizations are conducted through linear system that adopts use and dispose model creating a loophole for the depletion of Earth's Natural Resources. The SDG's have increased the publicity and call for manufacturing firms to shift from use and dispose to closed-looped supply models characterized by circularity in the functional operations such as reconditioning, recycle, re-use or remanufacture for a sustainable achievement (Genovese, Acquaye, Figueroa & Koh, 2017). For a firm to embrace circular supply chain in its processes, there has to be a leadership support vested as its culture (Lewandowski, 2016; Murray, Skene & Haynes, 2015; Smart, Hemel, Lettice, Adams & Evans, 2017).

The Environmental Management and Coordination Act (EMCA) provides for environmental protection through; Environmental impact assessment;

Environmental audit and monitoring, Environmental restoration orders, conservation orders, and easements. Some of its provision include Ban on plastic carrier bags, Plastic ban in protected areas, Extended Producer Responsibility (EPR) Regulations 2020 and the revision of the building code. Other policies that help in this transition include Waste Management Regulations 2016, National Solid Waste Management Strategy 2015, The Green Economy Strategy and Implementation Plan (GESIP), Nationally Appropriate Mitigation Actions (NAMAs), Bio-energy strategy 2020-2027.

Problem Statement

Kenya's manufacturing sector is a model of mutually beneficial cooperation. In circular supply chain, recycling technology is always improving, which aids in the creation of a society with less carbon emissions (Cucciniello & Cespi, 2018). Companies that produce goods rely heavily on imported raw materials and require expensive transportation and logistics services, both of which increase the cost of production (KAM, 2019). In order to increase operational efficiency and hence handle these problems, circular supply chain strategies should be implemented fully.

Sustainable supply chain methods such as waste management, reverse logistics, and green procurement have received the majority of attention in Kenyan research. However, there is no study that tackles the idea of circular supply chain in its wholistic form. Ochiri, Wario, Odhiambo, and Arasa (2015) investigated the impact of waste-reduction methods on the success of Kenyan publishing enterprises. The results of the study showed that cutting waste raised productivity levels in businesses. Researchers Malaba, Ogolla, and Mburu (2014) looked at how sugar factories in Kenya rely on a network of suppliers that are environmentally sensitive. The results also demonstrated that when businesses implement green supply chain management, they make more profitable pricing decisions. David and Shalle (2014) examined the

impact of reverse logistics evaluation on the supply chains of Kenyan manufacturers. The research concluded that manufacturing firms can greatly boost productivity by implementing reverse logistics. Systematic literature reviews in this area, particularly in terms of assisting organizations and managers in their pursuit of CSCM goals, remains unclear. In light of these gaps, the purpose of this study was to investigate the effect of circular procurement on business performance and the role that the Policy framework plays in mediating that effect.

Study Objectives

- To examine the effect of circular procurement on the performance of manufacturing firms in Kenya.
- To analyze the moderating effect of Policy framework on the relationship between circular procurement and performance of manufacturing firms in Kenya.

LITERATURE REVIEW

Theoretical Framework

This is an ideological in-depth reasoning by previous researchers on a specific area of study. This study was pinned on relevant schools of thought such as Resource Dependency Theory and Institutional Theory

Resource Dependency Theory (RDT)

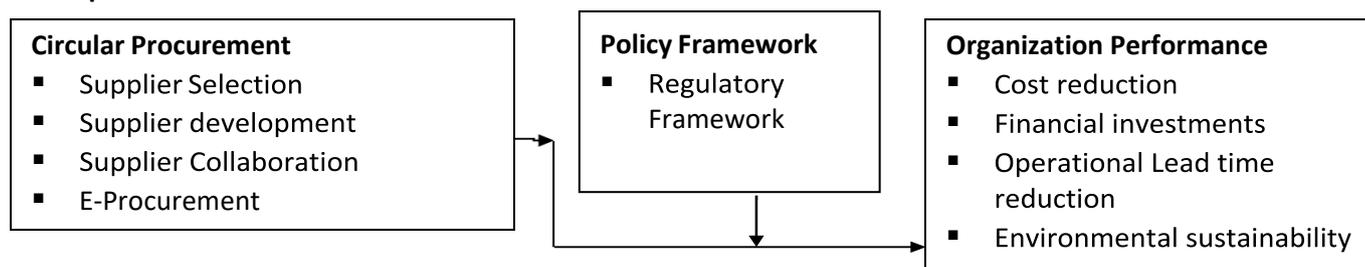
While analyzing RDT, Van (2018) found that businesses actively structure their trade relationships, forming formal and semiformal ties with other businesses in an effort to lessen uncertainty and better manage dependence. By relying on one another, businesses can create a bundle of resources that is both distinct and

difficult to replicate by combining their individual strengths with those of their partners (Harrison et al., 2021). A lasting competitive advantage and enhanced procurement performance can be attained by businesses that invest in developing relationship-specific capabilities that beyond what those companies may have on their own (Sambharya & Banerji, 2016; Paulraj & Chen, 2017). Given that it is extremely unlikely for a single company to achieve sustainable growth, RDT is an applicable theory to SCM since it can assist in the development of activities that cross the barrier between the organization and its external environment.

Institutional Theory

The proponents of Institutional Theory (Hamilton, 1919; Yonaya, 1998) have opined that Institutions School of Thought provides an understanding on how organizations should navigate rules and norms within their operations so as to survive. The proponents have moreover provided that organizational growth is dependent on how they can adopt to the recurrent rules, policies and regulations in the environment whereby the institutional isomorphism must be realized. The Theory embraces Social Legitimacy through the adoption of social traditions and norms predominant in the legal system since every institution is guided by the legal framework (Zeng *et al.*, 2017). The proponents further indicted that Institutions has no option but to adopt the policies and practices in their operations as indicated by Zeng *et al.* The concept of circularity is governed by social norms, cultural perspective and political models in the society.

Conceptual Framework



Independent Variables

Moderating Variable

Dependent Variable

Figure 1: Conceptual Framework

Circular Procurement and Organization Performance

Procuring products and services in a way that doesn't compromise future needs is called circular procurement, a concept derived from the circular supply chain (Zaidi et al., 2019). The procurement function has far-reaching effects on an organization's operations, finances, and ecosystem. More than half of all product or service costs are allocated to procurement, making it an increasingly important function for every successful business (Monczka et al., 2018). Given the centrality of procurement to supply chain management, the adoption of circular procurement (CP) as a means of aligning procurement procedures with CE principles is essential for the industry to complete its transition to circular goals. Many public and corporate institutions use CP as their standard method of procurement when trying to advance CE (Neessen et al., 2021). UNEP defines circular procurement as "buying products or services that follow the principles of the circular economy, supporting the assessment of designing, making, selling, reusing, and recycling products to determine how to get the maximum value from them both in use and at the end of their life" (UNEP, 2021).

Policy Framework and Organization Performance

A system of systematic regulation and policy would be required, as well as improved relationships between policymakers, governments, industry, and society as a whole

(Homrich et al., 2018). The lack of a solid legislative process influences manufacturing enterprises' decisions to adopt environmentally friendly solutions into their operations. Organizations incline to retain the waste management status quo due to a lack of regulatory pressures, which is usually disregarded in supply chain operations (Ellen-MacArthur Foundation, 2018). Government regulations will hold all supply chain actors

accountable for implementing appropriate measures, such as enabling the adoption of reverse logistics initiatives, all over the world. Agreements in the various Sectors are useful because making it formal is expected to induce supply chain players to adopt waste logistics systems, (Guarnieria et al., 2020). In the global network, these sectors can be major information transmission hubs between consumers and producers. In addition to the voluntary cooperation that happens at the corporate level, there is a need for increased horizontal collaboration between supply chains players (De-Angelis, Howard & Miemczyk, 2017).

Organizational Performance

The measuring of performance is beneficial to the continuous development of SCM. In general, economic performance is focused with lowering costs while simultaneously increasing profits (Green et al., 2018). The elimination or reduction of expenditures that are associated with the environment, such as the cost of purchasing materials and energy, is the primary emphasis of this initiative. An economically performing

organization is one that is able to achieve decreased costs for the purchasing of materials, decreased costs for the consumption of energy, decreased costs for waste treatment, decreased costs for waste discharge, and decreased costs associated with environmental accidents in their operations, as stated by Ninlawan *et al.*, (2019). Green

et al., (2018) referred to this as "operational performance, while Laosirihongthong *et al.*, (2020) found a correlation between improved economic performance and improved operations.

Empirical Review

Various theoretical frameworks, such as Cradle to Cradle (McDonough & Braungart, 2020), the Laws of Ecology (Commoner, 2018), the Looped and Performance Economy (Stahel, 2017), and Regenerative Design, have contributed to the current understanding of the Circular Economy (Lyle, 2018). Biomimicry (Benyus, 2019), the Blue Economy (Graedel & Allenby, 2020), and Industrial Ecology (Graedel & Allenby, 2020) (Pauli, 2021). Waste is reduced and product value is maintained for as long as possible under the circular economic model (European Commission, 2020). One way to cut down on waste is to reuse or repurpose materials and/or energy after they have been used (Ellen MacArthur Foundation, 2018). With no specific circular loop in mind, the

butterfly graphic instead emphasizes the interconnectedness of biological and technical closed loops as a continual flow of materials across the value circle (Ellen MacArthur Foundation, 2018).

METHODOLOGY

Guided by the philosophy of positivism, this study was conducted through descriptive research design. Cresswell (2018) has described a descriptive research design as a scientific method involving observation and description of the subjects (population) in a study at their normal or natural state. The target population for this study comprised of manufacturing firms in Kenya as registered with Kenya Manufacturing Association (KMA). The registered manufacturing firms in Kenya totaled 1105 firms (KAM, 2020 - 2021). By using random sampling technique, a sample size of 294 was selected for the study. Data was collected by questionnaire structured in a Fiver Likert Scale Format.

FINDINGS AND DISCUSSION

Results and discussion

To ascertain the reliability of the tools, Cronbach's Alpha was computed. This was done after the data was cleaned and transformed into ratio scale. The reliability results are presented in Table 1.

Table 1: Reliability

Variable	Number of Items	Co-efficient Alpha	Comment
Circular Procurement	5	0.849	Accepted
Policy framework	5	0.896	Accepted
Organizational performance	8	0.881	Accepted
Overall	18	0.931	Accepted

Since all the variables had Cronbach's Alpha of more than 0.7 the tool can be deemed to be reliable.

Relationship between Circular procurement and Organization Performance

A correlation analysis was carried out between circular procurement and organization performance to determine the strength and nature of the relationship between them. Table 2 presents the correlation analysis results.

Table 2: Correlation between Circular procurement and Organization performance

		Procurement	Performance
Procurement	Pearson	1	
	Correlation		
	Sig. (2-tailed)		
	N	258	
performance	Pearson	.657**	1
	Correlation		
	Sig. (2-tailed)	.000	
	N	258	258

** . Correlation is significant at the 0.01 level (2-tailed).

Table 2 shows a strong significant positive relationship between circular procurement (0.657, p value 0.000). This means that an increase in circular procurement significantly increases organization performance.

Influence of Circular Procurement on organization performance

The key objectives of this paper were to find; the influence of circular procurement on organization

performance and the moderating effect of the policy framework on the influence of circular procurement on organization performance. The assumptions governing linear regression were verified before the linear regression model was fitted between circular procurement and organization performance with policy framework as the moderating variable. Tables 3, 4 and 5 present the regression results.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.657 ^a	.431	.429	.62625
2	.719 ^b	.517	.511	.57959

a. Predictors: (Constant), procurement

b. Predictors: (Constant), procurement, Policy, PROCUREMENT_POLICY

Table 3 shows that in model 43.1% of all the variations in organization performance are accounted for by circular procurement while other variables not in the model account for 56.9% of all

the variations. The introduction of the policy framework as a moderating variable sees the coefficient of determination rises to 51.7%.

Table 4 presents the ANOVA results.

Table 4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	76.101	1	76.101	194.044	.000 ^b
	Residual	100.399	256	.392		
	Total	176.500	257			
2	Regression	91.175	3	30.392	90.471	.000 ^c
	Residual	85.325	254	.336		
Total		176.500	257			

a. Dependent Variable: performance

b. Predictors: (Constant), procurement

c. Predictors: (Constant), procurement, Policy, PROCUREMENT_POLICY

Results in Table 4 shows that in model 1 circular procurement had significant influence on organization performance (F statistics of 194.044 and p value of 0.000). The policy framework was introduced as a moderating variable the F value decreases significantly to 90.471 but p value remained at 0.000. This could be an indication that

policy framework has no moderating effect on the influence of circular procurement on organization performance.

Regression coefficients were generated and results presented in Table 5.

Table 5: Coefficients

Unstandardized Coefficients				Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.872	.154		12.119	.000
	procurement	.556	.040	.657	13.930	.000
2	(Constant)	1.164	.355		3.283	.001
	procurement	.506	.102	.597	4.966	.000
	Policy	.427	.124	.574	3.436	.001
	PROCUREMENT_ POLICY	-.044	.031	-.336	-1.391	.165

a. Dependent Variable: performance

Results in Table 5 shows that circular procurement has significant influence on organization performance. The resulting regression model is given by equation 1 as

$$Y = 1.872 + 0.556X \dots \dots \dots (1)$$

Equation 1 shows that for every change in circular procurement performance increases by 55.6% keeping other factors constant.

The introduction of policy framework in model 2 makes circular procurement to have no significant influence on organization performance since it has a p value of more than 0.05. it can be concluded from Table 5 that policy framework has no moderating effect on the influence of policy framework on organization performance since the p value of interaction variable is more than 0.05.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The main objective of the study was to find out the influence of Circular procurement on organization performance among manufacturing firms in Kenya. The study also determined the

moderating effect of policy framework on relationship between circular procurement and organizational performance

The inferential statistics was performed provided findings and deductions. The dimensions of Circular procurement were found to be statistically significant in explaining organization performance in manufacturing firms in Kenya. The regression results indicated that a change in Circular procurement caused a significant change in organization performance. The first null hypothesis (H01) was rejected and this indicated that there was a significant relationship between Circular procurement and organization performance among the manufacturing firms in Kenya. The results showed that Organization performance in manufacturing firms in Kenya highly depended on Supplier Selection, Supplier development, Supplier Collaboration and E-Procurement. The responses to the opinion statements showed that most respondents agreed that Circular procurement affected organization performance of the manufacturing firms in Kenya.

Based on the research findings, the study shows that Circular procurement had significant influence on the organization performance of manufacturing firms in Kenya. When policy framework was introduced as a moderating variable, it had insignificant effect on the relationship between Circular procurement and organization performance of manufacturing firms in Kenya.

From the research findings it was concluded that circular procurement had an effect on the organization performance of Kenyan

manufacturing firms. The correlation results indicated that there was a positive and significant correlation between circular procurement and organization performance. A unit change in circular procurement led to a significant change in organization performance, and significant change in organization performance was as a result of circular procurement. This conclusion was also based on the fact that the respondents agreed to most of the dimensions on circular procurement being helpful in enhancing organization performance.

REFERENCES

- Akinade, O.O.; Oyedele, L.O. (2019). Integrating Construction Supply Chains Within a Circular Economy: An ANFIS-Based Waste Analytics System (A-WAS). *Journal of Clean Production*, 229, 863–873.
- Agrawal, V., A. Atasu and K. van Ittersum (2015). Remanufacturing, Third-Party Competition and Consumers' Perceived Value of New Products. *Journal of Management Science*, 61 (1), 60-72.
- Blomsma, F., & Brennan, G., (2017). The Emergence of Circular Economy: A New Framing Around Prolonging Resource Productivity. *Journal of Industrial Ecology* 21 (3), 603–614.
- Braun, A.T.; Kleine-Moellhoff, P.; Reichenberger, V.; Seiter, S. (2018). Case study analyzing potentials to improve material efficiency in manufacturing supply chains, considering circular economy aspects. *Journal of Sustainability* 6 (4) 34 – 56.
- Bressanelli, G., Perona, M., Sacconi, N., (2018). Challenges in Supply Chain Redesign for The Circular Economy: A Literature Review and a Multiple Case Study. *International Journal of Production Resources*, 1–28
- Chen, T. and K. Kockelman (2016). Carsharing's Life-Cycle Impacts on Energy use and Greenhouse Gas Emissions. Transportation Research Part D: *Journal of Transport and Environment Management*, 47, 276-284,
- Chouinard, Y. (2016). Let My People Go Surfing: The Education of a Reluctant Businessman: Including 10 More Years of Business Unusual. *New York: Penguin Books*.
- Christ, T. W. (2020). Scientific-based research and randomized controlled trials, the “gold” standard? Alternative paradigms and mixed methodologies. *Qualitative Inquiry*, 20(1), 72–80.
- Dora, M., Bhatia, M.S. & Gallear, D. (2016). Supply Chain in a Circular Economy: a Multidimensional Research Agenda, *Nairobi University*.
- Duan, C.; Xiu, G.; Yao, F. (2019). Multi-Period E-Closed-Loop Supply Chain Network Considering Consumers' Preference for Products and AI-Push. *Sustainability*, 11, 4571.
- Dulebenets, M.A. A Diploid (2018). Evolutionary Algorithm for Sustainable Truck Scheduling at a Cross-Docking Facility. *Journal of Sustainability*, 10, 1333.
- Ellen McArthur Foundation (2018). Eleven Companies take Major Step Towards a New Plastics

Economy.

- ElMassah, S. (2018). Industrial Symbiosis Within Eco-Industrial Parks: Sustainable development for Borg El-Arab in Egypt. *Journal of Business Strategy and Environment* 27, 884–892.
- Genovese, A., A. A. Acquaye, A. Figueroa, and S. L. Koh. (2017). Sustainable Supply Chain Management and the Transition Towards a Circular Economy: *Evidence and Some Applications*, *Omega* 66: 344–357.
- Ghisellini, P.; Cialani, C.; Ulgiati, S. (2016). A Review on Circular Economy: The Expected Transition to a Balanced Interplay of Environmental and Economic Systems. *Journal of Clean Production*, 114, 11–32.
- Gatune Julius, Ozor Nicholas & Oriama Ruth, (2020). Modelling Bio Economy Futures for Eastern Africa. *Emerald Publishers*.
- Helfat, C.E.; Peteraf, M.A. (2018). The dynamic resource-based view: Capability lifecycles. *Journal of Strategic Management* 3 (7), 997–1010.
- Linder, M., and M. Williander. (2017). Circular Business Model Innovation: Inherent Uncertainties. *Business Strategy and the Environment* 26 (2): 182–196.
- Moreno, M.A., De los Rios, C., Rowe, Z., Charnley, F. (2016). A Conceptual Framework for Circular Design. *Journal of Sustainability*, 8, (6)124- 937.
- Patrick Schröder & Jan Raes (2021). Financing an Inclusive Circular Economy. De- Risking Investments for Circular Business models and the SDGs. *Chatham House, the Royal Institute of International Affairs, London*.
- Pfeffer, J., & Salancik, G. R. (1978). *The External Control of Organizations: A Resource Dependence Perspective*. Harper & Row.
- Ren G. & Gamestone M. (2022). Servitization in Manufacturing Companies. *Journal of Craft Production System* 6 (4) 4-7.
- Romero, & D, Rossi, M. (2019). Towards Circular Lean Product Design Service Systems. *Procedia Journal* 7 (2) 34 – 56.
- Rovinaru F.I., Rovinaru M.D. & Rus A.V., (2019). The Economic and Ecological Impacts of Dismantling End-of-Life Vehicles in Romania. *Journal of Sustainability*, 11, (6), 44 - 68.