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# ON THE BASIS OF PERCEPTION: A MODERATED MEDIATION ANALYSIS OF DOING BUSINESS AND CORRUPTION

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**ABSTRACT**

Salah satu proyek andalan dari Bank Dunia adalah Laporan Kemudahan Berusaha (*ease of doing business*/EODB), yang mengukur kemudahan berusaha dari sisi peraturan yang ada di negara di seluruh dunia. Pemeringkatan EODB telah lama digunakan sebagai tolak ukur bagi sebuah negara dalam menarik investor dunia usaha untuk membuka dan melaksanakan bisnis dan menarik banyak peneliti, pembuat kebijakan, dan praktisi untuk mengeksplorasi lebih lanjut. Banyak peneliti menemukan bahwa peringkat kemudahan berusaha sebuah negara berkaitan erat dengan pertumbuhan ekonomi, hubungan internasional, pengembangan bisnis, dan area-area terkait lainnya. Penelitian ini berkontribusi dalam meneliti lebih lanjut hubungan antara kemudahan berusaha dan nilai persepsi tentang korupsi dengan menggunakan pendekatan analisis moderasi mediasi. Penelitian ini menunjukkan bahwa Produk Domestik Bruto (PDB) per kapita memediasi hubungan antara peringkat kemudahan berusaha dan persepsi korupsi dan kategori pendapatan negara memoderasi mediasi tersebut. Penelitian ini menggunakan periode selama 10 tahun, dari 2010 sampai 2019 dengan jumlah negara sebanyak 146. Secara statistik, hubungan moderasi mediasi antara kategori pendapatan negara, PDB per kapita, peringkat kemudahan berusaha, dan indeks persepsi korupsi adalah signifikan dengan nilai $\beta = 0.3013$, *BootSE = 0.0507, LLCI =0.2246, ULCI= 0.4226.* penulis menyarankan bahwa penelitian selanjutnya dapat menggunakan metode analisis faktor dan mengeksplor lebih lanjut variabel penelitian menggunakan metode analisis jalur *(path analysis)* yang lebih komprehensif.

*One of the landmark projects from the World Bank was the initiative called the Ease of Doing Business (EODB), which captures business regulatory settings in countries worldwide. The EODB scores have long indicated a country's attractiveness in doing business with private sectors and have attracted many scholars, policymakers, and practitioners to explore. Many researchers have indicated that doing business scores were associated with economic growth, international relations, business development, and many other areas. This study contributes to the debate on how business regulations are associated with the perception of corruption index (CPI) using moderated mediation analysis. The results find that GDP per capita mediates the relationship between EODB and CPI and that country's income category moderates the mediation. The relationships are explored for a period of ten years, from 2010 to 2019 worldwide (n= 146). The country's income category moderated the mediating impact of GDP per capita by softening the influence of EODB on CPI ($\beta = 0.3013$, BootSE = 0.0507, LLCI =0.2246, ULCI= 0.4226). The author suggests corroborating factor analysis and exploring the variables using more advanced path analysis for future research.*

## 1. INTRODUCTION

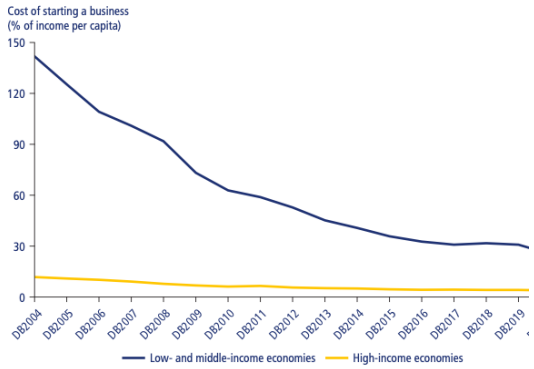
The attractiveness of a country can be seen by how easy to start, do, and manage a business with the private sector, which is a term that the World Bank names the "freedom to do a business" (World Bank, 2020). Easiness of doing business (EODB) reflects in the government's regulations that support and protect business activity. In 2003, the World Bank started the initiatives to measure business regulations and their applications across countries to capture this framework. Also, the government's reforms and enforcement are analyzed to promote a healthy business environment and improve the World's business regulatory setting (World Bank, 2019; Yildiz, 2013).

The measurement of doing business worldwide is conducted with a rigorous research methodology that captures 11 areas of improvement. These areas include starting the business, labor market regulation, construction permits, electricity, property registration, credit protection, minority investors, trading across borders, paying taxes, enforcing contracts, and resolving insolvency (World Bank, 2019, 2020). The analysis outcome is the score from 0 to 100, which

serves as the basis for economies' ranking for the business environment compared to other economies.

The analysis of doing business criteria mainly relies on expert respondents in each country through interviews, group discussions, and questionnaires, both private practitioners and government officials, who deal with the actual business practice (World Bank, 2019). In addition, high-level policymakers of the economies are also the sources of information for data collection along with the documentary research of relevant business laws and regulations. As such, the meticulous care of the research method resulted in the improvement of categories. For example, Figure 1 illustrates the benefits of improved law evidenced by the reduction of the starting a business cost over the years for entrepreneurs who want to start commercial activity.

**Figure 1: Reduction in the cost of starting a business in developing countries**




Source: EODB database (World Bank, 2019, 2020)

Despite the considerable factors counted in the calculation, EODB does not cover the area of bribery and corruption. The incidence of corruption may affect business competitiveness and erode an economy's development. Lambsdorff (1999) investigates the association between corruption perception and government regulations on business competitiveness. The result shows a statistically significant association between these two indicators. Thus, it is worth noting the effect of such depravity's scheme in the EODB.

One of the indicators to show the perception of corruption prevalence that can be used is the Corruption Perceptions Index (CPI) developed by Transparency International (TI), a reputable international nonprofit organization. TI aims to promote an anti-corruption movement and combat the criminal effect of corruption (Transparency International, 2020).

Additionally, the yearly report on the EODB attracts scholars across disciplines providing evidence of economic outcomes of the business regulatory reform under 11 areas of doing business. Considerable research has been initiated and published in top academic journals to provide research-based evidence of the effectiveness of business regulations under EODB. Further, the data is widely used to direct policies for the government and policymakers worldwide (World Bank, 2019).

Linking the ease of doing business and corruption perception is essential to guarantee transparency in business operations (Mongay & Filipescu, 2012). Also, corruption hinders countries' ease of doing business and investment attractiveness (Moiseev et al., 2020). Moreover, in developed countries with a low level of corruption, people are fostered into entrepreneurship because it provides better innovation and efficiency. Meanwhile, in developing countries with a high level of corruption, people are forced to small businesses because larger, more efficient firms do not exist (Mitchell & Campbell, 2009). As such, understanding the prevalence and attitudes toward corruption is essential to eliminate its effect on doing business (Budak & Rajh, 2014).

Both magnitudes, CPI and EODB scores, have been explored and analyzed independently by scholars, but lack of study on the correlation and interdependence of the two (Mongay & Filipescu, 2012). In addition, as part of this unexplored area, little is known about the effect of doing business code on the corruption perception in most economies with different income categories (Budak & Rajh, 2014; Mongay & Filipescu, 2012). Thus, this study intends to contribute to the knowledge development of this gap. It corroborates the impact of an economy's Gross Domestic Product (GDP) per capita in the relation between EODB and CPI. Addressing this correlation hopefully helps the government of different income levels to formulate policy that enhances business practice and reduces the perception of corruption. The framework is structured from the previous literature review and covers developed and developing economies.

## 2. LITERATURE REVIEW AND HYPOTHESIS

Numerous academics have researched the World Bank's doing business landmark program in different research areas. They are spanned from business studies (Carroll, 2012; Kwon, 2009), political science (Vlassenroot et al., 2012), international development (Dobler, 2009), business ethics (Calderón et al., 2009; Chow, 2012; Wong, 2009), and business law (Bhojwani, 2012). In addition, global trading is about understanding business regulations and managing people's cultures (Tomalin & Nicks, 2007).

### 2.1. Business Environment and Economic Growth

Several bodies of work have been linked to the investigation of the business environment, as captured by the EODB score and economic growth. Earlier studies by Desai et al. (2003) and Scarpetta et al. (2002) found a statistically significant correlation between entrepreneurial activity and cross-country economic growth. Hence, Gross Domestic Product (GDP) per capita is associated with positively affecting an individual's ability to be a successful entrepreneur.

Subsequent studies that focused more on the effect of EODB on economic growth are investigated by Djankov et al. (2006), Haidar (2012), Whelan & Adhikari (2021), and Yildiz (2013). Firstly, Djankov et al. (2006) observed the impact of business regulations under EODB variables on the annual GDP growth in 135 countries. Data were generated from 1993 until 2002 and analyzed using Ordinary Least Square (OLS) and Two-Stage Least Squares (2SLS). They found that business regulations are essential in explaining economic growth. Subsequently, higher growth rates are positively significant with a more business-friendly regulation.

Moreover, Haidar (2012) investigated the link between regulatory reforms under the doing business reports as the independent variables and average GDP growth as the dependent variable. The research sample consists of 172countries from 2006 to 2010. Also, he incorporated nine control variables: the country's population, foreign direct investment, capital growth, trade, government expenditure, financial freedom, political stability, the rule of law, and control of corruption. The findings provide robust evidence that effective business regulatory reforms are determinants for economic growth. They supported the results from Haidar (2012) and concluded that a good business environment and its reforms are essential for the country's economic growth.

Another study comes from Yildiz (2013), who found similar results to Djankov et al. (2006) and Haidar (2012) that doing business parameters are positively associated with the GDP per capita. The result implies that business owners in low-income countries are suffered from the regulatory burdens and bureaucratic procedures compared to more prosperous economies.

Lastly, more recent research is presented by Whelan & Adhikari (2021), who found that improving business indicators have a short-term negative effect on real GDP using Vector Autoregression analysis. The finding somewhat raises a question, but the explanation is that this happens in developing countries where implementing business reform is time-consuming. Thus, the effect may not be evident in a short period.

This research aims to explain the relation between EODB and GDP per capita. However, instead of using GDP as a dependent variable, the GDP variable will be a mediator between EODB and corruption perception. Therefore, this could add new insight into research development around doing business across countries.

### 2.2. EODB and CPI: Are These Two Related?

Empirical studies on corruption are relatively new areas explored by academics (Lambsdorff, 1999). Corruption is viewed as the misappropriation of public needs or trusts for personal benefits (Cleary, 2007; Kurer, 2005) and the transfer of illegal fees to government officials for personal gain (Hofstede et al., 2005). Regarding the business environment, corruption weakens equal competition and halts economic development (Argandoña, 2005; Veracierto, 2008).

Focusing on the relationship between World Bank's doing business and corruption perception, Calderón et al. (2009) incorporated the CPI index, EODB regulatory area, and Bribe Payers Index to measure the cross-country investment climate and corruption behavior. They found that reducing corruption was not the outcome of improving investment and the business environment. Hence, the role of corporations is essential in combating public officials' corrupt behavior.

Further, Mongay & Filipescu (2012) observed the role of corruption (as shown by the CPI index) and EODB, and *vice versa,* in 172 nations using Pearson's correlation analysis. The findings revealed a high correlation between the two variables, meaning that complex, intricate, and challenging business activities appear in corrupt countries. In contrast, the easiness of doing business is associated with transparent nations.

In the context of more specific countries and more recent studies, Nageri & Gunu (2020) found that control of corruption scores positively impacts doing business in West African countries using multiple regression analysis. The result supports the finding by Mongay & Filipescu (2012). We can summarize that corruption and business practice are correlated with one another. This research corroborates the EODB score as an independent variable, CPI as the dependent variable, and other variables as moderators and mediators to give a more comprehensive approach to this issue.

### 2.3. Does Economic Growth Affect Corruption Behaviour?

Research on the relationship between economic growth and corruption is mainly on the effect of corruption tendency on economic growth, not the other way around (Bonga & Mahuni, 2018; Mo, 2001; Mustapha, 2014; Stanfill et al., 2016). Nevertheless, in 2020, Moiseev et al. (2020) investigates the effect of the growth of wealth in society, as depicted by the GDP per capita, on CPI in the 45 biggest economies. The findings reveal that economic growth makes corruption recede. That means sustainable economic development helps reduce corruption indices. Thus, facilitating economic growth could combat corruption.

This study expands on Moiseev et al. (2020) research on assessing the impact of GDP per capita on CPI scores within a broader area of 146 countries. Also, this exploration would contribute to the body of knowledge investigating the relationship between GDP per capita and corruption perception scores.

### 2.4. Do Country's Income Categories matter?

This research aims to use the income category as the moderator variable between EODB and GDP per capita. Two pieces of literature are presented to analyze whether a country's income category is relevant to be a moderator for the growth rates. According to Wei & Han (2015), income groups are expected to be determinants of favorable economic

growth rates. A regressive group of low-income economies is likely to fall into poverty. The research also rejected the presence of the "middle-income trap" concept in 107 countries covered in the study.

Next, Eichengreen et al. (2018) measured that economic growth, associated with GDP rates, differs between middle-income countries and the other groups, particularly the low-income economies. Thus, the slowdown rates of GDP are related to the low level of nations' income.

Based on the literature review explained above and following the framework of hypotheses developed by Preacher et al. (2007) and Li et al. (2019), three hypotheses are proposed in this paper as follows:

Hypothesis 1: Doing business score does not positively affect the corruption perception index.

Hypothesis 2: GDP per capita does not significantly mediate the relationship between doing business score and corruption perception index.

Hypothesis 3: Country's income category does not moderate the direct and indirect relationships between the doing business score and corruption perception index via GDP per capita.

## 3. RESEARCH METHODOLOGY

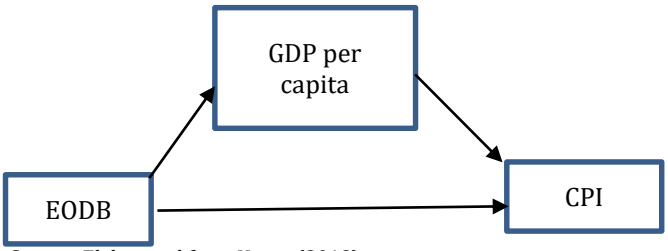
This study incorporates secondary data from the World Bank for doing business score (EODB), the Transparency International for the corruption perception Index (CPI), the country's income categories from the World Bank, and Gross Domestic Product (GDP) per capita from the International Monetary Fund (IMF). The data covers ten years, from 2010 until 2019, for 146 countries. The rationale is to cover a virtually long analysis period without concerning the COVID-19 disruptions that started around 2020 because it may affect the business conditions.

EODB scores span from 0 to 100. The scores capture the gap in the country's position of doing business performance and a weigh of the best practice from the overall sample (World Bank, 2019). The highest score means the best degree of regulatory performance to support the business for all indicators measured by the World Bank and vice versa. In addition, CPI scores range from 0 to 100 and represent the perception of how corrupt the public sectors in each country are; 0 is perceived to be highly corrupt, and 100 is considered a clean government (Transparency International, 2020). Furthermore, GDP per capita describes the country's economy at a specific point in time divided by its average population (IMF, 2019).

Then, the continuous variables of EODB, CPI, and GDP are calculated into an average value following the method from previous research (Haidar, 2012) due to differ specifications and variations among countries, limited quantity of data, and intention to maximize the number of usable observations. However, this approach may raise the issue of validity in the overall model. As for the income category, the author uses the World Bank lists, which consist of the country's high-income, upper-middle-income, lower-middle-income, and low-income (World Bank, 2019). Later, the categories are changed into ordinal scale variables.

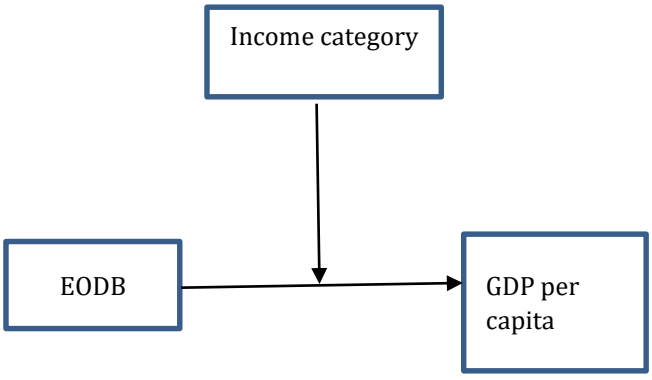
As for the regression model, this study uses the EODB score as an independent variable, CPI as a dependent variable, income category as a moderating variable, and GDP per capita as a mediating variable. The model is constructed using conditional indirect effects, widely known as moderated mediation effects (Hayes, 2018; Langfred, 2004; Preacher et al., 2007). The written model for this paper is developed using moderated mediation models (Hayes, 2018), as illustrated in Figure 2, Figure 3, and Figure 4. The model is started with the simple mediation (Figure 2) that specifies GDP per capita as a single mediator causally located between EODB and CPI. Then, in the moderation model (Figure 3), the effect of EODB on GDP per capita is moderated by the country's income category. Lastly, the moderation and mediation analysis are integrated into a single moderator mediation model, as shown in Figure 4.

**Figure 2. A simple mediation of GDP per capita in the effect of EODB on CPI**



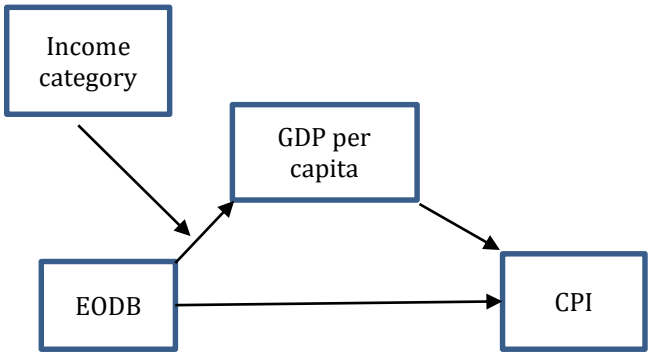

Source: Elaborated from Hayes (2018)

**Figure 3. A simple moderation of income category in the effect of EODB on GDP per capita**




Source: Elaborated from Hayes (2018)

**Figure 4. A moderated mediation model of EODB, CPI, GDP per capita, and country's income category**




Source: Elaborated from Hayes (2018)

Concerning the model developed in Figure 4, the regression equations for the moderated mediation effects in this study can be written as follows (Hayes, 2018; Preacher et al., 2007):

**Equation 1:**

$$\text{GDP per capita} = \alpha + \beta_1 \text{EODB} + \beta_2 \text{Income category} + \beta_3 \text{EODB} * \text{Income category} + \varepsilon$$

**Equation 2:**

$$\text{CPI} = \alpha + \beta_4 \text{EODB} + \beta_5 \text{GDP per capita} + \varepsilon$$

Hence, from equation 1 and equation 2, the indirect effect of doing business environment (EODB) on corruption perception (CPI) is the product of the effect of EODB on GDP per capita ($\beta_1 + \beta_3 Income\ category$), and the effect of GDP per capita on CPI ($\beta_5$).

**Equation 3:**

$$(\beta_1 + \beta_3 \text{Income category}) * \beta_5 = \beta_1\beta_5 + \beta_3\beta_5 \text{Income category}$$

As a result, the indirect effect of EODB on CPI depends on the mechanism of size or strength increases or decreases with changes in the moderator variable income category.

where:

| | | |
|---|---|---|
| EODB | = | the average value of the country's doing business score from 2000 to 2019 ranges: from 0 to 100 |
| CPI | = | the average value of the country's corruption perception index from 2000 to 2019 ranges: from 0 to 100 |
| GDP per capita | = | the average value of the country's gross domestic product per capita from 2000 to 2019 |
| Income category | = | country's income category as per the World Bank (1= low-income, 2= lower-middle income, 3= upper-middle income, and 4= high-income) |
| $\varepsilon$ | = | error term |

Then, the data will be analyzed using SPSS version 27 with the additional add-on of PROCESS developed by Hayes (2017) to incorporate moderated mediation analysis into a single computation.

## 4. RESULTS AND DISCUSSIONS

This part discusses the findings from the analysis using SPSS PROCESS software related to the moderated mediation effects of all variables covering 146 countries worldwide. In addition, cluster analysis will also be presented to capture the spread of the EODB and CPI among countries.

### 4.1. Results

#### 4.1.1. Descriptive Statistics and Correlations

Table 1 presents the equations' descriptive statistics for all continuous variables (EODB, CPI, and GDP per capita). The data shows that the doing business scores ranged from 20 to 87. The lowest regulatory environment belongs to Somalia, where the World Bank covers no substantial reform on doing business indicators. Moreover, the country with the highest average score on EODB is Singapore, which means it has an excellent environment for doing business across various indicators.

Furthermore, Somalia is once again the country with the lowest score but is now on the corruption perception index with a score of 9.1. From this perspective, we can conclude that Somalia is perceived as having the worst corrupt public sectors compared to other countries. Conversely, Denmark is perceived as having the least corrupt government officials, which supports a clean government with a score of 90.4.

In relation to the GDP per capita, the minimum value is USD 0.266 (in thousands), which goes to Burundi, and the maximum value of USD 115.2 (in thousands) is for Luxembourg. Thus, a significant difference is presented in the GDP per capita. Burundi is suffered from a low GDP per capita because it is considered one of the poorest countries in the World due to civil war, inefficient public policy, and natural disasters (Thomas, 2017). On the other hand, Luxembourg enjoys the luxury of economic growth, as shown in the high GDP per capita, because it is known as a friendly country for business, has low tax rates, and a stable work environment (Hahn, 2015).

**Table 1. Descriptive Statistics**

| Variables | Mean | Std. Dev | Min | Max |
|---|---|---|---|---|
| EODB | 61.44 | 13.17 | 20 | 87 |
| CPI | 43.70 | 19.70 | 9.1 | 90.4 |
| GDP per capita | 15.04 | 20.76 | 0.266 | 115.2 |

Next, Table 2 illustrates Pearson's correlation matrix among variables. As expected, aligned with previous literature, the business condition in a country

is positively correlated with the corruption perception, GDP, and income category. All bivariate correlations are statistically significant ($p$ < 0.01, 2-tailed) with strong correlation value (between ± 0.50 and ± 1).

**Table 2. Correlations Among Variables**

| c | CPI | EODB | GDP |
|---|---|---|---|
| EODB | 0.805** | | |
| GDP | 0.831** | 0.634** | |
| Income category | 0.735** | 0.777** | 0.680** |

** correlation is significant at 0.01 (2-tailed)
N= 146

### 4.1.2. Moderated Mediation Analysis

To test hypotheses 1, 2, and 3, the author used PROCESS macro in SPSS version 27, following Hayes (2012) Model 7, to estimate the direct and indirect effects of doing business on perception corruption through GDP per capita as moderated by country's income category. Further, the 5000 bootstrap samples were adopted to evaluate the significance of direct and indirect effects, with 95% confidence intervals (Li et al., 2019; Scarpi et al., 2019). Significant outcomes are supported if zero is outside the confidence intervals (zero is not within the Lower-Level Confidence Interval – LLCI and Upper-Level Confidence Interval – ULCI).

Hypothesis 1 is tested using the direct effect of doing business on corruption perception. Table 3 shows a statistically significant impact ($\beta = 0.6951$, $p$ < 0.01, LLCI =0.5595, ULCI= 0.8306), indicating countries with positive business environments and regulations would be perceived to have less corruption public sectors. Thus, hypothesis 1 is not supported.

**Table 3. Direct Effect of EODB on CPI**

| Effect | t | $p$ | LLCI | ULCI |
|---|---|---|---|---|
| 0.6951 | 10.135 | 0.000 | 0.5595 | 0.8306 |

For the mediating effects, as presented in Table 4, doing business positively correlates with GDP per capita and is statistically significant ($\beta = 0.483$, $p$ < 0.01, LLCI =0.2304, ULCI= 0.7366). Also, the association between GDP per capita and CPI also significant ($\beta = 0.509$, $p$ < 0.01, LLCI =0.4230, ULCI= 0.5950). Therefore, hypothesis 2 is not supported in the sense that GDP per capita has a mediating effect on the relationship between EODB and CPI. The mediating analysis result means that GDP per capita increases as the score of doing business increases, which, in turn, is related to the higher index of corruption perception (perceived as less corrupt behavior).

**Table 4. Indirect Effects**

| Variables | **β** | t | $p$ | LLCI | ULCI |
|---|---|---|---|---|---|
| EODB to GDP per capita | 0.483 | 3.776 | 0.0002 | 0.2304 | 0.7366 |
| GDP per capita to CPI | 0.509 | 11.698 | 0.0000 | 0.4230 | 0.5950 |

As for hypothesis 3, Table 5 shows that country's income category would be a moderating variable in determining the direct effect of doing business and GDP per capita ($\beta = 0.591$, $p$ < 0.01, LLCI =0.432, ULCI = 0.751). In addition, the conditional effect on the moderator is divided into three categories: one standard deviation below the mean (-1SD), mean (0SD), and one standard deviation above the mean (+1SD). The results of the conditional effect of the moderator are shown in Table 6.

**Table 5. Moderation Effects**

| Variables | **β** | t | $p$ | LLCI | ULCI |
|---|---|---|---|---|---|
| EODB | 0.483 | 3.78 | 0.002 | 0.230 | 0.736 |
| Income | 10.1 | 6.52 | 0.000 | 7.03 | 13.1 |
| EODB* Income | 0.591 | 7.35 | 0.000 | 0.432 | 0.751 |

Table 6 presents that moderating effect of the country's income category for the low-income country (-1SD) is not statistically significant ($p$ >0.01, and zero is within LLCI -0.4579 and ULCI 0.1350). However, middle-income (equal to Mean value) and high-income (+1SD) are statistically significant.

**Table 6. Conditional Effects of Moderator**

| Income | **Effect** | t | $p$ | LLCI | ULCI |
|---|---|---|---|---|---|
| -1SD | -.162 | -1.07 | 0.282 | -0.4579 | 0.1350 |
| Mean | 0.483 | 3.77 | 0.002 | 0.2304 | 0.7366 |
| +1SD | 1.129 | 7.05 | 0.000 | 0.8131 | 1.445 |

Lastly, the bootstrap method revealed a significant moderated mediation effect because zero is not included in the value between LLCI and ULCI ($\beta = 0.3013$, BootSE = 0.0507, LLCI =0.2246, ULCI= 0.4226), in which country's income category moderated the mediating impact of GDP per capita by softening the influence of EODB on CPI. Thus, the income category moderates the direct effect of the relationship between doing business and perceived public officials' corrupt behavior. As for indirect effects, a significant association is found in the middle-income and high-income countries (zero standard equals the mean, and one standard above the mean, +1SD). Conversely, the indirect effect was non-significant for low-income countries (one standard below the mean, -1SD) as shown with zero is inside the value of LLCI and ULCI.

The conditional indirect effects for the income category are presented in Table 7. Given that these income categories partially moderated the mediation process, hypothesis 3 is partly supported.

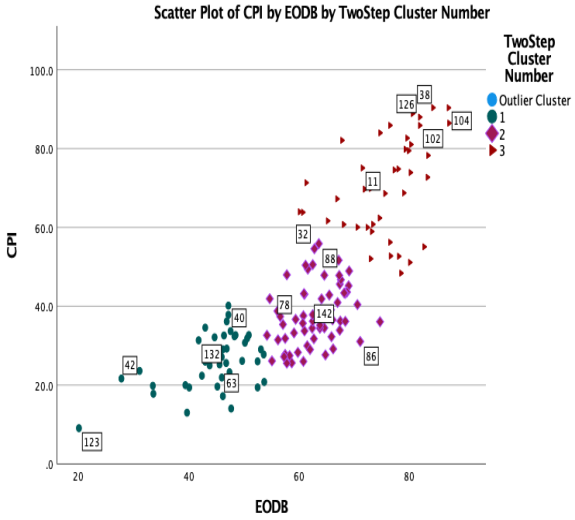
**Table 7. Conditional Indirect Effects (EODB ⟶ GDP per capita ⟶ CPI)**

| Income | Effect | BootSE | LLCI | ULCI |
|---|---|---|---|---|
| -1SD | -0.0826 | 0.0642 | -0.2281 | 0.0227 |
| Mean | 0.2461 | 0.0764 | 0.1141 | 0.4122 |
| +1SD | 0.5748 | 0.1170 | 0.3881 | 0.8406 |

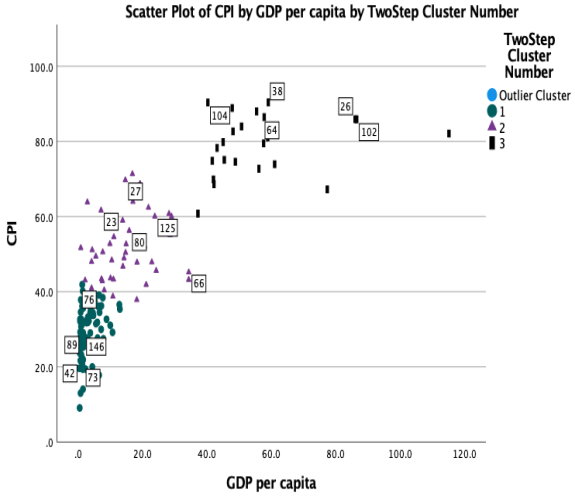
### 4.1.3. Cluster Analysis

To illustrate the spread of countries (cases) according to the relationship between EODB and CPI and GDP per capita to CPI, the author runs the cluster analysis using SPSS v.27. The study is conducted using the Two-Step Cluster number, and the result is captured in Graphs 1 and 2.

**Graph 1. Scatterplot of CPI by EODB**




**Graph 2. Scatterplot of CPI by GDP per capita**



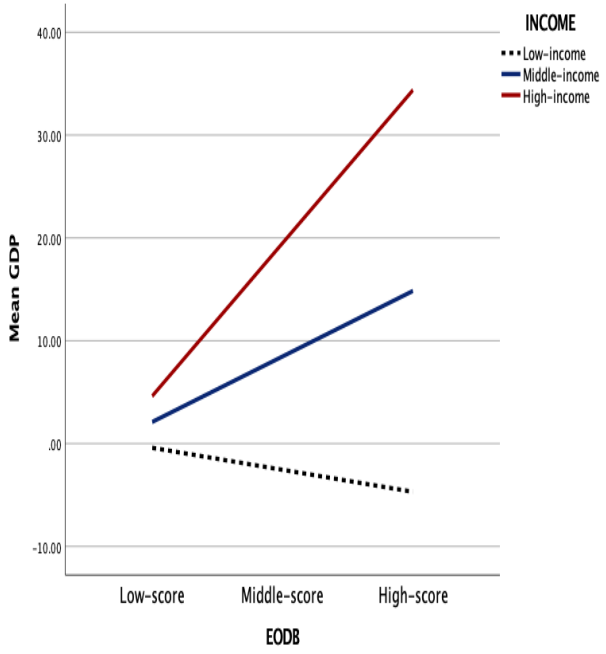

The numbers on the Graph 1 and Graph 2 represent the cases in which the name of countries in this study. The Cluster analysis will group the similar characteristic of countries according to the association of EODB to CPI in Graph 1; excellent doing business regulations are associated with high CPI scores. Also, GDP per capita to CPI in Graph 2; countries with high GDP per capita and CPI scores would be in the same cluster, and *vice versa*.

### 4.2. Discussion

This research's primary goal is to observe the links between regulatory business conditions, corruption perception, and a country's income category and to explore the mediating role of economic growth, as calculated by the GDP per capita, in perceived corruption behavior. First, the findings revealed that EODB is correlated significantly with corruption perception. The result is consistent with previous studies, which show that easiness in doing business perceived to be happened in ''cleaner'' countries. (Mongay & Filipescu, 2012; Nageri & Gunu, 2020). Second, this study reveals that economic growth, as shown by GDP per capita, is indeed linked with CPI scores. It means that the result of this study supports and consistent with previous research by Moiseev et al. (2020). That is, countries with higher GDP per capita would likely have better public services due to less corrupt behavior. Third, it has been found that doing business score positively impacts the country's GDP per capita. The more efficient the regulatory business is, the higher the economic output per person would be. The finding supports the literature on the determinants of GDP in a country (Whelan & Adhikari, 2021).

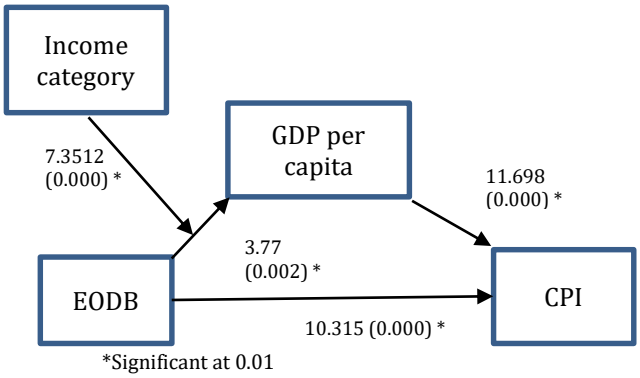
Next, the study results displayed that country's income category moderates the link between EODB and GDP per capita. More precisely, the income category would be regarded as a moderating force that strengthens the relationship between EODB and GDP per capita. However, according to the conditional effects of the moderator, the moderating effect only appears in middle-income (equal to the mean) and high-income (+1SD) countries. It does not apply to low-income countries (-1SD), as illustrated in the plots of interactions in Figure 5. Examination of the interaction plots shows an increasing effect that GDP per capita increased as the doing business score and the country's income increased. Countries with high income and excellent business scores have the highest GDP per capita. However, for low-income countries, EODB and GDP per capita have a reversed relationship, that an increase in the regulatory business would reduce the economic benefit received by society. The explanation would be that low-income countries suffer from strong corrupt behavior from their public officials, thus reducing the country's economic power (Lambsdorff, 1999; Mo, 2001; Stanfill et al., 2016; Veracierto, 2008).

**Figure 5. Interaction Plots of Income Category, EODB, and GDP per capita**




As such, the findings of this study can be summarized in a model with path coefficients as follows:

**Figure 6. The Moderated Mediation Model of EODB, GDP per capita, CPI, and Income Category**




In addition, according to the cluster analysis findings, there are three clusters for the association between EODB and CPI. The first clusters consist of cases representing countries with low EODB scores and CPI. For example, the numbers 123 (Somalia), 42 (Eritrea), 132 (Timor-Leste), 63 (Iraq), and 40 (Algeria) are considered low-income and middle-income countries. The second clusters are cases numbers 78 (Srilanka), 142 (Vietnam), 86 (Mexico), 88 (Malta), and 32 (Costa Rica), which are categorized as middle and high-income countries. The last clusters are cases number 11 (Belgium), 38 (Denmark), 102 (Norway), 104 (New Zealand), and 126 (Sweden). All nations in the last clusters are considered high-income countries. Thus, the finding shows that developed economies are benefited from attracting corporations to do business because they are perceived to have a clean government.

Similar trends are also found in EODB and GDP per capita clusters, where low-income nations such as Zimbabwe (146), Eritrea (42), and Liberia (76) are sustained in low economic conditions due to corrupt practices. Also, in contrast to this event, high-income countries such as Iceland (64), Switzerland (26), and Norway (102) enjoy incredible economic growth due to clean public sectors.

This study provides consistent and robust evidence of clear relationships between doing business and economic growth on the corruption perception. Further, a partial mediation of GDP per capita moderated by the country's income category is associated with the CPI scores. Thus, from the methodology perspective, the study implements a novel moderated mediation analysis to the debate of doing business research.

Even though the World Bank is now postponing the doing business report due to misconduct allegations regarding the data changes and methodology (Shalal, 2021), previous reports lay a strong foundation for managing business regulations to support economic growth and clean public services. Moreover, the reports were also relevant for policymakers, practitioners, and academics to stimulate further research. Thus, future studies should measure the replacement of doing business for relevant indicators.

## 5. CONCLUSIONS

This study tested the moderated mediation effects of factors that affect corruption perception worldwide, with underlying variables are doing business mediated by GDP per capita in the moderation of income category. The examination of the analysis found that a low doing business score was the problematic event of the presence of perceived corrupt behavior, mostly in the low-income nations. The business regulatory easiness predicted corruption perception through GDP per capita, the effects of which on corruption were buffered by the country's income category.

In brief, the findings generally draw on our understanding of doing business, its relationship with economic growth, and the perception of corruption. They are also investigating a specific cluster of countries for a deeper understanding of what drives corruption perception in most countries.

## 6. IMPLICATIONS AND LIMITATIONS

Some limitations should be drawn upon this study. First, the measurement of the continuous variables was averaged for the research period, which might have affected the validity of the results. Thus, future studies could address the issue by incorporating panel data and using a more advanced path analysis such as Structural Equation Modeling (SEM) to increase the robustness of the study. Second, using a single final score for doing business might eliminate the importance of indicators on the EODB. Hence,

future research may consider using all the indicators to do the factor analysis (Yildiz, 2013). Last, further examination for the effect of postponement of doing business assessment by the World Bank due to its scoring scandal (Shalal, 2021).

Apart from its limitations, this study contributes to understanding business regulation with its association with the economic benefits and corruption behaviors. The study highlights the under researched part of the relation between GDP per capita and corruption perception and considers the country's income category in the model. Furthermore, the findings of this study could help government and policymakers to address the issue of business regulatory inefficiency in association with the corrupt attitude of public officials.

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