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Original Article

## Examining the Effect of Trust on Supply Chain Performance: The Mediating Role of Process Innovation

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This paper assesses the effect of trust on the practice of supply chain performance. The paper also examines the mediating role of process innovation in the relationship between trust and supply chain performance in Tanzania. Drawing from social exchange theory and relational exchange theory, the research posits that, there is a crucial link between trust and supply chain performance. The paper is hence guided by four hypotheses: H<sub>1</sub>, there is a positive and significant relationship between trust and supply chain performance. H<sub>2</sub>, there is a positive and significant relationship between process innovation and supply chain performance. H<sub>3</sub>, there is a positive and significant relationship between trust and process innovation. H<sub>4</sub>, process innovation mediates the relationship between trust and supply chain performance. The study collected survey data from 262 top managers of 128 companies involved in exporting agricultural products in Tanzania. Inferential statistics were used to assess the relationship between the variables. The findings suggest that both trust and process innovation have a positive and significant effect on supply chain performance. Additionally, the study found that process innovation mediates the relationship between trust and supply chain performance. The current study is unique in its analysis of the influence of group trust on supply chain performance and the mediation role of process innovation, which has received little attention in previous studies.

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#### INTRODUCTION

Trust is a crucial and an important element in production economics. It enhances growth and persistence of social capital within an organization (Charterina et al., 2016; Lavastre et al., 2014). Trust is a very important factor, when companies choose to integrate activities, forming and maintaining business relationship as well in establishing control systems (Tanskanen, 2015).

Previous studies have demonstrated the role of trust in social and business interactions within the context of inter – organizational relationships (Halil et al., 2016; Hassan et al., 2015). Trust facilitates relationship – building which is central to the functioning of supply chain operations in an organization (Christopher, 2016). It is an important variable at explaining and predicting a mechanism to which supply chain performance better in an organization (Jajja et al., 2014; Atalay et al., 2013; Ireland & Webb, 2007).

In Tanzania, the concept of trust has proven to be very useful in the enhancement of supply chain operations. It has been identified as a key factor towards the rapid growth of manufacturing entities in the country (Kissoly et al., 2017; Wambura et al., 2014; Ugulumu & Inanga, 2013; Ruteri & Xu, 2009; Mafuru, 2007).

It is important to note that, for effective collaboration to occur between organizations, trust is key. It enforces, operators to fully realize the benefits of supply chain systems.

(Touboulic et al., 2014). Scholars in supply chain systems have indicate that, collaboration facilitates supply chain performance amongst the supply chain partners and stakeholders (Nkwabi, 2019; Mollel, 2015; Wambura et al., 2014).

Such collaboration enhances an improvement towards which the supply chain operations is undertaken (Ireland & Webb, 2007).

In the pursuit of improving quality of relationship between supply chain performance and trust, innovation plays a pivotal role (Charterina et al., 2016). It is through innovation that competitive advantage is achieved. Innovation triggers news ideas to facilitate operational procedures and put in place the use of technology for a better enhancement of the whole processes of supply chain management and hence better performance.

No enough studies have been settled on the impact of trust on innovation and its influence on performance outcomes of supply chain management. The current paper explores empirically, the effects of trust on supply chain performance while as well assessing the mediating role of process innovation in the relationship between trust and supply chain performance.

The current study draws from social exchange theory and relational exchange theory in explaining the link existing between the proposed variable.

The paper is divided into various sections, the first section is the introduction, the second section is about theory and hypotheses development, the third

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section is on methodology and analytical procedures, the fourth section is about results and the last section is about discussions and recommendations.

### THEORY AND HYPOTHESIS

The theoretical explanation of the current study is drawn from social exchange and relational exchange theories. The two theories are used in explaining the existing relationships between trust and supply chain performance in the food supply chain management in Tanzania's agricultural industries (Li et al., 2014).

Relational exchange theory for instance provides the need of strengthening relationship between industries and consumers by insisting on producing quality food staff to the end user, because quality in facilitates the strengthening of better relations between manufactures and consumers (Li et al., 2014).

The relational exchange theory cements on the need of increased social interaction and the development on non-economic relationships between partners in supply chain operations for in the end predicts customer satisfaction (Glavee-Geo & Engelseth, 2018).

Social exchange theory reflects the importance of personal relationships between individuals. The theory is of the opinion that, individuals in a social setting will tend to reciprocally give back with good deeds and positive actions to the party doing fair and good to them. This kind of reciprocal relationship yields into interdependent transactions and contingency of actions amongst individuals (Blau, 1964; Tanskanen, 2015).

The application of social exchange theory in supply chain management is very key especially at this age of technological advancement and rapid growth of business competitions (Hult, 1998; Griffith et al., 2006).

## The Concept of Trust

In business studies, trust is defined as a belief that, a party in a business negotiation will act honestly and benevolently during a business engagement (Cai et al., 2013). Being honest and being benevolent reduces suspicion during the business talks and processes, especial when there might me a thinking that the other part is acting opportunistically (Fawcett et al., 2012; Salam, 2017).

Christopher (2016) categories trust into three categories, contractual trust, trust based on competence trust, and goodwill trust. Contractual trust is reflected on the bases of keeping promises, while competence trust is related to professionalism and keeping business standards. Last a goodwill trust is more of basing on fairness especially when there is consensus between the parties

Furthermore, it is noted by previous studies that, the concept of trust has an economic value in an organization as it is for information and knowledge (Kwak et al. 2018). Trust capacitates the smoothening of cooperation without the limits of contracts and therefore quickens the flow of goods and services and hence improves the supply chain transactions without plutocracy of documentations (Abdallah et al., 2017).

When trust exists in an exchange relationship, parties do not need to spend as much time and resources monitoring each other to ensure that the other party is fulfilling their obligations. This is because they have confidence that both parties will act in good faith and not take advantage of each other, even when given the opportunity to do so. In addition to reducing transaction costs, trust has been shown to increase productivity in exchange relationships (Charterina et al., 2016; Abdallah et al., 2017).

#### **Process Innovation**

Process innovation refers to the implementation of a newly designed technological method or

processes in the delivery of products or services. It combines facilities, skills, and technologies in the process of production, delivering and in supporting a product or a service. Process innovation is essential in enhancing competitiveness and for structural renewal in organizations (Ageron et al., 2013).

Process innovation refers to improvements in the production, supply chain, and managerial processes of a firm. Even though these innovations may not have any direct observable impact on the final product, they can significantly enhance a firm's organizational structure, production process, and supply chain efficiency (Basker, 2015).

Innovation can be either technological or non-technological forms, and can be either incremental or radical. Incremental innovation involves making minor changes to existing processes or products over time, while radical innovation involves introducing a completely new process or product as the current one becomes obsolete (Nguyen et al., 2008; Ageron et al., 2013). In reality, most innovation initiatives tend to be incremental rather than radical. Process innovation, regardless of its form, leads to improved and more efficient processes (Soosay et al., 2008).

Many studies have focused primarily on technological innovation, while relatively little attention has been paid to process innovation (Azar & Drogendijk, 2016).

## **Supply Chain Performance**

Supply chain performance refers to the whole process into which the organization effectively minimizes costs of operations, while at the same time maximizes sales of goods and service.

Traditionally, logistic management was connected to issues around procuring of goods and services, shipping of goods as well as inventory and maintaining of such good in an organization.

However, in the modern times supply chain management involves adding value to how organizations operate, and also on how organizations innovate into new products development, how organizations do marketing and how they manage finances.

Supply chain performance aims at achieving organizational goals in meeting customer needs as well we making sure an organization develops sustainably (Hassan et al., 2015).

The overall performance of SCP is determined by several parameters, including measures for operations, organization, company, and finance. Supply chain performance is mostly determined by some indicators such operations, firms, and companies.

A model commonly used to measure overall SCP takes into account resources such as costs, product quality, response time, customer satisfaction, production capacity, schedule, and lead time (Shahbaz et al., 2018). It is essential to consider all aspects required to achieve operational performance, not just financial indicators, as they may not accurately reflect all performance aspects. Therefore, the balanced scorecard approach, which includes operational indicators, is needed to measure SCP accurately (Attia, 2017; Shahbaz et al., 2018).

The production process involves converting inputs into outputs, and it is closely related to the activities in the supply chain. The supply chain encompasses not only the flow of goods or services but also the flow of information and inventory management (Wu et al., 2014).

Measuring supplier performance is crucial in evaluating the success of the supply chain. In the context of global competition, the cooperation of all members of the supply chain is necessary. To achieve efficiency and effectiveness, it is important to measure the supply chain performance, which

ultimately contributes to the sustainability and survival of the business (Basu et al., 2017)

## **Hypothesis Development**

## Trust and Supply Chain Performance

The concept of supply chain relates to processes connected to the flow of goods and information concerning the procuring of raw materials to the delivery of such materials to its end user.

Objectively, the goals of supply chain in any organization are well defined when manufacturers make it possible for well-established mechanism of product production and hence determining the constructs of supply chain performance (Christopher, 2016).

Additionally, Halili et al (2016) explained that for supply chain operations to performance well, manufacturers need to be flexible, care of time lead reductions, and make efforts in lowering costs in the supply chain operations.

Previous studies have indicated for priorities necessary in the measure of supply chain performance, the speed, the quality, the cost, and the flexibility. (Susanty et al., 2018; Anderson et al., 2017).

Furthermore, empirical studies have indicated that trust, is an important variable in explaining the underlying mechanism into which supply chain performance can well be explained.

Abdullah and Musa (2014), for instance pointed out that, trust has a positive and significant impact on supply chain performance that commitment. He highlighted that it crucial for organizations to invest on building trust among business partners in order to strengthen better business relations.

Similarly, in a study conducted in the construction industry in Malaysia, Halil et al. (2016) found that trust between contractors and suppliers led to more efficient and effective communication, resulting in a better relationship

In a study by Eksoz et al. (2019). Ramdas and Spekman (2000) proposed six factors that are necessary for building a strong partnership relationship are trust, approach, communication, value sharing, empathy, and reciprocity as identified by Eksoz et al. (2019).

Prior studies have indicated a significant and positive relationship between trust of authority balance and alliance performance. The bestowing of proper and trustful authority in operations management increase performance of those allying the business partnership.

For instance, is a study of Medina-Munoz (2016), trust was found to have a significant and positive impact on the success of inter-organizational relationships between tour operators and accommodation companies. The results of the study indicated that there is a positive association between trust and performance on issues pertaining operation management.

Further, Doney and Cannon (2018) assessed the role of trust on buying behavior in business-to-business relationships. In the examination of two types of trust, trust in selling and trust between the front-line employees, they found out that when customers bestow trust to the employees of the company, such a company yields more results.

According to Tregurtha and Vink (2018), the basis for trusting front-line personnel varies among customers. In their study on trust and supply chain relationships, they used the case of the South African Breweries (SAB) and the Taung barley project to show that the trust relationship between farmers and SAB was determined by the efficiency of barley production in Taung. They concluded that while trust cannot transform an economically unfavorable relationship into a good one, it can improve an already good relationship.

This study posited that the trust alliance between SAB and the small-scale farmers is driven by sound economic principles and low-risk preference. Both

parties prioritize profitability in their decisionmaking processes, and the trust alliance helps to reduce transaction costs for the farmers. Therefore, the hypothesis is that the trust relationship between SAB and the small-scale farmers positively affects the economic performance of the Taung barley supply chain.

 $H_1$ : There is positive and significant relationship between trust and supply chain performance

## Innovation and Supply Chain Performance

Innovation encompasses all activities related to generating ideas, developing technology, and improving products and processes. According to Kulangara et al. (2016), refer innovation as the capability to provide new products or services that did not previously exist. Innovation is measured by various factors, namely, product design, improved product features, and the creation of new products.

Skardon (2011) views innovation as the process of implementing new and improved products, processes, marketing method, or external relationship. Ceserani (2014) suggests that integrity, commitment, and competence are essential for an organization to carry out successful new product innovation.

Collaborative learning and idea generation among stakeholders are crucial for innovation within an organization. Hardwick et al. (2013) argue that collaboration between two or more innovative companies can result in reduced development costs, lower risks, optimal economies of scale, and shorter development times. Such collaborative efforts lead to the generation of new and diverse ideas, enhancing the competence of the organization in creating innovative products.

Atalay et al. (2013) found that process innovation has a significant impact on company performance, similar to product innovation. Innovation can lead to consistent product and service quality, which in turn can improve Quality Management (QM) practices by reducing process variability and preventing errors. Effective QM practices that continuously improve can positively affect organizational performance (Lee et al., 2011).

Several researchers have highlighted the importance of integrating innovation and supply chain management, which is seen as a distinct problem (Alvaro et al., 2001; Kim et al., 2006). In recent years, scholars have focused on the added value of innovation and methods that can fully utilize resources, given their relationship with both supply chain processes and firm performance (Kim et al., 2006). To address these issues, firms must pay attention to the external environment and collaborate with supply chains to ensure efficient responses to dynamic market needs (Lin & Yu, 2009).

There is a scarcity of empirical studies that investigate the relationship between innovation and other constructs in supply chain performance, according to Seo et al. (2014). Researchers argue that the ability to innovate is a differentiating factor between high-performing and low-performing organizations. Although non-technological innovation has been overlooked in previous research, this study suggests that process innovation can serve as a mediator between trust and supply chain performance (Azar & Drogendijk, 2016). Therefore, this study proposes the following hypothesis:

*H*<sub>2</sub>: There is positive and significant relationship between process innovation and supply chain performance

#### **Trust and Innovation**

Social exchange theory suggests that supply chain partners generate and realize innovative ideas through stakeholder networking and collaboration, as noted by Dovey (2009). Such social interaction contributes to the development of innovative capabilities among partners, according to Kilungara et al. (2016). While conflicts and misunderstandings

can arise in any relationship, partners can build trust and foster further innovation through collaborative communication and constructive conflict, as observed by Fletcher-Chen et al. (2017).

According to Giest (2019), the development of trust among supply chain partners leads to knowledge exchange and collaborative innovation. It is important to note that trust development is not meant to replace formal contracts but rather to complement them. In other words, trust and formal contracts work together to stimulate product innovation, and one cannot substitute for the other in isolation. Charterina et al. (2016) support this view and argue that trust is not a substitute for formal contracts but rather a vital complement to business relationships.

Based on the links between different types of trust and innovation, this study puts forward the hypothesis that there exists a positive and significant relationship between trust (intra-firm, inter-firm, inter-organizational, and with customers) and innovation. Personal trust has been found to contribute positively to innovation, while trust in ecosystem dimension has been identified as a factor that fosters innovation

*H<sub>3</sub>: There is positive and significant relationship between trust and process innovation* 

## The Mediating Role of Process Innovation in Trust and SCP Relationship

Previous studies have indicated the mediating role of process innovation in the relationship between trust and supply chain performance.

In a study conducted by Alosani and Al-Dhaafri (2022) examining the role of kaizen the culture of police performance in Dubai, found out that innovation mediated the relationship between kaizen and police performance.

Similarly, Ali et al. (2021) investigated the effect of governance in information technology on

organizational performance and observed partial mediation of innovation between the two constructs. These studies provide evidence of the direct association between innovation and organizational performance. Based on this evidence, this study proposes that

H<sub>4</sub>: Process innovation mediates the relationship Trust and Supply Chain Performance

## **METHODS**

This study employs a descriptive research design, which aims to measure the relationship between research variables and indicate the direction of that relationship. The data used in this study is primarily derived from primary sources, which are considered the main resource for gathering information.

The method of data collection utilized in this study is a survey, with the main data collection tool being questionnaires. Questionnaires are a type of data collection tool that involves providing respondents with a set of questions or written statements to respond to. The researchers collected the data through direct visits to the respondents in Dar es Salaam, Tanzania

For data collection, a questionnaire was used with a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). To ensure clarity and consistency, the research team had a session with research assistants to clarify the variables of the study. This was done as a means of capacity building in case some respondents required clarifications while filling the questionnaire. The population for this study consists of agricultural products companies/organizations based in the city of Dar es Salaam. The city has a total of 128 agricultural products companies, and all firms located in the commercial city of Tanzania were included in the study

The suppliers selected for this study belong to various categories such as food and beverage suppliers, florist and decoration suppliers, bakery

suppliers, documentation suppliers, and suppliers of other supporting goods and services. The sample population consists of suppliers who have been actively supplying agricultural products to companies in Dar es Salaam for at least one year.

The sampling technique used in this study is judgment sampling, also known as purposive sampling, where the sample is selected based on available information to ensure that it represents the population accurately.

This study utilizes the Structural Equation Modeling (SEM) approach, which enables the inclusion of all observed variables based on the theoretical model developed using Partial Least Squares (PLS) analysis. PLS analysis comprises two models, namely the outer model and the inner model. The outer model evaluates the validity and reliability of the indicators, while the inner model measures the path coefficient and t-value needed to test the hypotheses (Suprapto et al., 2017). The data for this study were collected through a questionnaire distributed to 128 organizations that primarily engage in exporting agricultural products.

The survey targeted the top management team members who were assumed to possess adequate knowledge of the supply chain operations. A total of 384 questionnaires were distributed, and 262 of them were retrieved, yielding a response rate of 45%

## **Analysis Strategy**

This survey aimed to gather responses from top management team members who were presumed to possess sufficient knowledge of the supply chain operations. A total of 384 questionnaires were distributed, out of which 262 were collected, resulting in a response rate of 45%

### **RESULTS**

## **Descriptive Statistics**

The descriptive statistics reveal that the majority of the respondents were male (59%) and that the age group of 41-50 comprised 41.8% of the respondents. Additionally, most respondents had at least a Bachelor's degree (75.9%) and 57.9% had been employed by their current organization for at least five years, indicating a high level of reliability in their response

Regarding the correlation between variables, it should be noted that age is negatively correlated with trust (-0.213, p < 0.01), indicating that as individuals age, their level of trust may decrease. However, there is no significant relationship between age and innovation (0.01, p = 0.867), as indicated by the correlation analysis. Experience is negatively and significantly correlated with trust (-0.426, p < 0.001), innovation (-0.466, p < 0.001), and SCP (-0.221, p < 0.001)

## **Regression Analysis**

## Hypothesis Testing

 $H_1$ : There is positive and significant relationship between trust and supply chain performance

As indicated in *Table 1*, there is positive and significant relationship between Trust and SCP t=12.328, p=0.000

**Table 1: Trust and Supply Chain performance** 

|   | Model      | Unstandardized<br>Coefficients |            | Standardized<br>Coefficients | t           | Sig.  | Collinearity<br>Statistics |     |
|---|------------|--------------------------------|------------|------------------------------|-------------|-------|----------------------------|-----|
|   |            | В                              | Std. Error | Beta                         | <del></del> |       | Tolerance                  | VIF |
| 1 | (Constant) | -0.667                         | 0.358      |                              | -1.864      | 0.063 |                            |     |
|   | T          | 1.221                          | 0.099      | 0.608                        | 12.328      | 0     | 1                          | 1   |

*H*<sub>2</sub>: There is positive and significant relationship between process innovation and supply chain performance

Process innovation has positive and significant relationship with SCP t=14.110, p=0.000 as depicted in *Table 2*.

Table 2: Regression between Process innovation and Supply chain performance

|    | Model                      | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |  |
|----|----------------------------|-----------------------------|------------|---------------------------|--------|------|--|
|    |                            | В                           | Std. Error | Beta                      |        |      |  |
| 1  | (Constant)                 | 2.548                       | 0.099      |                           | 25.755 | 0    |  |
|    | IN                         | 0.366                       | 0.026      | 0.659                     | 14.11  | 0    |  |
| a. | a. Dependent Variable: SCP |                             |            |                           |        |      |  |

H<sub>3</sub>: There is positive and significant relationship between trust and process innovation

The regression results suggest there is a positive and significant relationship between Trust and Process Innovation t=12.328, p=0.000 as indicated in *Table 3*.

Table 3: Trust and process innovation relationship

|    | Model                     | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |  |  |
|----|---------------------------|-----------------------------|------------|---------------------------|--------|------|--|--|
|    |                           | В                           | Std. Error | Beta                      | _      |      |  |  |
| 1  | (Constant)                | 667                         | .358       |                           | -1.864 | .063 |  |  |
|    | T                         | 1.221                       | .099       | .608                      | 12.328 | .000 |  |  |
| a. | a. Dependent Variable: IN |                             |            |                           |        |      |  |  |

H<sub>4</sub>: Process innovation mediates the relationship Trust and Supply chain performance

This study applied Sobel test for mediation using unstandardized B values and standard errors between the main variables of study.

When Trust was regressed against Process Innovation B=1.221 and p= 0.099; then researcher had to run a multiple regression analysis T and IN and SCP. B and standard errors were as indicated in *Table 3*:

**Table 4: Multiple regression T and IN on SCP results** 

|                         | Model      | Unstandardized<br>Coefficients |            | Standardized<br>Coefficients | t     | Sig.  | Collinearity<br>Statistics |       |
|-------------------------|------------|--------------------------------|------------|------------------------------|-------|-------|----------------------------|-------|
|                         | -<br>-     | В                              | Std. Error | Beta                         | _     | •     | Tolerance                  | VIF   |
| 1                       | (Constant) | 1.808                          | 0.182      |                              | 9.934 | 0.000 |                            |       |
|                         | T          | 0.3                            | 0.063      | 0.269                        | 4.762 | 0.000 | 0.63                       | 1.587 |
|                         | IN         | 0.275                          | 0.031      | 0.496                        | 8.765 | 0.000 | 0.63                       | 1.587 |
| Dependent Variable: SCP |            |                                |            |                              |       |       |                            |       |

Lastly using the online sobel calculator and applying unstandardized B coefficients and standard error values researcher obtained t values 4.44229, p=0.00001 meaning that there was

mediation effect of Process innovation in Trust and Supply Chain Performance relationship.

## DISCUSSION AND THEORETICAL CONTRIBUTION

This study was guided by four Hypotheses as follows:

H<sub>1:</sub> there is positive and significant relationship between trust and supply chain performance. Results depicted from the regression analysis suggests that; business conducted under trusting environment leads to better communication between the parties it reduces lead time and lower costs (Christopher 2016: Halil et al., 2016). Trust improves buying behaviour (Doney & Cannon, 2018)

H<sub>2</sub>: there is a positive and significant relationship between process innovation and supply chain performance. Results suggest that process innovation have significant relationship with supply chain performance. Innovation has an impact in improving design, process, and method of marketing and external relationship (Skardon, 2011). Findings from the study are supported by previous findings by Atalay et al., (2013) who found that process and product innovation have significance impact on company performance.

H<sub>3</sub>: There is positive and significant relationship between trust and process innovation. The analysis results indicate there is positive and significant association t, 12.328; p, 00. Findings support the previous studies by Lei et al., 2019 who found a positive and significant relationship between personal trust and innovation. Once trust is developed between partners, they start sharing knowledge and participate in collaborative innovation (Giest, 2019).

H<sub>4</sub>: Process innovation mediates the relationship between trust and supply chain performance. the figures derived from the analysis above confirms the significant mediation effect. These findings are in line with the findings of the studies conducted by Alosani and Al-Dhaafri (2022) and Ali et al., (2021) who studied the mediation effect of innovation on organizational performance. In these two studies, however, the independent variables were culture and governance in information technology. This study addressed the mediation role of process innovation in performance however in this case trust was the independent variable.

#### **CONCLUSION**

Companies need to invest on developing relationship with partners in the supply chain. Studies have suggested that the better the relationship the better the performance. Organizations need to note that trust is not a replacement for other structures to function properly but rather it should complement (Charterina et al., 2018). Innovation can take forms other than technological. Organizations which focus on improving ways of conducting business have greater chances of surviving the competition than organizations which solely rely on technological innovation. Organization should nurture innovation environment by recognizing and awarding innovative ideas which have proved to improve the performance.

Trust has notable contribution in enhancing innovation. Building trust environment in an organization is likely to improve innovation. It is therefore important to develop trust between different teams/functions in an organisation. As businesses are turning to be more networked due to the level of global competition among other factors, trust developed from such relationships will have valuable impact when the trust fosters the development of innovation.

#### **Limitations and Future Direction**

Geographical, data collection was limited to Dar es Salaam city. Therefore, findings from this study cannot be generalized to a bigger geographical location. Further data was collected from one sector which is firms dealing with the export of agricultural products. It is therefore possible to have some sectorial biases when conducting this kind of

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studies. Future researcher should look at other sectors of economy and possibly a multi sectorial approach should be adopted.

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