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Corruption in Namibia: Examining the Nexus Between Survey-Identified Causes and Empirical Validation

Charles Tuiuane Karita

Department of Economic Engineering, Kyushu University,

〒819-0395, 744, Motooka, Nishi-ku, Fukuoka, Japan

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Abstract

This study investigates the causal relationship between the factors identified in the 2016 National Corruption Perception Survey Report and corruption levels in Namibia. By analysing data from 2000 to 2022, the Toda-Yamamoto VAR Granger causality test was employed to investigate the impact of greed, poor leadership and law enforcement, poverty (working poverty), and poor pay (compensation to employees) on corruption levels. The results revealed statistically significant causal linkages between greed, poor leadership and law enforcement, and poverty. Poor pay, however, showed no significant causal influence on corruption. These findings highlight the necessity of tackling issues such as equal income distribution, poverty, and governance inadequacies in anti-corruption initiatives. Targeted measures based on empirical evidence can effectively reduce corruption and increase transparency in governance. Additionally, conducting more recent corruption surveys in Namibia could yield up-to-date perceptions that could be adopted in similar country-specific studies elsewhere.

Keywords: corruption, Granger causality, anti-corruption initiatives, governance

1. Introduction

Corruption is a multidimensional phenomenon that undermines the rule of law, distorts market competition, and erodes public trust in institutions. Corruption manifests in various forms, encompassing both petty bribery and grand-scale embezzlement. According to Transparency International (2019), corruption is defined as "the abuse of entrusted power for private gain," with manifestations ranging from bribery, extortion, and nepotism to cronyism and illicit enrichment.

The nature and extent of corruption can vary across contexts, influenced by factors such as political culture, institutional quality, and economic development. In developing economies,

corruption often manifests as grand corruption, involving high-ranking officials and large-scale embezzlement of public funds, while in more developed economies, it may take subtler forms such as regulatory capture or influence peddling (Mauro, 1995). Corruption not only distorts resource allocation and hampers economic growth but also exacerbates social inequalities by favouring the privileged few over the broader population (Mauro, 1998).

Despite efforts to fight corruption through legal frameworks and institutional reforms, it remains a persistent challenge globally. The contest against corruption requires across-the-board approaches surrounding preventive measures, enforcement mechanisms, and public awareness campaigns. Moreover, addressing the root causes of corruption, including weak governance structures, inadequate accountability mechanisms, and entrenched vested interests, is crucial for fostering integrity and restoring public trust in institutions (Kaufmann & Vicente, 2011).

Notwithstanding the wealth of literature exploring corruption's complex nature, there remains a gap in understanding how perceptions captured in national surveys correlate with concrete manifestations of corruption. This cavity accentuates the importance of bridging theoretical insights with empirical realities, particularly in the context of Namibia's anti-corruption efforts.

While existing studies have provided valuable insights into the structural and systemic drivers of corruption, they often overlook the significance of survey data in informing anti-corruption strategies. National surveys serve as a barometer of public sentiment, offering invaluable insights into citizens' perceptions, attitudes, and experiences with corruption. Yet, their potential to inform evidence-based policy interventions remains largely untapped.

By leveraging survey-identified causes of corruption, this study seeks to address this gap and contribute to a more detailed understanding of corruption dynamics in Namibia. Specifically, it aims to elucidate whether factors identified in the National Corruption Perception Survey Report 2016 hold significant causal relationships with corruption levels in Namibia. This entails examining the strength and direction of these relationships, thereby enriching our understanding of the underlying mechanisms driving corruption in the country.

Besides, this study endeavours to explore the policy implications arising from the alignment between survey-identified causes and empirical findings. By discerning which factors exert the most substantial influence on corruption levels, policymakers can devise targeted interventions aimed at addressing the root causes of corruption. This tailored approach holds the potential to yield more effective and sustainable anti-corruption strategies, personalized to Namibia's distinctive socio-economic and political context. Given the detrimental effects of corruption on societal well-being and economic stability, particularly its exacerbation of poverty and inequality, focusing on corruption in Namibia is a topic that deserves greater consideration.

Overarching consequences of corruption include the failure to meet the Sustainable Development Goals (SDGs) due to increased poverty and inequality (Policardo & Carrera, 2018; United Nations Office on Drugs and Crime, 2017). This makes combating corruption

an urgent priority for Namibia, which already has a GINI coefficient of 59.1 according to the World Bank (2024). It is important to state that the more people who live in poverty, the more distrust there will be, and the legitimacy of the government's role will be called into question (Ades & Tella, 1996; Rose-Ackerman, 1999a). In addition, the unequal distribution of resources will make the system inefficient and further depress the economy (Desta, 2019; Feng, 2000; Rose-Ackerman, 1999b).

According to research on the causes of corruption, all forms of corruption should be eradicated in the long run. There are numerous reasons for the occurrence of corruption; for example, Lambsdorff (2006) and Dimant and Tosato (2018) all agree that the size of the public sector plays an important role in the occurrence of corruption. The Department for International Development (2015) claims that corruption is a result of poor governance rather than the cause of it. Meanwhile, De Graaf (2007) presented that how the causes of corruption are studied should ultimately determine the likely antidotes.

Corruption cures should not be generalized because one size does not fit all (Gnimassoun & Massil, 2019). It is vital to encourage and cascade research not only at a worldwide stage but also at regional and country-specific levels. When the most important aspects of an economy or country are stressed, a clearer picture of what needs to be done becomes possible. This opens the possibility of reforming the public sector, as proposed by Sharma and Pathania (2011) and Transparency International (2016). Other options to consider include striving for educational success, as asserted by Dimant and Tosato (2018) and opening and democratising autonomous, autocratic economies (Dong & Torgler, 2013). Although previous literature covers a wide range of possible causes using both theoretical and empirical methods, this study concentrates on five thematic areas on the causes that emerged from literature recurrently.

These thematic areas are as follows: the significance in modern society, the causes of corruption when cross-sectional studies have been applied globally, the causes found in developing countries, and the causes of corruption reported in Namibia. Although these themes are represented in various contexts in the literature, this paper will primarily focus on their relevance to the Namibian context.

As a result, this paper aims to reveal whether the acknowledged causes of corruption in the National Corruption Perception Survey Report 2016 in Namibia have significant causation on the corruption levels in Namibia and the strength and direction of their causal relationships. Secondly, what policy implications arise from the alignment between survey-identified causes of corruption and empirical findings? Lastly, how can this knowledge inform targeted anti-corruption strategies in Namibia?

2. Literature Review

2.1 Why Corruption Matters: Exploring its Significance in Modern Society

Understanding corruption and its harmful effects is crucial, as emphasised by the United Nations Office on Drugs and Crime (2017). It hampers the achievement of the Sustainable Development Goals (SDGs), breeds economic inefficiency, and deepens poverty. It leads to

public and private dysfunction, rigs economic and political systems, and undermines government legitimacy. Imagine a small business owner constantly facing demands for bribes to keep their business running—this is the everyday impact of corruption.

Corruption brings numerous societal problems: rising populism, organised crime, weakened state capacity, climate change, human rights violations, and widespread public disillusionment. Think of a community where trust in public institutions is so low that people no longer believe in the fairness of the judicial system. To tackle these issues, we must fully understand the broad impacts of corruption (Campos & Giovannoni, 2017; Peters, 2018).

Governments must take the lead in fighting corruption. Scholars like Ades and Tella (1996) and Rose-Ackerman (1999b) highlight how corruption harms investment, market competitiveness, and judicial systems. This creates inefficiencies and bureaucratic hurdles that foster bribery and stall economic progress. When judicial systems are compromised, citizens lose faith in justice, leading to a broader decline in societal morale.

Lambsdorff (2006) explored the complex causes and consequences of corruption, pointing to factors like the size of the public sector, regulatory quality, and cultural influences. He suggests that policymakers can adjust certain factors to reduce corruption. Dimant and Tosato (2018) further discuss various contributors to corruption, such as bureaucratic inefficiencies, political structures, and economic growth. Dimant and Tosato (2018) stress the need for policymakers to address these elements. Yet, many studies have overlooked insights from national surveys, leaving gaps in our understanding of corruption's societal impact.

2.2 Corruption Across the Borders

When examining the causes of corruption across different regions, Gnimassoun and Massil (2019) found glaring differences between sub-Saharan Africa, East Asia, the Pacific, and developed versus developing countries. This showed a need for tailored research that considers each region's unique characteristics. Volosin (2019), for example, gave a detailed analysis of Argentina's corruption, demonstrating how political and economic impediments obstruct reform attempts. Furthermore, the Department for International Development (2015) noted that corruption stems from weak governance rather than being the primary cause and hence called for comprehensive reforms.

Treisman (2000) highlights the difficulty of understanding corruption and warns against relying only on subjective ratings. The study showed that established democracies that have a free press tend to have lower corruption, while strict corporate rules and economic instability correlate with higher corruption. Intriguingly, Goel and Nelson (2010) and Pellegrini (2011) investigated how factors such as government size and cultural influences interact. According to Pellegrini (2011), robust legal systems and ongoing democratic governance help prevent corruption, whereas Goel and Nelson (2010) argue that geographic variables may also have an influence.

Policardo and Carrera (2018) link income inequality to higher corruption levels, while Rehman and Naveed (2007) find connections between economic development and corruption. These varied findings highlight the need for anti-corruption strategies that are commissioned

to each country's particular setting. For example, addressing income inequality in a developing country could be a crucial step in reducing corruption.

Tackling corruption requires a multifaceted approach. There is no one-size-fits-all solution; instead, there is a need to consider each region's political, economic, and cultural contexts to develop effective strategies.

2.3 Corruption in Developing Countries

Studies on corruption in developing countries have revealed various causes and manifestations. Desta (2019) underlined how institutional transparency, weak enforcement, and a lack of merit-based promotions drive corruption in the public sector. In so doing, corruption affects economic growth and political stability. Imagine civil servants rising through the ranks by bribery, perpetuating inefficiency and injustice.

Zhang et al. (2017) point to lax regulations and non-competitive bidding in China as corruption facilitators. Akomah and Nani (2016) blame greed and weak institutions for corruption in public procurement. In South Africa, Manyaka and Nkuna (2014) stated that political appointments and poor enforcement encourage corruption, resulting in wasted resources and poorly executed projects.

According to Basheka (2011), economic variables are more important in Uganda's fight against corruption, whereas Abu and Staniewski (2019) opined that economic progress and civil liberties reduce corruption in Nigeria. Similarly, Gani (2017) linked economic progress, colonial heritage, and a lack of democracy to corruption. Montinola and Jackman (2002) however, observe that corruption thrives in low-income nations with inadequate political competition. Cariolle (2018) found that education, government involvement, and political freedom influence corruption levels. Zimelis (2020) urges a broader perspective when studying corruption, pointing out a research bias toward underdeveloped countries.

These studies expound that corruption's roots are complex and vary, requiring personalised solutions considering each country's unique circumstances. A deeper understanding of these factors is essential for crafting effective anti-corruption remedies.

2.4 Namibia's Corruption Battle

Namibia is an economy that thrives on mining, especially diamonds and uranium, along with agriculture, fishing, and tourism. Although she has an abundance of natural wealth, the country struggles with high poverty rates, inequality, and unemployment, especially among the youth. Corruption is a precarious issue, as highlighted by the World Bank (2024a) and the 2016 National Corruption Perception Survey conducted by the Anti-Corruption Commission (2016).

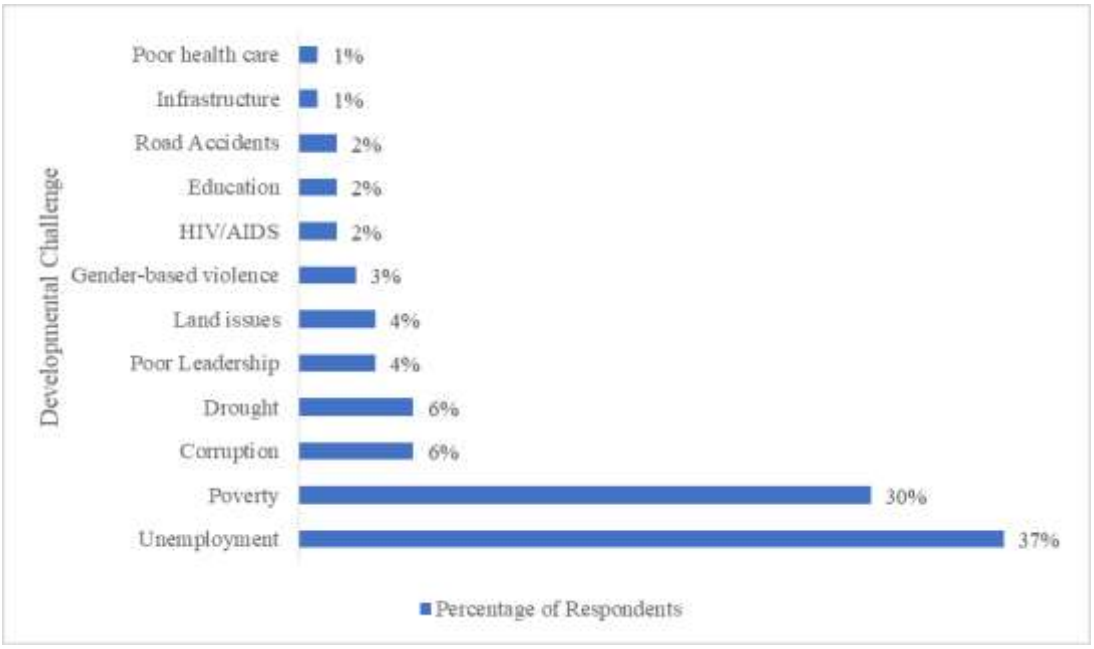

Figure 1. Main Developmental Challenges Facing Namibia[1]

The National Corruption Perception Survey Report 2016 stressed Namibia's perilous situation in Figure 1, with corruption ranking third with 6% of total respondents, alongside drought as the most worrisome developmental concerns. With 37% and 30%, unemployment and poverty were ranked first and second respectively (Anti-Corruption Commission, 2016). It is interesting to note that despite the passage of time between 2016 and the report of the Afrobarometer 2021 Survey, similar and concerning responses were obtained (Survey Warehouse, 2022).

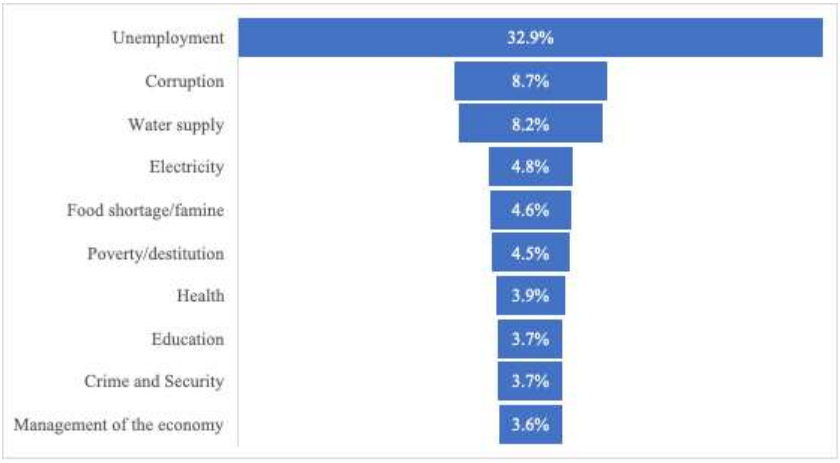

Figure 2. Most Important Problems Facing the Government[2]

[1] Source: National Corruption Perception Survey Report (2016)

[2] Source: Afrobarometer 2021 Survey

Taking only the top ten concerns from the survey, and the initial responses showed that from Figure 2, corruption came in at number two on the list of most critical problems to address, right behind unemployment. The percentage of people who chose corruption dropped to 5.3% and 5.2% respectively after the subsequent responses3. Furthermore, the Anti-Corruption Commission (2016) reported the causes that the public believes are to blame for Namibia's high level of corruption:

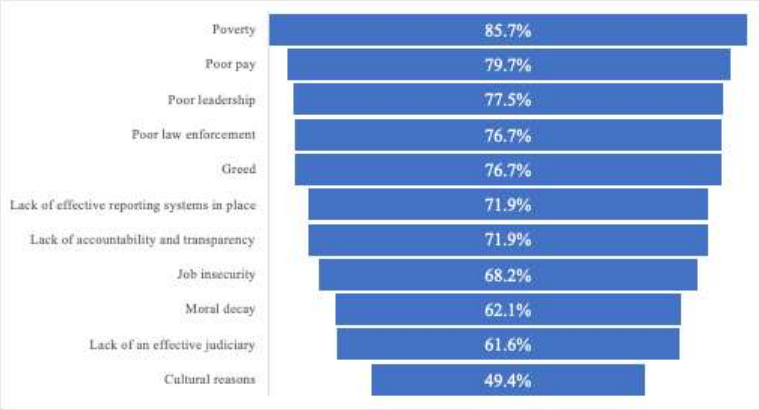

Figure 3. Causes of Corruption[4]

According to Figure 3, the top five causes of corruption were poverty, poor pay, poor leadership, poor law enforcement and greed. Keeping in mind that perception does not always equate to actual corruption, it is a preliminary point to consider.

The Anti-Corruption Commission (ACC) is the main institution responsible for fighting corruption in Namibia. It works alongside other important institutions such as the Office of the Prosecutor-General, Ministry of Justice, Namibian Police Force (NAMPOL), Financial Intelligence Centre (FIC), the Office of the Ombudsman and the judiciary to combat corruption in all forms (United Nations Office on Drugs and Crime, 2015).

However, incorporating multiple entities to combat corruption often poses difficulties in executing it efficiently. Links (2020) presented a report that provided an account of the governance situation in Namibia over five years, from 2015 to 2020. The report noted that the absence of commitment or participation from various institutions hindered the implementation of the National Anti-Corruption Strategy and Action Plan (2016 - 2019), leading to average or incomplete implementation.

According to a report by Yikona et al. (2011), there are several causes of corruption in Namibia, and one of them is the powerful influence of a single political party. This has led to an obscuring of lines between corrupt practices and unethical activities. The authors also note

[3] The Afrobarometer Survey report of 2021 asked the respondents the same question three times.

[4] Source: National Corruption Perception Survey Report (2016)

that privatization has led to closer ties between the business class and the political elite.

All Africa, (2010b) argue (as cited in Yikona et al., 2011) that they saw Black Economic Empowerment (BEE) executives have become rich business moguls who use their influence to swing parliamentary decisions and push for legislation that will benefit them financially.

Another issue contributing to corruption is a lack of sufficient controls and loopholes in the procurement system. Additionally, there is an issue about corruption linked to the exploitation of Namibia's natural resources, including fishing, farming, and mining concessions. It is important to balance the potential economic benefits of mineral extraction with the need for long-term environmental protection of Namibia's natural environment (Yikona et al., 2011).

The fundamental impetus for this paper draws from the findings of the National Corruption Perception Survey Report 2016, which examined the overall state of corruption in Namibia and partially covered the causes of corruption. The report was a promising start, but it only scratched the surface; a more precise review is required.

This study is grounded in the works of Treisman (2000), Mauro (1995) and Kaufmann and Kraay (2002) that established frameworks to uncover the causes of corruption. Treisman's (2000) research into the question of how the connections between economic development, political institutions, and cultural elements lead to corruption, is very important to this research in Namibia. Mauro's (1995) work, on his part, shows how corruption can have negative impacts on economic growth and why fighting corruption offers more sustainable inclinations to growth. Similarly, Kaufmann and Kraay's (2002) dedication to governance in illuminating the crucial roles of leadership and law enforcement vis-a-vis reducing corruption is well-taken.

This research applies these concepts to Namibia. It allows a clearer picture of the interrelationships of these variables, and the findings are instrumental in offering some targeted policy guidelines. This study thus extends the work of others and insists on a deep analysis of the context to develop appropriate governance reforms and provide transparency in policymaking.

3. Methodology

This paper looks to establish the causes of corruption in Namibia based on the responses stemming from the National Corruption Perception Survey Report 2016. The survey is the most recent and was the first corruption survey in Namibia that covered the whole of the country (rural and urban) and delved into both public and private sectors (Anti-Corruption Commission, 2016). Furthermore, the Anti-Corruption Commission (2016) indicated that the survey aimed to collect reference views and perceptions of stakeholders in Namibia. Thus, this left an area for investigation to establish whether causality does exist from the responses reported.

According to the Anti-Corruption Commission (2016) the survey's demographics are listed below:

- A greater number of males participated in the survey compared to females, with 56% of

respondents being male and 44% female.

- Unemployment rates were at 57% among respondents, with 55% falling within the 21-35 age bracket.
- The private sector employed the majority of working respondents, comprising 59%.
- Educational levels varied among respondents, with 15% having tertiary education, 46% secondary, 23% primary, and 15% lacking formal education.
- A significant portion, 48%, of respondents fell within the 21-35 age range.
- The survey sample was evenly distributed between rural and urban areas.
- Household income spanned from N$0 to N$20 000 or more, with the most common income bracket being between N$1 000 to N$1 900 respectively.
- Most respondents, 58%, were single and had never been married.

3.1 Identified Causes of Corruption

As depicted in Figure 3, the top five causes of corruption according to survey's respondents were:

i)	Poverty	-	85.7%
ii)	Poor Pay	-	79.7%
iii)	Poor Leadership	-	77.6%
iv)	Poor Law Enforcement	-	76.7%
v)	Greed	-	76.7%

According to the responses received, it can be said that the causes of corruption are mostly economic and ethical, suggesting that they may be more influential than other non-economic reasons (Anti-Corruption Commission, 2016). In past studies about corruption, people are often motivated to commit corrupt acts due to their economic interests or ethics (De Waele et al., 2021; Letki et al., 2023). For instance, poverty is widely considered as one of the major factors that leads to corruption since individuals who lack financial resources can easily get involved in such practices to survive.

Likewise, it has been argued that inadequate payment also drives employees into taking bribes to supplement their salaries thereby improving their living standards economically. Besides, morality has a significant impact on how individuals perceive dishonesty within public offices (De Waele et al., 2021; Letki et al., 2023) . Furthermore, respondents pointed out other factors such as poor leadership, poor law enforcement coupled with greed posed by public service once appointed become influential causes too.

3.2 Rationale for Proxy Variables Selected

To adequately explore the five identified causes, it is important to identify proxy variables

that are closely related to these causes. This will help in measuring the necessary steps for analysis (Kaufmann et al., 2011). Proxy variables assignment is significant in portraying complex potential causal linkages in empirical research designs (Acemoglu & Robinson, 2006).

Additionally, using proxy variables diligently can help solve the problem of mistakenly calculating abstract structures directly (Kaufmann et al., 2011). Reasonable proxy variables bring about a practical way for dealing with unobservable or latent variables. It means that this method can tackle the limitations and improve the accuracy of practical results at the same time.

3.3 Data and Variables

3.3.1 Justification of Variables Representing the Causes of Corruption

Corruption (dependent variable): Using the Control of Corruption estimate as the dependent variable is befitting since it directly relates to the study's focus on measuring corruption. It assesses how often public power is misused for personal gain, giving us a good sense of how widespread corruption is overall:

- The estimate gives a complete measure of corruption, that includes both petty and grand corruption.
- By checking the degree to which public power is abused for private gain, it offers valuable insights into the overall prevalence of corrupt practices.
- Its annual frequency allows for the tracking of corruption trends over time, providing a dynamic understanding of the phenomenon.

Poverty:

- The working poverty variable is deemed suitable as a proxy for poverty due to its focus on employed individuals living below the poverty line.
- It captures a significant aspect of economic deprivation, which could incentivise individuals to engage in corrupt practices.
- Measuring working poverty annually in US dollars allows a consistent assessment of working poverty levels and their potential impact on corruption.

Poor Pay:

- The compensation to employees (percentage of expense) variable serves as an appropriate proxy for poor pay, reflecting the share of income distributed to workers.
- The fact that Namibia lacks an official wage rate and approval has only been granted in 2024 for implementation in 2025 (The Namibia Economist, 2024).
- Selecting the compensation to employees is an appropriate alternative offering useful data and insight into the adequacy of compensation for labour.

- Annual measurement as a percentage of total expenses gives space for a thorough evaluation of poor pay trends and its relationship with corruption.

Poor Leadership and Law Enforcement:

- Utilizing the government effectiveness estimate was selected as it assesses the quality of governance and institutional capacity to implement and enforce policies, regulations, and laws.
- Since the two variables are often measured in tandem, it was seen as appropriate to combine them as one.
- Deficiencies in leadership and law enforcement contribute to the prevalence of corruption within the country, making this measure highly relevant.
- Annual estimates of the government effectiveness estimate provide ongoing information into the institutional factors influencing corruption levels.

Greed:

- The Gini coefficient index is an apt proxy for greed as it quantifies income inequality within a population.
- Higher values of the Gini coefficient indicate greater disparities in wealth distribution, potentially reflecting heightened levels of self-interest and greed.
- Th yearly publication of the Gini coefficient allows for the monitoring of income inequality trends and their potential association with corrupt behaviour.
- Milanovic's (2016) and Piketty's (2014) analyses showed the Gini coefficient's thorough evaluation of wealth allocation.
- This is typified by the chase for personal gain at the expense of others, triggers unequal wealth concentration and likely corrupt practices.
- Thus, this study employs the Gini coefficient as a marker for greed to offer a pragmatic way to quantify and confront the negative impact of self-interest on society.

Considering the 2012 alterations to the Corruption Perception Index published by Transparency International, it would not have been feasible to compare data from two different periods with different methodologies. An alternative index (corruption measure) was therefore more appropriate given this problem and considering data availability. The Control of Corruption estimate, published by the World Bank was preferred as it has been consistently measured and reported for the concerned sample period.

The Control of Corruption estimate is extensive enough showing multiple dimensions of governance on integrity and efficacy as mentioned by Kaufmann et al. (2011). It provides stability and reliability which are well in line with the frameworks of this study. Consequently, it was adopted for use as a dependable gauge for monitoring trends in corruption over time.

Analysing the cases from 2000 to 2022 gives enough room for insight into corruption

dynamics and how they relate to the selected explanatory elements. Such a wide time range enables one to carefully study tendencies and regularities. This could be helpful in ensuring that our discoveries are authentic and all-inclusive.

3.4 Methodological Approach

3.4.1 Overview of the Toda-Yamamoto Granger Causality

The Toda-Yamamoto Granger Causality (T-Y) test is an Econometrics test used to find out the causality between variables in time series data. But unlike the usual Granger causality tests, the Toda-Yamamoto test is a step above in terms of robustness as it is devoid of potential non-stationarity and endogeneity issues that may arise in the data (Toda & Yamamoto, 1995).

The Toda-Yamamoto Granger Causality (T-Y) test is based on an extended Vector Autoregression (VAR) model, with "k" being the number of lagged terms in the model. This test determines whether variables have a causal relationship with one another, accounting for any potential lags and differences in the data. By incorporating both lagged and differenced variables into the model, the augmented VAR $k+d_{max}$ framework provides a more robust and accurate way of identifying such causal linkages, boosting the accuracy of the T-Y test results (Toda & Yamamoto, 1995).

One of the key benefits of the Toda-Yamamoto test is its ability to handle non-stationary variables without the need for differencing, which sometimes leads to loss of information or spurious results. In addition, this test gives a rigorous statistical framework for testing causal relationships between variables, thereby aiding in the identification of underlying economic mechanisms (Toda & Yamamoto, 1995). However, it is important to specify that the Toda-Yamamoto test has certain limitations. For instance, it assumes linearity in the relationships between variables and may not be suitable for capturing complex, nonlinear interactions.

3.4.2 Model Specification of the Toda-Yamamoto Granger Causality Test

The Toda-Yamamoto Granger causality test is a method used to determine if one time series variable (X) Granger causes another time series variable (Y). The test involves estimating regression equations in a Vector Autoregression (VAR) model and performing a series of hypothesis tests on the coefficients to determine if X Granger causes Y. Considering the study consists of the four independent variables and one dependent variable; the Toda-Yamamoto Granger Causality test model specification is as follows:

For the dependent variable Y:

$$Y_t = \alpha + \sum_{i=1}^{p+d_{max}} \beta_i Y_{t-i} + \sum_{j=1}^{4} \sum_{k=1}^{p+d_{max}} \gamma_{jk} X_{j(t-k)} + v_t \qquad (1)$$

And for the explanatory variables X_j (where j = 1, 2, 3, 4):

$$X_{jt} = \alpha_j' + \sum_{k=1}^{p+d_{max}} \delta_{jk} X_{j(t-k)} + \sum_{i=1}^{p+d_{max}} \lambda_{ji} Y_{t-i} + \epsilon_{jt} \quad (2)$$

Where:

- Y_t is the dependent variable.
- X_{jt} is the j^{th} explanatory variable.
- α and α_j' are the intercept terms.
- β_i are the coefficients of lagged values of Y.
- γ_{jk} are coefficients of lagged values of X_{jt} in equation (1).
- δ_{jk} are the coefficients of the lagged values of X_j in equation (2).
- λ_{ji} are the coefficients of the lagged values of Y in equation (2).
- p is the optimal lag length.
- d_{max} is the maximum order of integration of the variables.
- $v_t \; and \; \varepsilon_{jt}$ are the error terms.

In this setup, the null hypotheses are two-folds. Firstly, that the lagged values of the explanatory variable individually do not Granger cause the dependent variable. Secondly that combined, the lagged values of the explanatory variables do not Granger cause the dependent variable.

The test involves estimating both equations (equation 1 and 2) separately and then performing a series of hypothesis tests on the coefficients to determine if the lagged values of the explanatory variables have a statistically significant effect on the dependent variable.

3.4.3 Application of Toda-Yamamoto Granger Causality Test

The study uses the log form of annual data from 2000 to 2022 to investigate the causal relationship between corruption and the survey's foremost causes: poverty, poor pay, poor leadership and law enforcement, and greed. Corruption is represented by the Control of Corruption estimate, poverty by working poverty, poor pay by the compensation of employees, poor leadership and law enforcement combined and represented by the

government effectiveness estimate, and finally greed represented by the Gini coefficient. The statistical software EViews 12 was used in this paper to analyse the data descriptively and generate the estimates.

The data for the study was sourced from the United Nations University World Institute for Development Economics Research (UNU WIDER), the World Bank, and the International Labour Organisation (International Labour Organization, 2023; UNU WIDER, 2023; World Bank, 2024b).

4. Results

4.1 Null and Alternative Hypotheses

Collectively and individually the lagged values of the independent variables (X_{jt}) do not Granger cause the dependent variable (Y). Mathematically, this can be written as:

$$H_0: \gamma_{j1} = 0, \gamma_{j2} = 0, \gamma_{j3} = 0, \gamma_{j4} = 0$$

$$H_{01}: \gamma_{j1} = \gamma_{j2} = \gamma_{j3} = \gamma_{j4} = 0$$

Where $\gamma_{j1}, \gamma_{j2,} \gamma_{j3,} \gamma_{j4}$ are the coefficients of the lagged values of the independent variable X_j in equation (1).

Alternative hypothesis: The lagged values of the independent variables (X_j) Granger cause the dependent variable (Y). Mathematically, this can be written as:

H_a: At least one of the coefficients ($\gamma_{j1}, \gamma_{j2,} \gamma_{j3,} \gamma_{j4,}$) is not equal to 0

H_{a1}: At least one of the coefficients ($\gamma_{j1}, \gamma_{j2,} \gamma_{j3,} \gamma_{j4,}$) is not equal to 0

In other words, the null hypotheses state that the coefficients of the lagged values of X_j in equation (1) are jointly and separately equal to zero, indicating no Granger causality. The alternative hypothesis asserts that at least one of these coefficients is not equal to zero, suggesting the presence of Granger causality.

4.2 Maximum Order of Integration

The paper employed the Augmented Dickey-Fuller (ADF) and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) tests to examine the integrating order of the variables under consideration. The results of the unit root tests for the variables produced that the maximum order of integration was I(0). Hence d_{max} is I(0).

4.3 Optimal Lag Length

Table 1. VAR Lag Order Selection Criteria

VAR Lag Order Selection Criteria

Endogenous variables: CORRUPTION GREED LAW_LEADERSHIP POOR_PAY POVERTY

Exogenous variables:

Sample: 2000 2022

Included observations: 21

Lag	LogL	LR	FPE	AIC	SC	HQ
1	171.039	NA	6.57e-13	-13.90849	-12.66501	-13.63862
2	214.7166	45.75735*	1.61e-13*	-15.68730*	-13.20034*	-15.14756*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: Results estimated using EViews 12

In Table 1. The optimal lag length was obtained using the AIC, SC, HQ criterions. Which was unanimous to be 2, hence k = 2.

4.4 Toda-Yamamoto VAR Granger Causality/Block Exogeneity Wald Test

By augmenting the VAR model i.e. incorporating ($k+d_{max}$), the Toda-Yamamoto VAR Granger Causality/Block Exogeneity Wald Test yielded the following results in Table 2.

Table 2. Toda-Yamamoto VAR Granger Causality/Block Exogeneity Wald Test

VAR Granger Causality/Block Exogeneity Wald Tests

Sample: 2000 2022

Included observations: 21

Dependent variable: CORRUPTION

Excluded	Chi-sq	df	Prob.
GREED	15.88096	2	0.0004
LAW_LEADERSHIP	7.116665	2	0.0285

POOR_PAY	1.280706	2	0.5271
POVERTY	6.83848	2	0.0327
All	23.05559	8	0.0033

Source: Results estimated using EViews 12

(a) Greed:

- Probability value: 0.0004
- Interpretation: The likelihood of such a strong relationship between greed and corruption happening by chance alone is extremely low.
- Therefore, it can be inferred that greed is a contributing factor to corruption.
- Conclusion: The H_0 is rejected; greed is found to Granger cause corruption.

(b) Poor Leadership and Law Enforcement:

- Probability value: 0.0285
- Interpretation: The likelihood of the observed connection between Law & Leadership and corruption arising by chance is fairly low.
- This suggests that poor leadership and law enforcement may indeed contribute to corruption.
- Conclusion: Reject the null hypothesis H_0; it is inferred that poor leadership and law enforcement Granger causes corruption.

(c) Poverty:

- Probability value: 0.0327
- Interpretation: The chance of poverty being related to corruption arising by random occurrence is relatively low.
- This suggests that poverty may indeed have an impact on the occurrence of corruption.
- Conclusion: Rejection the null hypothesis H_0, and conclude that poverty Granger causes corruption.

(d) Poor Pay:

- Probability value: 0.5271
- Interpretation: The estimated correlation between poor pay and corruption is quite considerable.

- However, this does not necessarily imply a strong causal relationship.
- Therefore, it can be reasonably concluded that poor pay is not a significant factor in influencing corruption.
- Conclusion: The null hypothesis H_0 cannot be rejected; there is no evidence to suggest that poor pay has a Granger causal effect on corruption.

And lastly, jointly, the four explanatory variables were statistically significant (probability value of 0.0033 which is less than the significant value of 0.05). Thus, the null hypothesis H_{01} was rejected and concluded that the four variables Granger cause corruption. This is pertinent information as it confirms previous studies such as Zimelis' (2020) findings that combating corruption requires a multifaceted approach across the board.

In terms of direction of causality, Table 3. below summarizes direction of causality when each independent variable is made the dependent variable in relation to corruption.

Table 3. Direction of Causality

Variable	Probability Value of Corruption	Direction of Causality
Poverty	0.4143	Poverty → Corruption
Poor Pay	0.0809	Poor Pay ⇎ Corruption
Poor Leadership & Law Enforcement	0.4907	Poor Leadership & Law Enforcement → Corruption
Greed	0.3215	Greed → Corruption

Source: Results estimated using EViews 12

Poverty causes corruption:

- Contrary to popular belief, poverty can sometimes act as a catalyst for corrupt behaviour, revealing a complex relationship between an individual's economic status and their ethical conduct.
- Possible explanation: Those experiencing financial hardship may turn to corruption as a means of survival or to improve their socio-economic situation.
- Limited opportunities and unequal access to resources can lead individuals to engage in unethical practices.

Poor Pay has no causal relationship with corruption:

- The absence of a direct link between compensation of employees and corruption

challenges conventional wisdom regarding the influence of financial remuneration on corrupt behaviour.

- Possible reasons: While low employee compensation may lead to financial strain, other factors such as personal ethics, organisational culture, and the effectiveness of anti-corruption measures are likely to have a more significant impact on individuals' propensity towards corruption.

Poor Leadership and Law Enforcement causes corruption:

- This finding points to governing frameworks and leadership having a significant impact on corruption and highlights the critical role of governance structures and accountability in shaping ethical conduct.
- Potential reasons: This is testament that weak enforcement of laws, inadequate transparency, and ineffective leadership may create an environment conducive to corrupt practices.
- Corrupt leaders may exploit gaps in legal systems and undermine anti-corruption efforts, perpetuating unethical behaviour.

Greed causes corruption:

- The direct connection between greed and corruption underscores the importance of addressing underlying motivations and ethical considerations in anti-corruption strategies.
- Probable reasons: The insatiable quest for wealth and self-interest can incentivise corrupt behaviours as seen by (Milanovic, 2016; Piketty, 2014).
- Lack of ethical values, unchecked greed in business practices, and inadequate regulatory frameworks may facilitate corrupt activities.

4.5 Robustness Checks

As a matter of cross-checking, serial correlation was ruled out using the LM Test for serial correlation as shown in Table 4.

Table 4. LM Test for Serial Correlation

VAR Residual Serial Correlation LM Tests
Sample: 2000 2022
Included observations: 21
Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	33.26395	25	0.1246	1.317645	(25, 5.2)	0.4073
2	50.24335	25	0.0619	4.005985	(25, 5.2)	0.0592

Source: Results estimated using EViews 12

The probability values were greater than the significant level of 0.05 thus not rejecting the H_0 of no serial correlation.

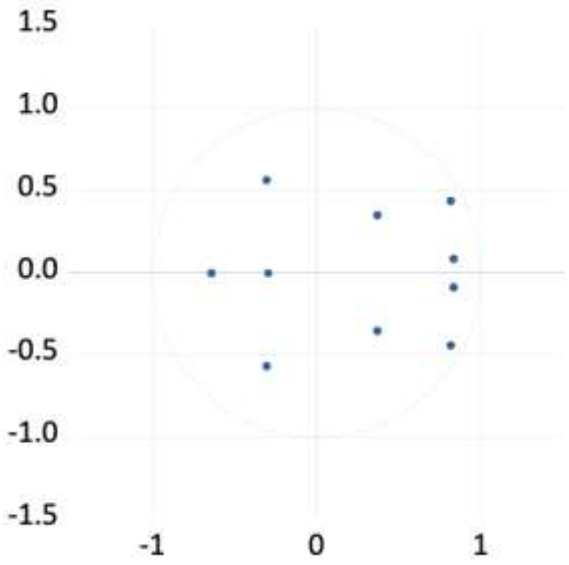

Figure 4. Inverse Roots of AR Characteristic Polynomial[5]

Additionally, the VAR model was found to be stable when observing the inverse roots of the autoregressive (AR) characteristic polynomial in Figure 4.

5. Summary of Key Findings

The study serves as a comprehensive bridge/tool, quantifying survey-sourced perception of corruption to shed light on probable causes in Namibia. It provides a robust understanding for policymakers, reassuring them about the validity of the findings and helps to develop effective measures to battle corruption and promote transparency and accountability within governance structures.

Research Question 1: The study used the Toda-Yamamoto VAR Granger causality test, sampling annual data from 2000 to 2022 by looking at the survey-identified causes like greed, poor leadership and law enforcement, poverty, and poor pay. The sole focus was to find out their impact on corruption levels in Namibia. The test results were quite insightful: They showed that greed, poor leadership and law enforcement, and poverty were all found to have significant and one-way causal relationships with corruption. Greed and poor leadership and law enforcement came out as strong predictors, indicating that these causes may drive corruption to a considerable degree. Meanwhile, poverty also played a notable role, though its impact was somewhat less significant. Surprisingly, poor pay did not show a significant causal relationship towards corruption and insinuates that while compensation to employees' matters might be meaningful, they are not as crucial as the other factors that were considered.

[5] Source: Results estimated using EViews 12

Research Question 2: The interaction of survey-specified causes and empirical data highlights crucial policy implications. Given that greed, poor leadership and law enforcement, and poverty are significant causes of corruption, measures should be designed to improve governance and reduce socioeconomic inequality. In so doing, introducing targeted poverty eradication programmes is critical, as lowering poverty can solve one of the root causes of corruption. Interestingly, the lack of strong causation between poor pay and corruption suggests that raising employee compensation may not be enough. A more all-encompassing approach that tackles the multi-layered nature of corruption is needed.

Research Question 3: The study's results provide a practical framework to guide responsible authorities and stakeholders in developing specific anti-corruption efforts in Namibia. By identifying greed, poor leadership and law enforcement, and poverty as significant drivers of corruption, authorities are equipped to target suitable solutions. Moreover, the study accentuates the importance of improving governance and legal frameworks to uproot persistent causes of corruption. In essence, the paper advocates for a comprehensive, evidence-based approach to fighting corruption that is tailored to Namibia's unique condition.

6. Conclusion and Policy Implications

In closing, this research shows Namibia's main drivers of corruption: greed, poor law and leadership, and poverty. The findings indicate that an all-inclusive anti-corruption approach targeting the root cause is a priority. In terms of policy, therefore, the fight against corruption needs to go beyond superficial reforms. More robust governance structures, with laws passed and implemented with integrity and transparency, can address the twin malaise of greed and mismanagement—comparable to gardening, where taking out the weeds does not stop them from re-growing unless the roots have been destroyed. Thus, corruption will also prevail unless we deal with the root causes.

On the other hand, the theory of eliminating poverty is paramount. In a scenario where basic needs are satisfied, and the community is provided with education and employment opportunities, the attraction of corruption is minimized since people lose more and have less to gain from it. Therefore, policies aimed at eradicating poverty through education, job creation, and equitable distribution of resources are of the utmost. To summarize, this means that the fight against corruption in Namibia must have a multi-pronged approach customized to the specific circumstances of the country and derived from evidence-based analysis. Consequently, a focused approach to good governance, implementation of sound laws, and poverty eradication in Namibia will build a society where corruption is not only minimized but expunged. Such a broad-based approach is necessary for building long-term integrity and transparency.

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