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POVERTY AND CRIMINALITY IN THE DIGITAL ERA: AN EMPIRICAL STUDY IN INDONESIA

Herlina Pebrianti, Lestari Agusalim, Aprima Vista Ajeng Lestari
Development Economics, Trilogi University

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ABSTRACT

The rapid and widespread development of digital technology has become a major driving force in transforming various aspects of life. This transformation has facilitated human activities across different sectors. However, the fast-paced technological advancements and increasingly accessible information also contribute to the rise of crime. Additionally, poverty can create an unstable environment, which increases the likelihood of individuals being involved in criminal activities. The limitations faced by individuals in poverty make them more susceptible to committing crimes, especially those driven by economic motives. Generally, crime rates tend to increase as the population of the poor rises. This study aims to analyze the impact of poverty on crime in the digital era. The analysis method used is panel data regression with a random effects model, based on panel data from 34 provinces in Indonesia over the period 2010-2022. The results indicate that poverty has a positive and significant effect on crime. However, the internet variable shows a negative and significant effect on crime. Variables such as population density, economic growth, and the Human Development Index (HDI) have a positive and significant effect on crime. Furthermore, variables like the provincial minimum wage and the COVID-19 dummy variable show a negative and significant effect on crime. On the other hand, the open unemployment rate does not have a significant effect on crime. Finally, the interaction between poverty and internet usage has a positive and significant effect on crime.

Corresponding Author:
Herlina Pebrianti
Development Economics, Trilogi University
Jl. TMP. Kalibata No.1, Jakarta Selatan
febliana03@gmail.com

Introduction

In the current digital era and globalization, technology plays a pivotal role in supporting various aspects of human life. The increasingly advanced development of digital technology has led to a significant transformation worldwide (Ainun et al., 2022). A fundamental shift in mass communication has occurred due to the advancements of the digital era. One key aspect of this transition to the digital era is the emergence of extensive and rapid connectivity (Manasikana & Noviani, 2021). The internet has become a central element in connecting the world globally, enabling instant communication and providing unlimited access to information. Technology is increasingly infiltrating daily life, simplifying human activities (Madan & Rosca, 2022). Communication technology is also expected to experience significant growth in the near future (Rukmana et al., 2023).

Figure 1 illustrates the trend of internet and telephone users as a percentage of households. In 2010, internet users accounted for 22.4% of households, with this figure steadily increasing to 86.54% of households by 2022. Meanwhile, telephone users in 2010 represented 72% of households, and by 2022, this percentage had risen to 92.35%. According to Databooks (2021), the number of internet users in Indonesia has reached 212 million people, out of a total population estimated at around 276 million. This places Indonesia in 7th position for internet usage in Southeast Asia.

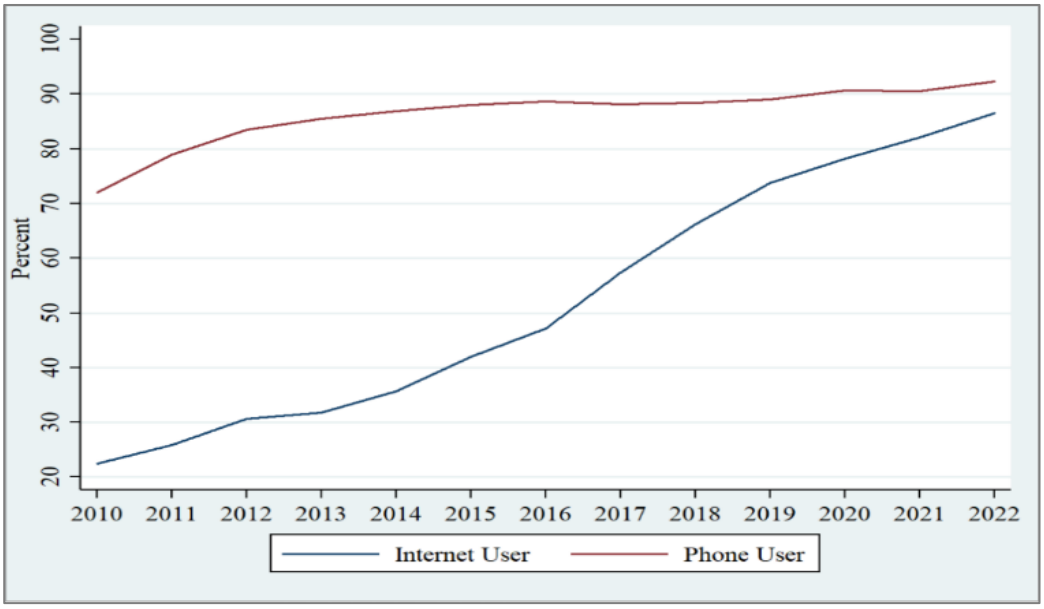

Figure 1. Trend of Internet and Telephone Usage in Indonesia
Source: BPS Indonesia 2010-2022 (processed)

The rapid advancement of technology and the increasing accessibility of information have also contributed to the rise in criminal activities. While the internet has played a key role in advancing human progress and well-being, it has also become an effective tool for illegal activities and crime. Modernization can erode moral values, and in the context of information technology, some parties exploit security vulnerabilities in internet networks to commit crimes (Deora & Chudasama, 2021). Figure 2 illustrates the trend of criminal cases in Indonesia during the period of 2010-2022. From 2010 to 2017, the number of criminal cases remained relatively constant. However, between 2017 and 2021, there was a decline in criminal cases, with the lowest level recorded in 2021 at 239.48 thousand cases. This decline can be attributed to the COVID-19 pandemic, which led to government-mandated activity restrictions, causing people to spend more time at home. In contrast, 2022 saw an increase in criminal cases, reaching 372.89 thousand, largely due to the economic impacts of the post-pandemic period and the relaxation of activity restrictions.

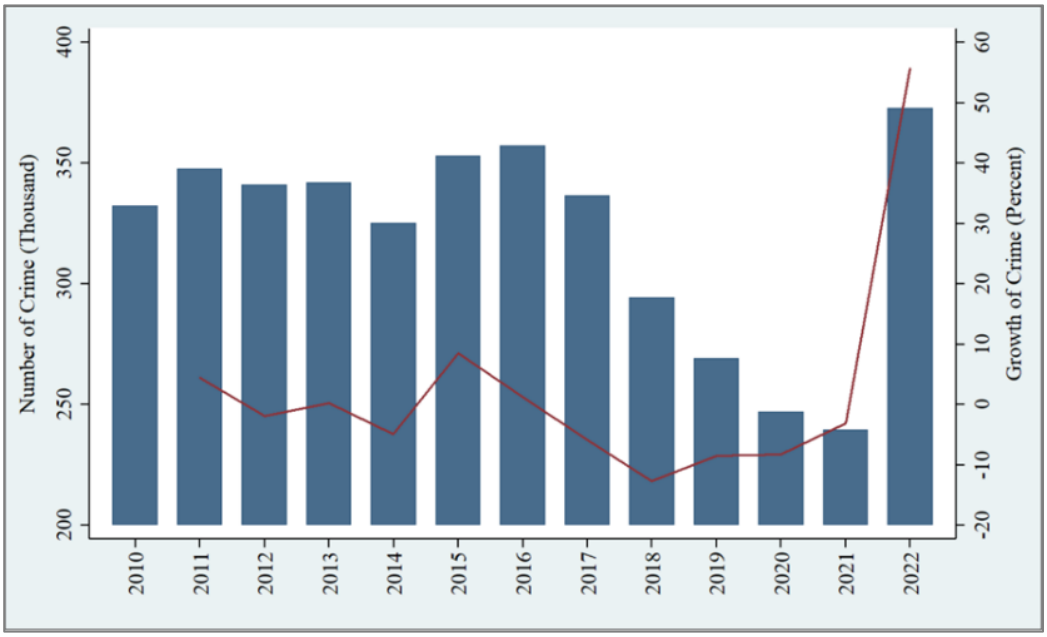

Figure 2. Trend of Criminal Cases in Indonesia
Source: BPS Indonesia, 2010-2022 (processed)

As a developing country, poverty has become an ongoing challenge in Indonesia. Economic inequality, insufficient income, and a lack of assets to meet basic needs are among the factors contributing to poverty in Indonesia (Purwono et al., 2021; Putra et al., 2021). Figure 3 shows the poverty levels in urban, rural, and national areas from 2010 to 2022. Poverty in rural areas is significantly higher compared to urban areas. In 2010, the poverty rate was 9.87%, which decreased to 6.65% by 2019. However, an increase in poverty occurred in 2020 due to the impact of the COVID-19 pandemic, with many urban residents losing their jobs or experiencing income reductions, which contributed to the rise in urban poverty. From 2021 to 2022, urban poverty decreased as a result of the post-COVID-19 economic recovery. The highest poverty rate in rural areas was recorded in 2010 at 16.56%, and the lowest rate was in 2019 at 12.6%, reflecting improved welfare among farmers and the government's success in controlling inflation. During the pandemic, people across Indonesia lost their sources of income, leading to an increase in poverty. The national poverty rate was 13.33% in 2010 and continued to decline, reaching 9.57% in 2022. Positive economic growth generally has a beneficial impact on efforts to alleviate poverty. The poor rural population is typically directly involved in agricultural activities and often consists of indigenous people working as subsistence farmers with low wages (Ridena, 2020).

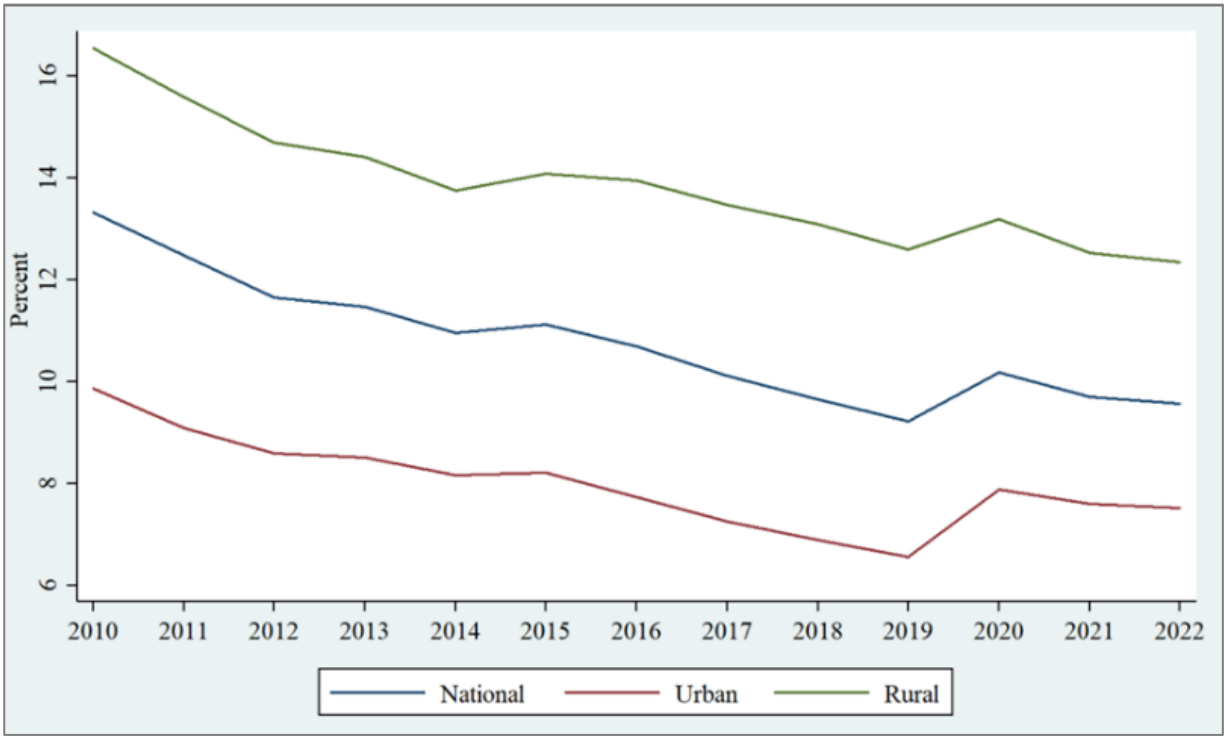

Figure 3. Trend of Poverty Levels
Source: BPS Indonesia, 2010-2022 (processed)

As one of the most populous countries, Indonesia faces widespread issues related to crime. Poverty is one of the key factors driving individuals to engage in criminal activities. Figure 4 illustrates the correlation between poverty and crime at both the national and provincial levels. At both the national and provincial levels, an increase in poverty leads to a corresponding rise in criminal activity. Crime rates tend to increase as the number of poor individuals rises (Kasim & Hendra, 2023). Lower levels of poverty are associated with a reduction in criminal behavior. Additionally, poverty can create an unstable environment, which increases the likelihood of involvement in criminal activities (Saputra, 2023).

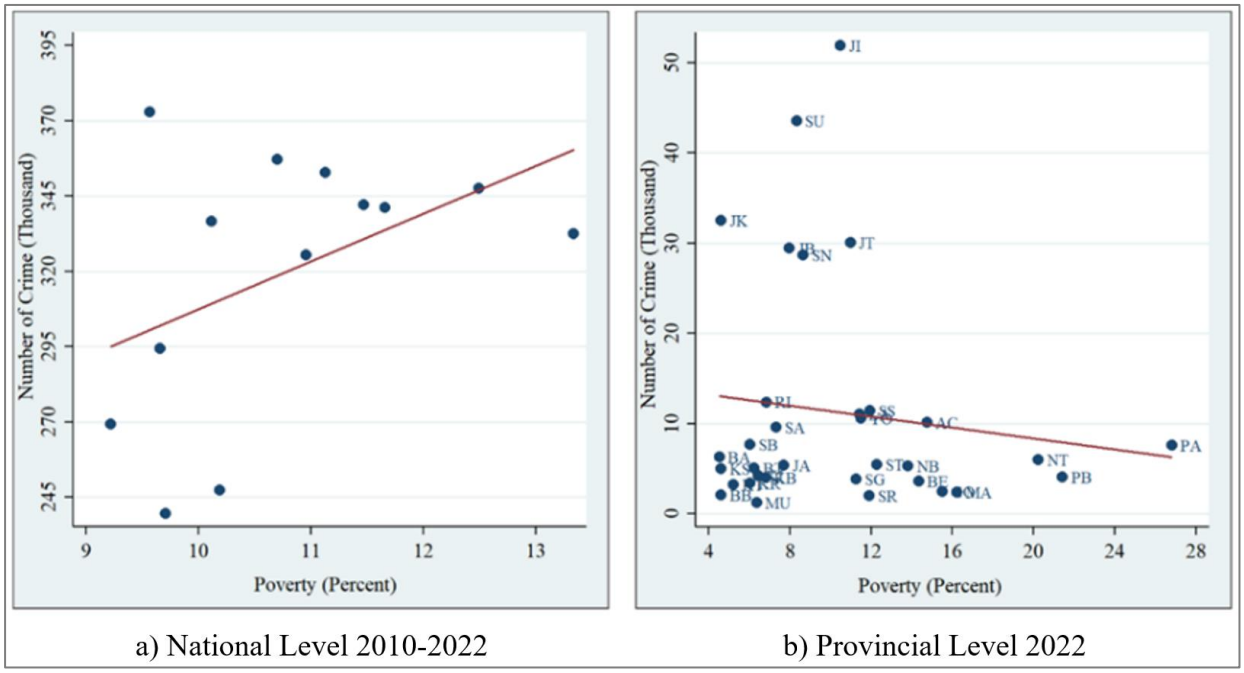

Figure 4. Indications of the Relationship Between Poverty and Crime
Source: BPS Indonesia 2010-2022 (processed)

In the era of globalization, crime has emerged as one of the consequences of technological advancements, leading to an increase in criminal activities. Globalization facilitates international interactions; however, without clear boundaries, traditional Indonesian cultural values that have been passed down through generations are starting to fade. The hardships faced by impoverished individuals make them more vulnerable to engaging in criminal activities, particularly those driven by economic motives, such as meeting basic needs and improving their standard of living (Djulius et al., 2022). Based on this background, it is necessary to conduct a thorough study on how poverty triggers crime in the digital era in Indonesia. This research is essential as a reference for the government to address the relationship between poverty and crime in the digital age.

Literature Review

Poverty

According to BPS (2023), poverty is the inability to meet the minimum standard of basic needs, including both food and non-food requirements. The indicator used for poverty in this study is the poverty rate, with data sourced from BPS for the period 2010–2022. The poor population refers to those who fall below a certain threshold, known as the poverty line. Economic development is a key indicator for improving the welfare of developing countries (Erdoğan et al., 2021). One measure of successful economic development is economic growth. However, economic growth alone is not sufficient; poverty also impacts economic development (Asare & Barfi, 2021). Poverty is a critical issue for the sustainability of economic development in Indonesia. It remains a pressing socio-economic concern for the government of developing nations, including Indonesia. The indicator used for poverty in this study is the poverty rate, with data sourced from BPS for the period 2010–2022.

Criminality

According to the Indonesian National Police (POLRI), criminality refers to actions that can be penalized under the Criminal Code (KUHP). Sociologically, criminality or crime encompasses any human behavior that results in material and psychological harm, disrupting social life. A high crime rate can disturb public safety and order, reduce public trust in city security, and negatively affect urban development. This, in turn, lowers the quality of life and well-being of the population, while increasing the social costs borne by victims. Criminal acts can be committed by both men and women, and these acts may be consciously planned, deliberate, and directed toward a specific purpose (Suryadi & Aziz, 2022). Some crimes, however, are committed unconsciously, often due to circumstances such as the

need to protect one's life, which may lead to violent acts, such as homicide. Criminality is also sometimes rooted in economic conditions. Crimes often result in significant losses, including financial, physical, moral, and psychological harm. From an economic perspective, crime leads to additional costs related to criminal activities (Hachica & Triani, 2022). The indicator used is the number of crime cases in Indonesia during the period 2010–2022.

The Relationship Between Digitalization and Criminality

Technological advancements, particularly in telecommunications, are seen as primary drivers in accelerating the process of globalization across various aspects of life. Globalization has brought humans into a borderless world with a rapid, global flow of information. Criminal behavior is increasingly shifting toward the digital realm, with the growing use of the internet and online platforms (Zhilla, 2024). Crime in the digital era occurs as a negative impact of digital phenomena (Castañeda & Shemesh, 2020). Digital crimes occur as a negative consequence of the digital phenomenon(Aaronson & Shaffer, 2021). Individuals who are less skilled or lack strong technological abilities or have limited access to digital resources are often the most vulnerable targets for online criminal activities. Factors such as income inequality and lack of digital literacy can exacerbate this issue, creating an environment conducive to the proliferation of digital crime across various segments of society (Pereira et al., 2020).

The conceptual framework of this study aims to examine the relationship between poverty, digital adoption, and crime rates in Indonesia during the period 2010–2022. Based on this framework, it can be explained that poverty, digital adoption, and other macroeconomic variables influence the occurrence of crime in Indonesia. Changes in the independent variables poverty and digitalization will lead to changes in the dependent variable, namely crime. By understanding the impact of poverty, digital adoption, and other macroeconomic factors, policy recommendations can be formulated to address crime-related issues in Indonesia.

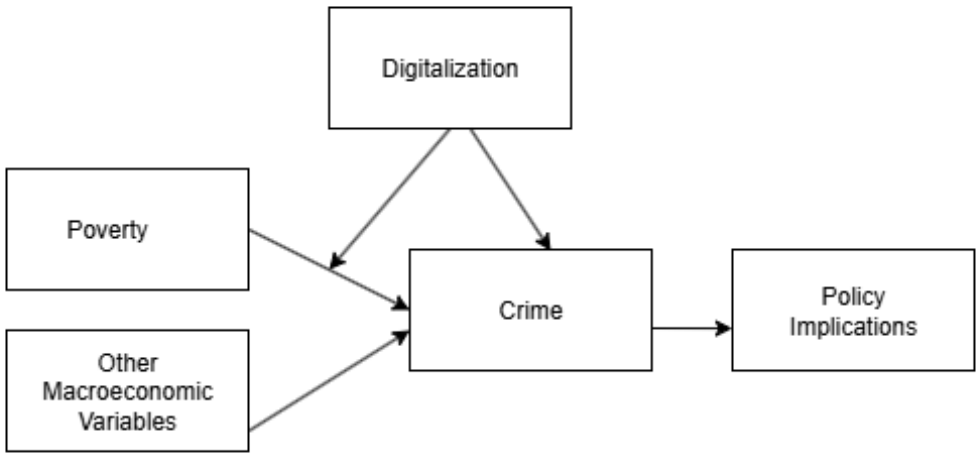

Figure 5: Framework

Research Method

This study examines poverty and its impact on criminality in the digital era. The research period spans from 2010 to 2022 across 34 provinces in Indonesia. Due to the lack of consistent historical data, the figures for South Papua, Central Papua, Highland Papua, and Southwest Papua are combined under Papua dan West Papua Provinces prior to its division, in order to maintain data continuity and comparability throughout the 2010–2022 period. This study employs a descriptive quantitative approach, where data is collected in numerical form, processed, and analyzed to uncover the scientific insights behind the figures. The data used in this research is secondary data sourced from publications by the Statistics Indonesia (BPS). The data collection technique employed in this study is a literature review, drawing from various sources including national and international journal articles, books, and

other scientific literature. The completeness of the data variables used in this study can be seen in the Table 1.

Table 1. Research Variables

Variable	Symbol	Description	Unit
Dependent variable	crime	Number of criminal cases	Cases
Independent variable	povr	Percentage of poor population (P0)	Percent (%)
	inter	Percentage of households that have accessed the internet	Percent (%)
Control variable	pden	Population density	Persons/Km²
	growth	GDP per capita (ln)	Million IDR
	our	Open unemployment rate	Percent (%)
	hdi	Human development index	0-100
	pmw	Provincial minimum wage	Million IDR
	java	Dummy variable for Java Island	Jawa = 1 Non-Jawa = 0
	cov	Dummy variable for COVID-19	2020-2021 = 1 2010-2019, 2022 = 0

The dummy variable for COVID-19 in this study is designed to capture the impact of the pandemic period on crime rates. It is coded as 1 for the years 2020 and 2021, reflecting the period when the COVID-19 pandemic was ongoing. The World Health Organization (WHO) officially declared COVID-19 a global pandemic on March 11, 2020, following the rapid spread of the virus worldwide. In Indonesia, the pandemic was formally acknowledged after the first confirmed domestic cases were announced on March 2, 2020, and continued to affect the country throughout 2020–2021.. The coding of 1 for these years indicates the direct and indirect socio-economic effects of the pandemic, including lockdown measures, economic slowdowns, and restrictions on mobility, which may influence crime dynamics. For all other years outside this period, the variable is coded as 0.

The analysis methods used in this study are descriptive analysis and panel data regression analysis, with data processing conducted using Microsoft Excel and STATA software. The study adapts and adds additional variables to the model used in previous research by Mardinsyah & Sukartini (2020) dan Silvia & Ikhsan (2021). Therefore, the model employed in this study can be described as follows:

$$lcrime_{it} = a_0 + a_1 povr_{it} + a_2 inter_{it} + a_3(povr * inter_{it}) + a_4 lpden_{it} + a_5 growth_{it} + a_6 lpmw_{it} + a_7 our_{it} + a_8 lhdi_{it} + a_9 jav_{it} + a_{10} cov_{it} + \varepsilon_{it}$$

In this model, as illustrated by the equation above, the independent variables, namely poverty and other control variables, are analyzed with respect to the dependent variable, which is the total number of criminal cases. For variables that are not measured in percentages, the natural logarithm is applied. The natural logarithm is used to scale down the variables, making it easier to perform the analysis. To address research question number three, the variable povr is multiplied by inter to examine whether digital technology can moderate the effect of poverty on criminality. The moderation effect is assessed based on the significance of the coefficient a_3. If the coefficient is significant, it indicates the presence of a moderation effect, whereas if it is not significant, no moderation effect exists.

Results and Discussion

Descriptive Analysis of Criminality, Poverty, and Digitalization

Figure 6 illustrates the trends in poverty and the number of criminal cases in Indonesia. The poverty rate in Indonesia has fluctuated throughout the period from 2010 to 2022. From 2010 to 2014, the poverty rate decreased, but there was an increase in 2016 to 11.13 percent compared to the previous year. The lowest poverty rate occurred in 2019 at 9.22 percent. However, in 2020, there was an increase due to the impact of COVID-19, which led to lower incomes, raising the poverty rate from 9.22 percent to 10.19 percent.

From 2010 to 2022, the number of criminal incidents experienced annual fluctuations. From 2010 to 2015, the number of incidents remained relatively stable, with a sharp increase in 2016 to over

357,000 incidents. Between 2017 and 2021, the number of criminal incidents decreased gradually, reaching a low of 239,000 incidents in 2019. This decline was influenced by the government-imposed restrictions to control the spread of COVID-19, which reduced public interactions and, consequently, lowered the opportunities for crime. However, in 2022, there was a sharp increase in criminal incidents, rising to over 372,000 cases. This increase was driven by the return of the public to normal activities, which consequently raised the opportunities for criminal activities.

Figure 6: Trends in Poverty and Criminality in Indonesia
Source: BPS Indonesia 2010-2022 (processed)

Figure 7 shows that in 2010, the average number of criminal cases per province was 10,725 incidents. Nine provinces had a higher number of criminal cases than this average. The highest number of criminal cases occurred in the DKI Jakarta province, with 60,989 cases, followed by North Sumatra with 33,227 cases, and South Sumatra with 18,288 cases. The high crime rate in DKI Jakarta may be attributed to the high population density and elevated economic activity, both of which create more opportunities for criminal activities. Similarly, in North Sumatra and South Sumatra, factors such as rapid urbanization and social inequality could contribute to the elevated crime rates in these regions. Meanwhile, the provinces with the lowest number of criminal cases were South Kalimantan with 1,910 cases, followed by North Maluku with 1,916 cases, and Bangka Belitung with 2,717 cases.

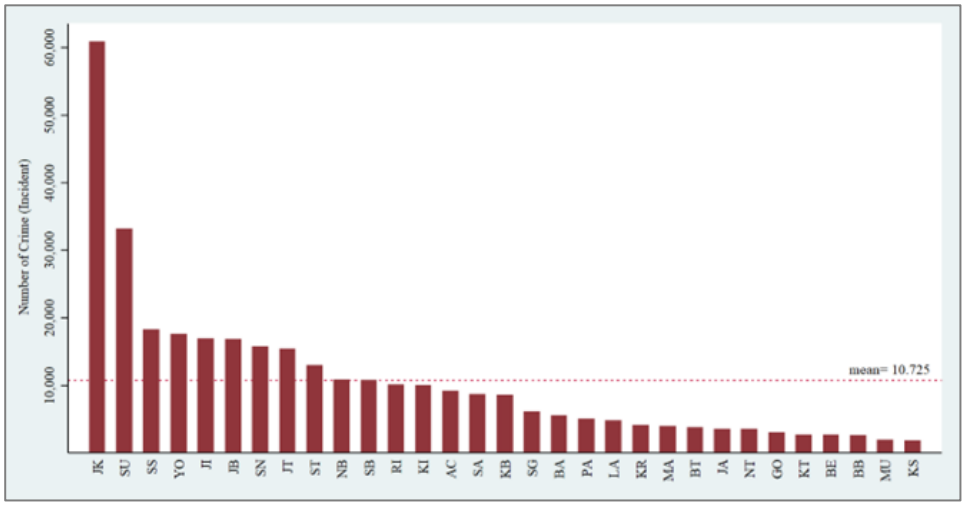

Figure 7: Number of Criminal Cases by Province in 2010
Source: BPS Indonesia 2010-2022 (processed)

Figure 8 shows that, based on the average number of criminal cases per province, there has been a slight increase from 2010 to 2022. This indicates that, overall, the number of criminal cases per province has risen. In 2022, the average number of criminal cases was 10,967. Eight provinces had a higher number of cases than the average. The highest number of criminal cases occurred in East Java, with 51,905 cases, followed by North Sumatra with 43,555 cases, and DKI Jakarta with 32,534 cases. DKI Jakarta experienced a decrease in the number of cases from 60,989 cases in 2010 to 32,534 cases in 2022. Meanwhile, the provinces with the lowest number of criminal cases were North Maluku with 1,220 cases, North Kalimantan with 1,280 cases, and West Sulawesi with 2,027 cases.

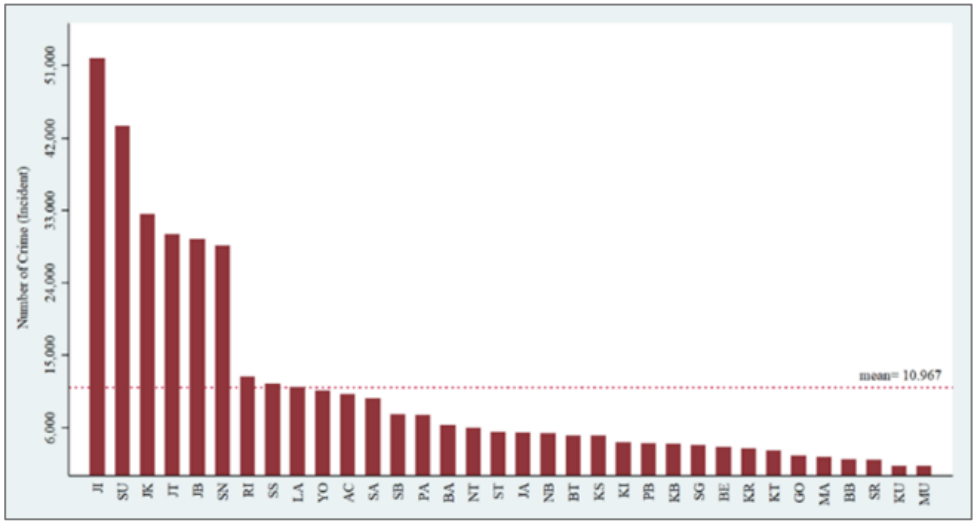

Figure 8: Number of Criminal Cases by Province in 2022
Source: BPS Indonesia 2010-2022 (processed)

Figure 9 shows the poverty rate by province in 2010. In 2010, the average poverty rate was 13.33%. Fifteen provinces had a poverty rate higher than the average. The highest rates occurred in Papua (36.8%), West Papua (34.88%), and Maluku (15.3%). The high poverty rates in these provinces highlight significant challenges in addressing poverty, particularly in Eastern Indonesia. On the other hand, the province with the lowest poverty rate in 2010 was DKI Jakarta, with only 3.48% of its population below the poverty line. Bali and South Kalimantan also recorded relatively low poverty rates, at 4.88% and 5.21%, respectively. The low poverty rates in these provinces reflect the success of poverty alleviation programs and more effective economic development strategies compared to other provinces.

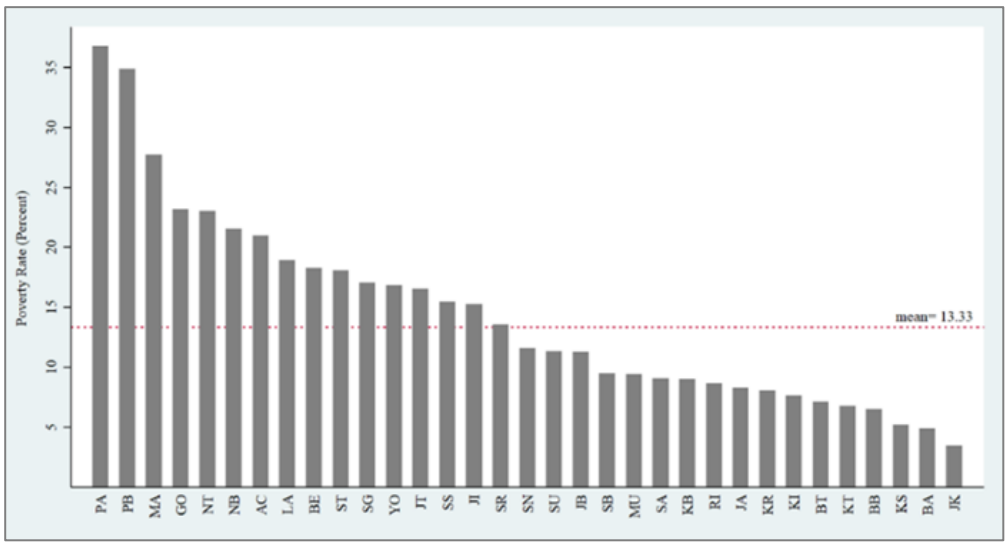

Figure 9: Poverty Rate by Province in 2022
Source: BPS Indonesia 2010-2022 (processed)

Figure 10 shows the poverty rate by province in 2022. There was a significant decrease in the poverty rate across Indonesia. By 2022, the average poverty rate had decreased to 9.57%. However, there are still 15 provinces with poverty rates above the average. In 2022, Papua recorded the highest poverty rate at 26.8%, followed by West Papua at 21.43%, and East Nusa Tenggara at 20.23%. This decline indicates economic improvements in certain regions, but significant challenges remain, particularly in Eastern Indonesia. Meanwhile, the lowest poverty rates were recorded in Bali (4.53%), Bangka Belitung (4.61%), and DKI Jakarta (4.61%). Although DKI Jakarta saw a slight increase in its poverty rate compared to 2010, Bali and Bangka Belitung showed relatively low and stable poverty rates.

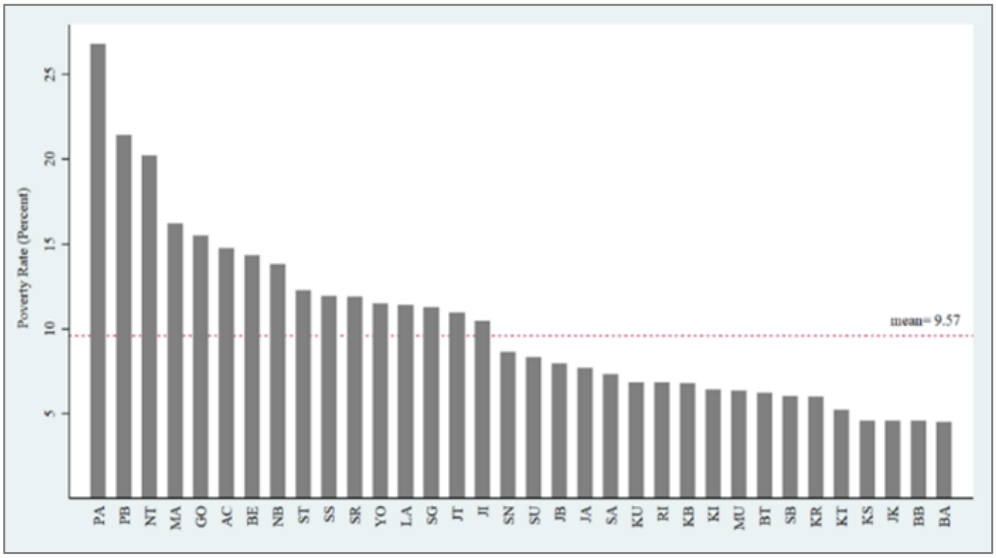

Figure 10: Poverty Rate by Province in 2022
Source: BPS Indonesia 2010-2022 (processed)

Figure 11 illustrates the poverty rate by province in 2022. There was a significant reduction in the poverty rate across Indonesia. By 2022, the national average poverty rate had decreased to 9.57%. However, 15 provinces still had poverty rates above the national average. In 2022, Papua had the highest poverty rate at 26.8%, followed by West Papua at 21.43%, and East Nusa Tenggara at 20.23%. This reduction reflects economic improvements in some areas, although there are still considerable challenges, particularly in Eastern Indonesia. On the other hand, the provinces with the lowest poverty rates were Bali at 4.53%, Bangka Belitung at 4.61%, and DKI Jakarta at 4.61%. Although DKI Jakarta saw a slight increase in poverty compared to 2010, both Bali and Bangka Belitung maintained relatively low and stable poverty rates.

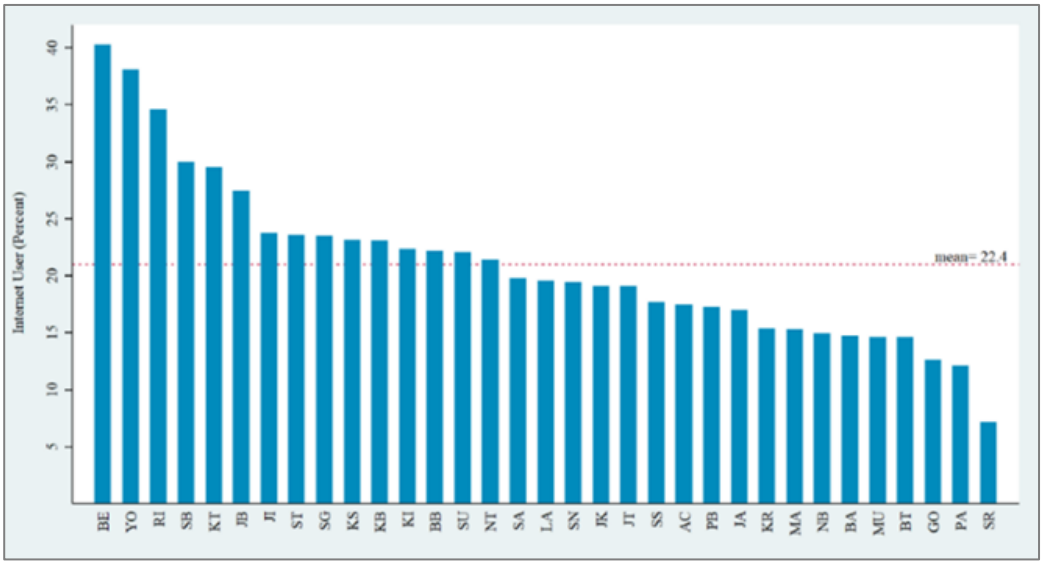

Figure 11: Number of Household Internet Users by Province in 2010
Source: BPS Indonesia 2010-2022 (processed)

Figure 12 illustrates the number of internet-using households by province in 2010. The national average for internet usage in 2010 was 22.4%. Eleven provinces had a higher percentage of internet users than the national average, indicating significant disparities in digital technology adoption across different regions in Indonesia. The provinces with the highest percentages of internet users were Bengkulu (40.31%), followed by DI Yogyakarta (38.12%), and Riau (34.62%). The high percentages of internet users in these provinces suggest that factors such as education, adequate infrastructure, and urbanization have contributed to greater access to and use of the internet among households. On the other hand, the provinces with the lowest internet usage were West Sulawesi (7.18%), Papua (12.08%), and Gorontalo (12.59%). The low levels of internet usage in these provinces highlight significant challenges in providing internet infrastructure and access to technology in these areas. These disparities underscore the imbalance in internet access across Indonesia, where certain regions are still lagging in adopting digital technologies.

In 2022, there was a significant increase in the number of internet users compared to 2010. The national average of internet users drastically rose to 86.54%. Eighteen provinces had a percentage of internet users above the national average. The provinces with the highest percentage of internet users were Jakarta (95.39%), followed by Riau Islands (95.26%), and North Kalimantan (94.27%). This increase reflects the success of various government initiatives and internet service providers in expanding access and digital infrastructure across Indonesia. However, there are still provinces with relatively low internet usage percentages in 2022. The provinces with the lowest percentage of internet users were Papua (35.14%), followed by East Nusa Tenggara (74.23%), and North Maluku (77.8%). Although there has been a significant improvement compared to 2010, these three provinces still face challenges in achieving higher levels of internet adoption. This highlights the ongoing need for efforts to improve access and infrastructure in the lagging regions, ensuring that all areas of Indonesia can benefit from the advancements in digital technology.

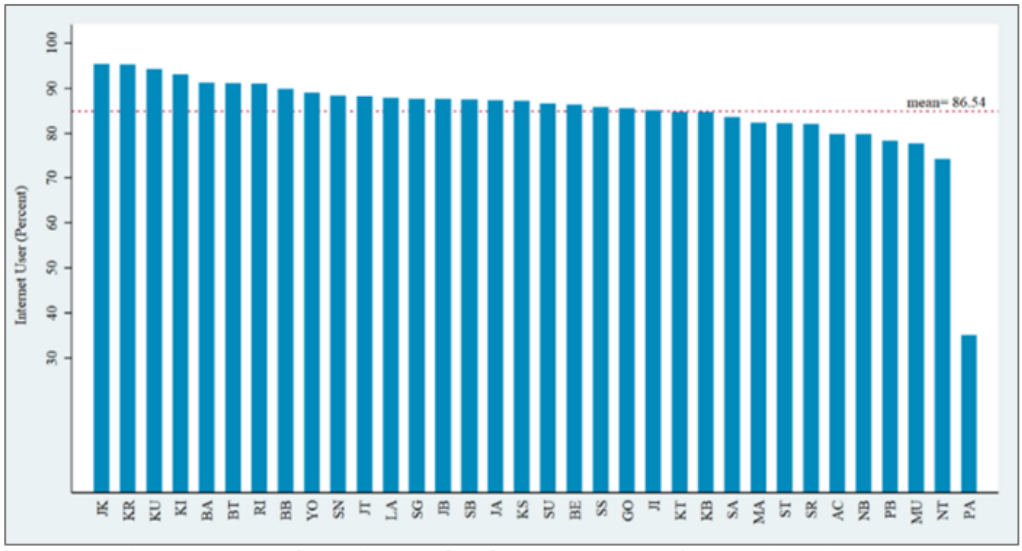

Figure 12. Number of Household Internet Users by Province in 2022
Source: BPS Indonesia 2010-2022 (processed)

Figure 13 illustrates the distribution of provinces in Indonesia based on the average poverty rate and the average number of crime incidents from 2010 to 2022, divided into four quadrants. The vertical line represents the national average of crime incidents, which is 9,493 cases, while the horizontal line represents the average poverty rate of 11.48%. Quadrant I includes provinces that have both a higher average number of crime incidents and a higher poverty rate than the national averages. Provinces in this quadrant, such as East Java, South Sulawesi, and Central Java, demonstrate a positive correlation between higher poverty rates and higher crime incidents, suggesting that increased poverty is linked to higher crime rates. Quadrant II consists of provinces with lower crime incidents but higher poverty rates than the national average. Provinces like Yogyakarta, North Sulawesi, West Nusa Tenggara, Aceh, Papua, and others fall into this quadrant, indicating that although these provinces experience high poverty, the crime rate is lower compared to other regions. Quadrant III includes provinces with both lower crime incidents and lower poverty rates, such as Riau, North Sulawesi, and Bali, showing a relatively better socio-economic condition in terms of both crime and poverty. Finally, Quadrant IV shows provinces with a higher than average number of crime incidents but lower poverty rates, including North Sumatra, West Java, and DKI Jakarta, highlighting that these provinces face significant crime issues despite lower poverty levels.

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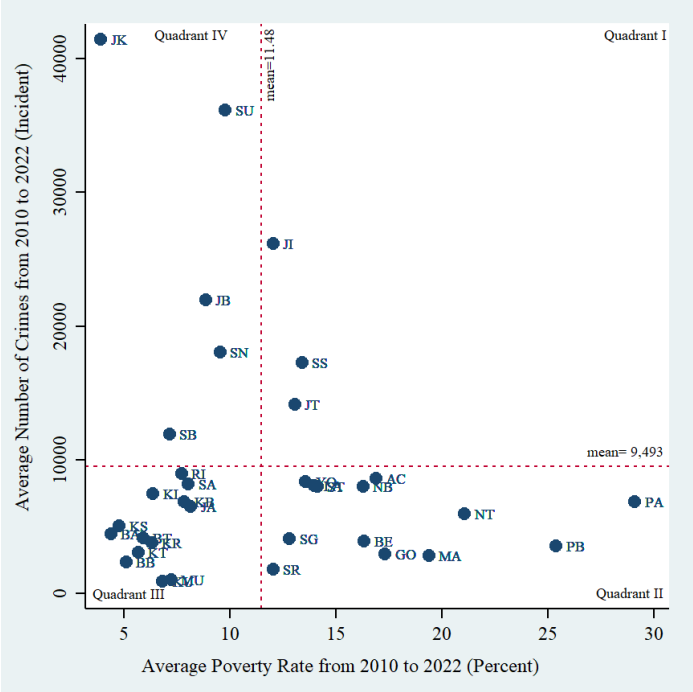

Figure 13. Distribution of Provinces Based on Average Poverty and Average Crime Incidents
Source: BPS Indonesia 2010-2022 (processed)

Panel Data Regression Results

Based on the regression test results, it was found that independent variables, such as poverty, have a positive and significant effect on crime. As shown in Table 2, the estimated regression coefficient for the poverty variable is 0.0360, indicating that each unit increase in the poverty rate in a region tends to raise the crime rate. This result aligns with the hypothesis that poverty positively affects crime. Poverty influences the occurrence of criminal activities. This finding is consistent with the research conducted by Fachrurrozi & Hakim (2021) and Sugiharti et al. (2022), which demonstrate that poverty has a positive and significant impact on crime rates, as poverty is likely to exacerbate criminal behavior. The internet variable shows a significant negative effect on crime, with an estimated coefficient of -0.0116. This suggests a negative relationship between internet usage and crime, meaning that increasing access to and use of the internet is associated with a reduction in crime rates. Regarding control variables, the minimum provincial wage, the Java Island dummy, and the COVID-19 dummy show negative and significant effects on crime. However, the open unemployment rate variable is not significant in relation to crime. The moderation variable test results indicate a positive and significant relationship with crime. This result shows that when internet usage increases among the poor, it tends to increase the crime rate. The development of information technology brings both positive and negative impacts on society.

Table 2. Results of Panel Data Regression Analysis

Independent variable	Dependent variable: Crime (lcrime)
povr	0.0360***(0.0126)
inter	-0.0116***(0.00237)
povr*inter	0.000403***(0.000151)
lpden	0.219***(0.0754)
growth	0.648***(0.0803)
lpmw	-0.203*(0.119)
our	-0.0219(0.0156)
lhdi	3.348**(1.684)
jav	-0.923***(0.308)
cov	-0.142***(0.0523)
Constant	-15.45**(6.444)
R-Squared	0.1185

Independent variable	Dependent variable: Crime (lcrime)
Wald chi^2	181.75
Observations	419
Province	34
Model Selection Criteria	
Chow Test	0.0000
Hausman Test	0.0723
Lagrange Multiplier Test	0.0000
Decision	REM

Note: Standard errors are in parentheses; significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Discussion

The Effect of Poverty on Crime

Based on the panel data regression analysis, the poverty variable has a positive and significant effect on crime in Indonesia. As shown in Table 2, the regression estimate for the poverty variable is 0.0360, indicating that for every one-unit increase in the poverty rate in a region, the crime rate tends to increase. These findings are consistent with the hypothesis that poverty has a positive effect on crime, as higher poverty levels often lead to increased criminal behavior. When the poverty rate or the number of poor people in Indonesia decreases, the crime rate also tends to decrease, and vice versa.

These results align with previous studies by Fachrurrozi & Hakim (2021), Silvia & Ikhsan (2021), and Sugiharti *et al.* (2022), which also found a positive and significant relationship between poverty and crime. This suggests that poverty may exacerbate criminal activities. A reduction in poverty correlates with a reduction in crime rates. Conversely, high levels of poverty compel individuals to work harder to meet basic life needs, which may, in some cases, result in an increased likelihood of criminal behavior. Thus, areas with lower poverty rates generally experience lower crime rates.

The Effect of the Internet on Crime

The regression analysis results show that the internet variable has a negative and significant impact on crime in Indonesia. The estimated coefficient for the internet variable is -0.0116, indicating a negative relationship between internet usage and crime rates. This suggests that an increase in internet access and usage is generally associated with a reduction in crime. The decline in crime may occur because the internet offers access to various platforms that divert individuals' attention away from criminal activities, such as social media, online entertainment, and educational resources. In other words, the internet serves as an alternative that reduces the opportunities for individuals to engage in criminal activities.

Another positive influence of the internet is its ability to provide platforms for job searching and economic opportunities (Lela *et al.*, 2023). Many individuals who previously lacked access to job opportunities can now find work through online platforms, which in turn can help reduce poverty and economic hardship—two factors commonly associated with higher crime rates.

However, the findings of this study contrast with the research by Mardinsyah & Sukartini (2020), which suggested that the percentage of households with internet access had a positive, though insignificant, effect on crime. Their study found that an increase in internet usage was linked to a higher crime rate, which may be due to the complex and multifaceted relationship between technology use and criminal behavior.

The Effect of the Moderating Variable (*povr*inter*) on Crime

Based on the panel data regression results, the moderating variable, which represents the interaction between poverty and internet usage, shows a positive and significant effect with an estimated coefficient of 0.000403. This suggests that when internet usage increases among the poor, it tends to elevate crime rates. The positive impact of the interaction between the internet and poverty could be attributed to several factors. People living below the poverty line may face various obstacles in utilizing the internet effectively, including limited digital literacy, inadequate access to necessary devices, and a lack of human resources to leverage online opportunities. As a result, they might not fully experience the benefits of the internet in reducing incentives to engage in criminal activities.

Moreover, internet usage among the poor may not always be directed toward positive purposes, such as education or job searching, but could instead be used for activities that worsen their conditions, such as online gambling or involvement in criminal networks. In this context, the internet does not function as an empowerment tool but exacerbates their situation by opening up opportunities for criminal activities.

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The Effect of Population Density on Crime

Based on the panel data regression analysis, the population density variable shows a significant positive effect on crime rates, with an estimated coefficient of 0.219. This indicates that an increase in population density tends to correlate with a rise in crime rates. Simply put, this suggests that areas with higher population densities are more likely to experience an increase in criminal activity.

Population density affects the quality of life (Irham & Putri, 2023). Improving the quality of life in densely populated areas is far more challenging than in areas with lower population density. This aligns with the Social Disorganization Theory, which states that crime occurs when social control weakens due to high population mobility. This finding is consistent with the research by Silvia & Ikhsan (2021), which examined the effects of economic growth, poverty, and population density on crime in Indonesia. Their analysis revealed that population density has a positive and significant effect on crime in Indonesia.

The Effect of Economic Growth on Crime

Based on the panel data regression results, as shown in the Table 2, the variable Gross Domestic Regional Product (PDRB) per capita has a positive and significant effect on crime rates, with an estimated coefficient of 0.648. This indicates that when PDRB per capita increases, there is a tendency for crime rates to rise. However, an increase in PDRB per capita does not always reflect an even distribution of wealth. This inequality can create frustration and dissatisfaction among people who feel left behind, which, in turn, may lead to an increase in crime as a form of social expression. Additionally, rapid economic growth is often accompanied by rapid urbanization and significant social changes. The rise in PDRB per capita may also increase the attraction of the area to external criminal actors.

The Effect of Provincial Minimum Wage on Crime

According to the panel data regression analysis results, the provincial minimum wage variable has a significant negative effect on crime rates. The estimated coefficient of -0.203 suggests that an increase in the provincial minimum wage is associated with a decrease in crime rates. This result indicates that minimum wage policies can be an effective tool in reducing crime by improving the economic welfare of low-income communities.

Theoretically, a higher minimum wage provides greater economic stability for low-income individuals (Fitriyani & Sumbawati, 2024). When their basic needs are met, these individuals are less likely to resort to crime as a way to fulfill their living requirements. With a higher minimum wage, the quality of life for the poor can improve, thereby reducing the economic pressure that often serves as a major driver for criminal behavior.

The Effect of Open Unemployment Rate on Crime

Based on the panel data regression analysis, the open unemployment rate (our) shows a negative but insignificant effect on crime, with an estimated coefficient of -0.0219. This result suggests a possible decline in crime rates as the open unemployment rate increases. The relationship between unemployment and crime is often linked to an increase in crime when unemployment is high. However, this result indicates that in some contexts, rising unemployment does not necessarily correlate with an increase in crime. This could mean that unemployment in certain regions may not align with a heightened urge to engage in criminal activity. Educated unemployment, especially among diploma and university graduates, dominates the unemployment rate in Indonesia. According to the Central Bureau of Statistics (BPS), from 2019 to 2022, the unemployment rate for diploma graduates decreased from 5.99% to 5.87%. This decline may reflect an improvement in skills or government policies supporting diploma graduates. Conversely, the unemployment rate for university graduates increased from 5.67% to 5.72% by 2022, indicating relative stability. Better-educated individuals are generally believed to have more rational thinking and are less likely to engage in criminal behavior.

This finding is consistent with research by Kasim & Hendra (2023) , who analyzed the impact of unemployment and poverty on criminal behavior in Tolitoli Regency from 2012 to 2021. Their study found that unemployment had a negative but insignificant effect on crime. In other words, a 1% decrease in unemployment in Tolitoli Regency resulted in a decline in criminal activity.

The Effect of Human Development Index on Crime

Based on the estimation results, the Human Development Index (HDI) variable shows a positive and significant effect on crime, with an estimated coefficient of 3.348. This indicates that as the HDI increases, crime rates also tend to increase, and vice versa, a decrease in HDI corresponds to a decrease in crime. An increase in HDI signifies an improvement in human resource quality. In Indonesia, the HDI has been increasing every year. Although this is generally viewed as positive, there are some concerns regarding the uneven distribution of HDI across provinces, which could lead to increased income inequality in the long term (Nindri & Devia, 2023). An increase in HDI can improve access to various aspects of life, including access to technology. However, this can also open up new opportunities for crimes such as cybercrime or online fraud (Lestari & Agusalim, 2025).

The Effect of Java Island Dummy on Crime

According to the panel data regression analysis, the dummy variable for Java Island (jav) shows a significant negative effect on crime, with an estimated coefficient of -0.923. This suggests that crime rates on Java Island are generally lower compared to other regions in Indonesia. The significant coefficient for the Java dummy reflects disparities in crime rates across different regions in Indonesia, highlighting a real difference in crime levels between Java and other areas based on various factors that influence crime rates. When the regression results indicate a significant negative coefficient for the Java dummy, it implies that certain characteristics or conditions on Java Island are consistently linked to lower crime rates compared to other regions. Regions outside of Java may face different challenges due to structural, social, and economic disparities, which can influence the prevalence of crime.

The Effect of COVID-19 Dummy on Crime

As seen in the panel data regression results, the COVID-19 dummy variable shows a significant negative effect on crime, with an estimated coefficient of -0.142. This result indicates that during the pandemic, there was a significant decrease in crime rates. One explanation for this negative relationship is the restrictions on mobility and the implementation of lockdown policies during the pandemic. When people's movements were restricted, the opportunity to commit crimes, particularly conventional crimes such as theft and robbery, also decreased. With fewer people being outside their homes, the chances for criminals to engage in unlawful activities diminished. Additionally, heightened surveillance by law enforcement during the pandemic may have contributed to the decline in crime rates.

On the other hand, the decrease in crime could also be attributed to changes in societal behavior during the pandemic (Abdissiam & Pratomo, 2024). Fear of virus transmission, increased social solidarity, and a heightened awareness of the importance of public health likely made individuals more inclined to avoid risky behaviors, including criminal activities. People focusing on the collective well-being and supporting each other during the crisis may also have contributed to reducing the incentives for crime.

Conclusion

The rapid development of technology and easy access to information have a significant impact on crime rates. On one hand, information technology can bring positive effects by providing alternatives that reduce the potential for crime. On the other hand, improper use of technology may open new opportunities for criminal activities, especially among economically vulnerable communities. Poverty has been proven to be one of the main factors contributing to the increase in crime rates in Indonesia, and a reduction in poverty levels has the potential to decrease crime rates. This suggests that when people are able to meet their basic needs, the incentive to engage in criminal activities will diminish.

Based on the regression analysis, it can be concluded that some independent variables, such as poverty, have a positive and significant effect on crime rates. Meanwhile, internet usage shows a

significant negative impact on crime, as it provides an alternative to divert individuals' attention from criminal activities. Additionally, control variables such as population density, PDRB per capita, and human development index (HDI) also influence crime rates. Other control variables, such as provincial minimum wage, the Java dummy variable, and the COVID-19 dummy variable, have a significant negative effect on crime rates, indicating that economic policies and social restrictions during the pandemic contributed to the reduction in crime. However, the open unemployment rate did not show a significant effect on crime in this analysis. Finally, the moderation variable showed a positive and significant effect, meaning that an increase in internet usage among poor communities tends to increase crime rates.

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