

Sustainable Economic Development and Digital Payments on Public Consumption Demand: Evidence from Indonesia

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Abstract

The COVID-19 outbreak has influenced Indonesia's economy and prompted an investigation. The study aims to assess the impact of sustainable economic development and digital payments on household consumption demand in Indonesia. It employs consumption theory, sustainable development theory, and digital payment systems. The study's independent factors include Gross Regional Domestic Product (GRDP), population density (PD), the Human Development Index (HDI), the Environmental Quality Index (EQI), electronic money (EM), debit cards, ATMs, and credit cards. The dependent variable is household consumption demand (CD). The data consists of a combined panel of annual data from 2020 to 2023 and cross-sectional data from 33 Indonesian provinces obtained from the Bank Indonesia and Central Bureau of Statistics websites. The research takes a quantitative approach and incorporates panel data analysis techniques. The data analysis techniques utilized are the Hausman Test, Heteroskedasticity Test, Correlation Test, Pesaran's CSD Test, FGLS Test, and PCSE Test. The findings suggest that sustainable economic development, as measured by GRDP, has a favorable and significant impact on household consumption. Population density has a favorable and considerable impact on household consumption. The HDI has a large negative impact on household consumption, whereas the household EQI has a positive and significant effect. Digital payments, particularly credit cards, have a favorable and considerable effect on household consumption. Improving health and education can increase people's awareness of a healthy lifestyle, reducing their consumption of unhealthy or unnecessary goods.

Keywords: *Sustainable Economic Development, Digital Payment, Public Consumption, Panel Model*

JEL Classification: Q01, E42, E21, C23

INTRODUCTION

National income refers to the total income generated by a country over a specific period of time. It is an important indicator for measuring a country's economic well-being, as well as analyzing growth, income distribution, and economic stability. The ability to produce goods, generate income, consume, and increase the assets owned by a country's population over a given period reflects economic will and interconnectedness (Geoffrey, 2005). We can use consumption

patterns as a tool to measure the well-being of the population, and changes in population composition can serve as an indicator of welfare levels (Badan Pusat Statistik, 2022).

Household income, income expectations, wealth, credit, government policy, consumer preferences, and psychological factors all influence consumption, according to Samuelson and William (2002). Covid-19 has impacted the economy in many ways. The effects on economic activity include a sharp decline in domestic consumption, a drop in tourism and business travel, the spillover of weak demand into other sectors and economies through trade and production links, supply-side disruptions affecting production and trade (which differ from the demand shocks that spread through trade and production networks), and health impacts such as increased illness and death, as well as a shift in healthcare spending (ADB, 2020). This situation reflects a unique combination of voluntary social distancing, necessary restrictions to slow the spread and allow healthcare systems to manage the surge in cases, a sharp loss of income, and weakening consumer confidence due to the pandemic (IMF, 2020).

Dumairy explains that household consumption expenditure is one of the macroeconomic variables (Dumairy, 1996). We can identify a society's consumption pattern based on its allocation; broadly speaking, we classify consumption expenditure allocation into two categories: expenditure on food and non-food items (Dumairy, 1996). As shown in Figure 1, the Central Bureau of Statistics reports the state of public consumption, measured according to gross domestic product (GDP) at constant prices.

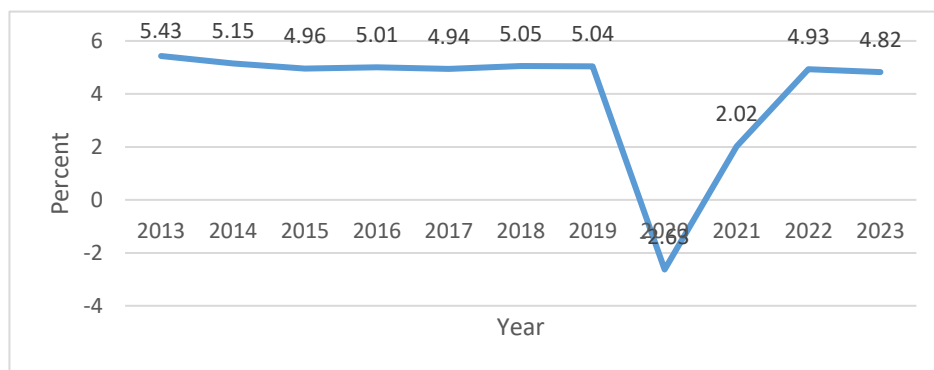


Figure 1. Conditions of Public Consumption in 2020-2023

Source: Badan Pusat Statistik (2023)

The highest growth in household consumption after the Covid-19 pandemic occurred in 2022, reaching IDR 6.19 quadrillion, an increase of 4.93 percent from the previous year. However, despite this growth, Indonesia's household consumption has not fully recovered compared to pre-pandemic levels. This is reflected in the consumption growth from 2013 to 2019. Post-Covid-19 consumption growth remains lower than in 2019, when it grew above 5 percent, as shown in Figure 1. During the Covid-19 pandemic in 2020, household consumption consistently grew below the national economic growth rate. The national economy grew by 5.31 percent to IDR 11.71 quadrillion in 2022, compared to 2.02 percent in the previous year. Additionally, the share of household consumption in GDP at

current prices was only 51.87 percent of the total national GDP of IDR 19.59 quadrillion in 2022 and 4.82 percent in 2023. This portion is the lowest since 2010 (Badan Pusat Statistik, 2022).

In 2020, according to Bank Indonesia, the impact of Covid-19 pressured Indonesia's economy, leading to mobility restrictions and health protocols, including large-scale social restrictions (PSBB), to control the virus spread. The impact of Covid-19 was unavoidable and sharply reduced economic activity, causing a slowdown in economic growth from 5.17 percent in 2018 and 5.02 percent in 2019 to -2.07 percent (yoy) in 2020, with a contraction of 5.32 percent (yoy). As economic growth contracted, household consumption dropped to -2.63 percent (yoy) in 2020, contracting by 5.04 percent (yoy). Government consumption also contracted by 0.67 percent (yoy) in 2020 to 2.58 percent (yoy). From 2021 to 2022, Indonesia's economy rebounded, with economic growth increasing by 5.76 percent (yoy) in 2021 and 1.62 percent (yoy) in 2022, but in 2023 it declined to 5.04 percent (yoy).

The rising economic growth was followed by increases in both household and government consumption. Household consumption grew by 4.65 percent (yoy) in 2021, 2.91 percent (yoy) in 2022, and further increased to 4.82 percent (yoy) in 2023. Government consumption saw a rise of 1.59 percent (yoy) in 2021, a decline of 8.68 percent to -4.51 percent (yoy) in 2022, and then recovered in 2023 to 2.95 percent (yoy) (Bank Indonesia, 2023). The following is Figure 2 that explains economic indicators.

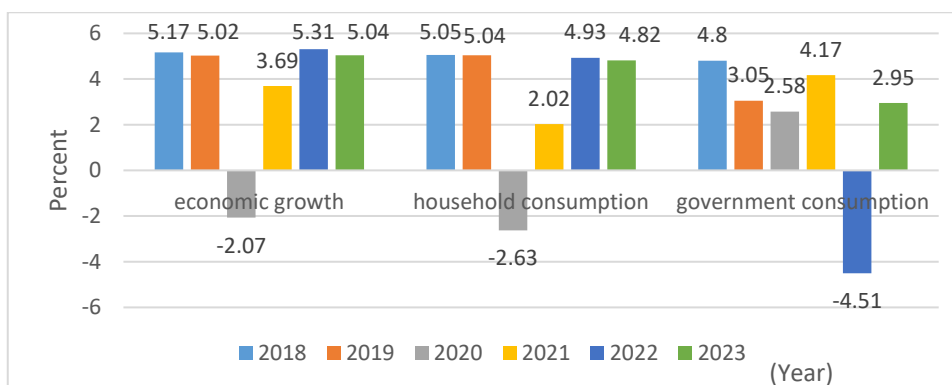


Figure 2. Economic Indicators

Source: Bank Indonesia processed

According to the 2021 Global Findex database, amidst the global expansion of formal financial services, the Covid-19 pandemic has significantly driven digital payments. The expansion of financial services has created new economic opportunities. Digital payments refer to payment methods conducted through communication technology, artificial intelligence, and information technology with the help of computers, smart devices, and other hardware equipment. In this context, digital means primarily include electronic payments, electronic money, and digital currency. (Demirgüç-Kunt et al., 2022).

The use of digital payments in Indonesia has experienced a rapid increase. Bank Indonesia revealed this through the data in Figure 3.

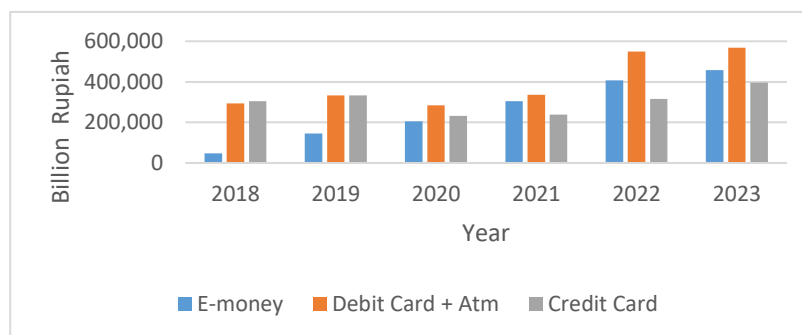


Figure 3. Number of Electronic Money Transactions, Debit/ATM Cards and Credit Cards in 2018 - 2023 (Billions of rupiah)

Source: Bank Indonesia, 2023

Bank Indonesia reported an increase in digital financial transactions from 2018 to 2023. This is reflected in spending transactions using electronic money, debit cards, and credit cards, indicating a continuous push towards an efficient economy and financial inclusion through cashless payment policies or electronic money. (Bank Indonesia, 2023).

Li et al. (2020) Research on the impact of digital finance on household consumption shows that digital finance can significantly increase household consumption. Wang and Huang (2023) also revealed in their study that the digital finance index has a significant impact on facilitating online consumer purchases. Countries with higher levels of digital finance development tend to have greater online sales volumes, indicating that digital finance influences consumption levels.

Research by Li et al. (2020) found that digital finance can significantly increase household consumption in China, while Wang and Huang (2023) showed that the digital finance index significantly boosts consumers' digital spending. These studies generally highlight a positive relationship between digital financial technology and consumption, especially in countries that have widely implemented digital infrastructure. However, a key limitation of these studies is that they mainly focus on the economic side of consumption, such as increased spending or transaction volumes, without considering the social and environmental impacts of consumption patterns. As a result, the research tends to overlook long-term sustainability aspects. Another limitation lies in the context of the countries studied. Most of the literature is based on data from countries with more advanced digital financial systems, such as China, the United States, or European nations. Therefore, the findings may not be fully applicable to Indonesia, which has different socio-economic characteristics, levels of digital literacy, and digital infrastructure gaps. Previous studies have also rarely explored the connection between digital payments and sustainable development, particularly in terms of how changes in consumer behavior could support sustainability goals. Yet, this relationship is crucial to examine, especially as awareness of environmental and social issues has grown in the post-pandemic era.

Based on the background and previous studies mentioned, household consumption contributed the majority, or 53.31 percent, to Indonesia's gross domestic product (GDP) growth in the second quarter of 2023, with this component growing by 5.32 percent year-on-year (yoy) (Badan Pusat Statistik, 2023). Whether the development of digital payments impacts consumer demand and how it relates to sustainable economic development remains unresolved, with ongoing controversy among theorists. This issue continues to be debated. The author includes sustainable economic development variables, consisting of three pillars: the economic pillar measured by per capita GRDP, the social pillar measured by urbanization and the Human Development Index (HDI), and the environmental pillar measured by the Environmental Quality Index (EQI), which are hypothesized to enhance household consumption in the post-Covid-19 era. Development focused on sustainability creates new jobs in green sectors and improves infrastructure that supports healthier and more comfortable living. This is relevant because people recovering from the pandemic tend to value better economic stability and environmental quality, making them more willing and able to increase their consumption of products and services that support sustainability.

The novelty of this study lies in combining the perspective of sustainable economic development, which includes three pillars: the economic pillar measured by GDP per capita, the social pillar measured by urbanization and the Human Development Index (HDI), and the environmental pillar measured by the Environmental Quality Index (EQI), with the development of digital payments to analyze household consumption demand in Indonesia. This study focuses on how sustainable economic development can facilitate inclusive and environmentally friendly consumption growth, and how digital payment technology can accelerate economic recovery and shift consumption patterns. This is relevant because, in the post-pandemic context, people tend to value economic stability and better environmental quality, making them more willing and able to increase consumption of products and services that support sustainability. This provides a multi-dimensional perspective in analyzing consumption patterns among the Indonesian population. Unlike previous studies that focused on global or cross-country analyses, this study offers country-specific data, making its findings more relevant for national policymakers—especially in the context of post-Covid-19 economic recovery.

The research aims to examine the impact of sustainable economic development and digital payments on consumer demand in Indonesia, particularly in the post-pandemic context. Using panel data from 33 provinces for the period 2020-2023, this study seeks to explore the relationship between sustainable development indicators and the use of digital payment technology on consumer demand, while offering new insights into sustainable economic recovery strategies. These factors have motivated the authors to analyze the topic titled "Sustainable Economic Development and Digital Payments on Public Consumption Demand: Evidence from Indonesia".

METHOD

This research approach uses a quantitative approach. The data consists of a combined panel of annual data from 2020 to 2023 and cross-sectional data from 33 Indonesian provinces obtained from the Bank Indonesia and Central Bureau of Statistics websites, and using secondary data as contained in Table 1.

Table 1. Secondary Data Sources

Variables	Notation	Indicators	Scale	Sources	Units
Public Consumption Demand	Y	Average monthly per capita expenditure for food and non-food	Rupiah	BPS (Badan Pusat Statistik)	CD
Sustainable Economic Development (economic, social and environmental pillars)	X1	GRDP Per Capita (Economic Pillar)	Thousand Rupiah	BPS (Badan Pusat Statistik)	GRDP
	X2	Urbanization (Population Density) (Social pillar)	Persons/Km2	BPS (Badan Pusat Statistik)	PD
	X3	Human Development Index (HDI) (Social pillar)	Index	BPS (Badan Pusat Statistik)	HDI
	X4	Environmental Quality Index (environmental pillar)	Index	BPS (Badan Pusat Statistik)	EQI
Digital Payment	X5	Electronic Money	Million Cards	BI (Bank Indonesia)	EM
	X6	Debit Money and ATM	Billion Transaksi	BI (Bank Indonesia)	DEBIT + ATM
	X7	Credit	Billion Transaksi	BI (Bank Indonesia)	CREDIT

This research uses panel data regression analysis techniques. Panel data regression analysis is a regression analysis tool where data is collected between individuals (cross-section) and over a certain period of time (time series). The usefulness of panel data is that it can capture individual heterogeneity, capture the dynamics of adjustment, as well as more information and variation, which will help minimize the possibility of multicollinearity (Baltagi, 2021).

The initial model to describe the relationship between sustainable economic development and digital payments on public consumption demand. Several variables in the research use natural logarithms (Ln) to reduce excessive data fluctuations and normalize data that is not normally distributed. Referring to Baltagi (2005), the equation model in the research can be estimated into three models, model one is listed in model 3.1, model two in 3.2, and model three in 3.3 is as follows:

$$\ln_CD_{it} = \alpha + \beta_1 \ln_GRDP_{it} + \beta_2 \ln_PD_{it} + \beta_3 HDI_{it} + \beta_4 EQI_{it} + \beta_5 \ln_EM_{it} + \varepsilon_{it} \quad (1)$$

$$\ln_CD_{it} = \alpha + \beta_1 \ln_GRDP_{it} + \beta_2 \ln_PD_{it} + \beta_3 HDI_{it} + \beta_4 EQI_{it} + \beta_6 \ln_DEBITATM_{it} + \varepsilon_{it} \quad (2)$$

$$\ln_CD_{it} = \alpha + \beta_1 \ln_GRDP_{it} + \beta_2 \ln_PD_{it} + \beta_3 HDI_{it} + \beta_4 EQI_{it} + \beta_7 \ln_CREDIT_{it} + \varepsilon_{it} \quad (3)$$

Model description: Y is the variable of the public consumption demand. The independent variable in the research is sustainable economic development, which

includes GRDP as an economic pillar, Population Density (PD) and Human Development Index (HDI) as the social pillar, EQI as an environmental pillar, and digital payment variables, including Electronic Money (EM), Debit & ATM transactions, and Credit Card usage. Meanwhile, ε is individual heterogeneity.

The first stage of analysis is to carry out descriptive statistics. The second stage is to find the best panel regression model by estimating. Three formulations will be tested, namely the Pooled Model, Random Effect Model, and Fixed Effect Model. The Breusch-Pagan test was used to choose between the Pooled Model and Random Effect Model, then the Hausman test was carried out to choose between the Fixed Effect Model and Random Effect Model, and finally, the Lagrange multiplier test was carried out to choose between Random Effect and Simple OLS (Figure 4).

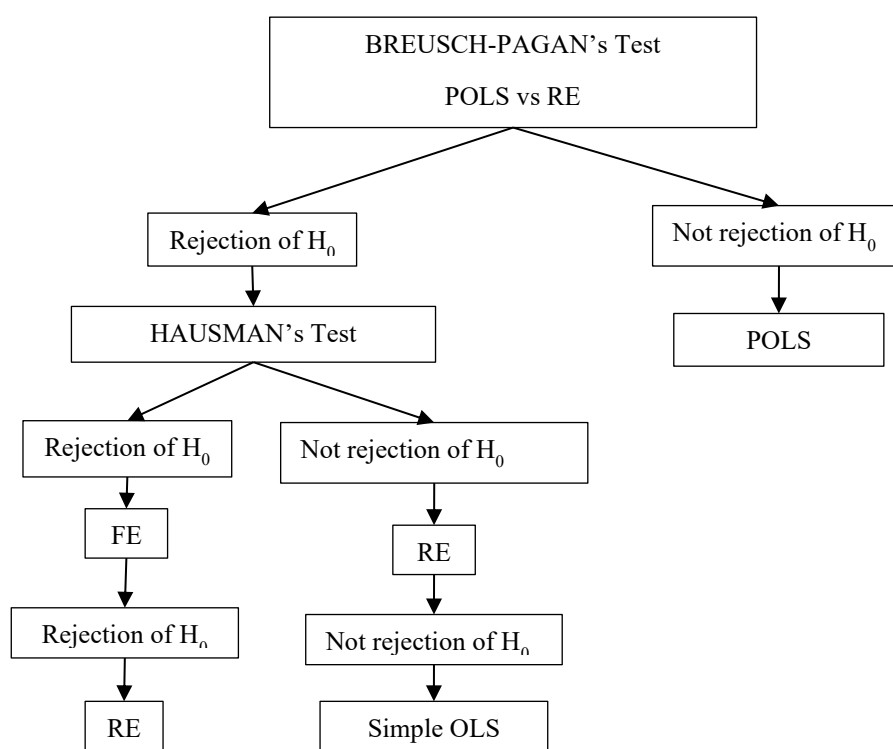


Figure 4. Panel Model Stages

Source: Di Lascio (2011)

After obtaining a suitable model from the three models tested, a diagnostic examination was then carried out, namely (a) Multicollinearity, with detection of: variance inflation factor (VIF); (b) Heteroscedasticity, with detection: Modified Wald statistics for group heteroscedasticity; (c) Serial Correlation (Autocorrelation), with detection: serial correlation test. If there are still heteroscedasticity and/or serial correlation problems, model improvements will be carried out using certain commands (Hoechle, 2007).

RESULTS AND DISCUSSION

To obtain the best panel data regression model for data on public consumption demand in Indonesia, descriptive analysis is carried out first. Descriptive statistical analysis aims to describe the conditions data, such as average, standard deviation, minimum data, maximum data and amount of data. The results of the analysis that has been carried out can be seen in Table 2.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
CD	132	1.326.121,00	314.475.81,00	794.361,00	2.791.715,00
GDRP	132	349.214.219,00	485.160.722,00	28.031.443,00	2.050.465.970,00
PD	132	769,00	2.729,00	9,00	16.158,00
HDI	132	71,84	3,86	60,44	82,46
EQI	132	72,21	5,68	52,98	84,22
EM	132	1,64	8,04	0,02	53,08
Debit & ATM	132	225.889,00	465.663,00	9.155,00	2.962.633,00
Credit	132	9.050.355,00	30.737.161,00	39.063,00	238.196.125,00

In Table 2 of the statistical results, it can be observed that the level of household consumption in Indonesia has a maximum value of 2,791,715 consumption per household and a minimum value of 794,361 consumption per household. The Gross Regional Domestic Product (GRDP) variable has a maximum value of IDR 2,050,465,970 million and a minimum value of IDR 28,031,443 million. The GRDP values are very high and vary significantly between regions, indicating an imbalance in economic development. The population density variable has a maximum value of 16,158 people/km² and a minimum value of 9 people/km².

It can therefore be concluded that the population distribution across regions is highly uneven. The Human Development Index (HDI) variable has a maximum value of 80.37% and a minimum value of 43.25%. The Environmental Quality Index (EQI) has a maximum value of 84.22% and a minimum value of 52.98%. Environmental quality is generally good; however, there are regions where the quality remains low. The Electronic Money (EM) variable has a maximum value of 53.08 per million cards and a minimum value of 0.02 per million cards. The debit and ATM card variable has a maximum value of IDR 2,962,634 billion per transaction and a minimum value of IDR 9,155 billion per transaction, while the credit card variable has a maximum value of IDR 238,196,125 billion per transaction and a minimum value of IDR 39,063 billion per transaction this shows that the amount of credit distributed varies, reflecting differences in economic needs or capacities across regions.

The second stage is to find the best regression model by carrying out the Breusch Pagan Test to choose between the Pooled Model and the Random Effect Model, then carrying out the Hausman test to choose between the Fixed Effects Model and the Random Effects Model. And finally, the Lagrange multiplier test is carried out to choose between Random Effect and Simple OLS. Based on the results of testing the best regression model, the results obtained were that the best regression model was the Fixed Effect Model, reaching a significance level of 5%, while the best estimation model was model 3, where the estimation model was as follows:

$$\ln_{CD}_{it} = \alpha + \beta_1 \ln_{GRDP}_{it} + \beta_2 \ln_{PD}_{it} + \beta_3 HDI_{it} + \beta_4 EQI_{it} + \beta_7 \ln_{CREDIT}_{it} + \varepsilon_{it}$$

The model used is fixed effects; the test was carried out using robust standard errors via the Panel-Corrected Standard Errors (PCSE) method. According to Hoechle (2007), PCSE is effective for overcoming heteroscedasticity and dependence between units in panel data. This method provides a more accurate estimate of the standard error so that the variables become more significant. Therefore, the fixed effects model with the robust PCSE test was chosen as the best model, as shown in Table 3.

Table 3. Significance Test Results

Parameter	Coeffisient	Standard Error	z	P value
GRDP	0.0638068	0.0118186	5.40	0.000
PD	0.0399548	0.0070397	5.68	0.000
HDI	-0.0202314	0.0052105	-3.88	0.000
EQI	0.0146903	0.0039359	3.73	0.000
Credit	0.0310161	0.0102643	3.02	0.003

Source: Stata 17 processed by researchers

Table 3 shows that the variables with a 5 percent probability level are GRDP with a z-table value of 5.40 > z-critical value of 1.96, population density with a z-table value of 5.68 > z-critical value of 1.96, HDI with a z-table value of -3.88 > z-critical value of 1.96, EQI with a z-table value of 3.73 > z-critical value of 1.96, and credit card usage with a z-table value of 3.02 > z-critical value of 1.96. This indicates that each of these variables significantly influences the dependent variable, namely household consumption, by 0.0638068 percent (GRDP), 0.0399548 percent (population density), -0.0202314 percent (HDI), 0.0146903 percent (EQI), and 0.0310161 percent (credit card usage).

The Influence of Sustainable Development on Public Consumption

This study aims to examine the impact of sustainable economic development and digital payments on household consumption in Indonesia. Based on the analysis, it was found that sustainable economic development, consisting of three pillars of economic (GRDP), social (urbanization (PD) and HDI), and environmental (EQI) has a significant impact on consumption patterns, particularly in improving welfare and access to environmentally friendly goods and services. Additionally, digital payments (Credit) also positively contribute to increased consumption by accelerating and simplifying economic transactions.

The research findings regarding the economic pillar of sustainable economic development, namely GRDP, are consistent with the literature. According to Keynes, the main factor determining a country's economic growth is aggregate expenditure, which includes household spending on goods and services. Household consumption decisions influence overall economic behavior both in the short and long term. In the short term, fluctuations in consumption have a significant impact on economic fluctuations, while in the long term, household consumption decisions affect other macroeconomic variables. In many countries, consumption expenditure accounts for around 50-75 percent of Gross Domestic Product (GDP), making household consumption a key factor in determining fluctuations in economic

activity over time, as individual consumption is directly proportional to income (Persaulian et al., 2013).

The social pillar (urbanization as proxied by population density and HDI) aligns with consumer demand theory, where an increase in population density can lead to changes in average income or income distribution in an area. This can alter consumption patterns through the income effect and substitution effect. If income increases, consumers may consume more luxury goods. Conversely, if prices rise due to increased demand, consumers may seek cheaper substitute goods. Sustainable development theory describes sustainable development as a system involving complex interactions between various sectors, including technology, human development quality, and urbanization. Improvements in one sector can stimulate growth in other sectors, which in turn can boost household consumption. According to the concept by Alisjahbana and Murniningtyas (2018), urbanization, proxied by population density and connectivity infrastructure, accelerates the integration of economic centers across regions and reduces regional disparities. Urbanization and the growing trend of urban dwellers require urban development that considers sustainability aspects, including urban infrastructure development.

Sanusi (2008) highlights that human development significantly impacts household consumption but has a negative direction. With better education and optimal health, individuals tend to have better job opportunities, leading to higher income. This income increase can then influence individual consumption.

The environmental pillar of sustainable economic development (EQI) can influence consumer demand, consistent with the literature by Lin and Shi (2022), which states that there is a relationship between the environment and consumption. Good environmental quality measurement and monitoring encourage people to be more interested in purchasing products that are guaranteed to come from well-managed environments, such as eco-friendly products or products made using environmentally friendly methods or that do not contain harmful chemicals.

The Influence of Digital Payments on Public Consumption

Digital payments (Credit) can also influence consumer demand in line with the literature by Wang and Huang (2023), which reveals that the digital financial index has a significant impact in facilitating consumer purchases. The use of credit cards has significantly contributed to the increase in consumer spending in Indonesia. This aligns with the statement by Samuelson and Nordhaus (2002), which suggests that fundamental factors determining consumer spending on goods and services include household income, future income expectations, wealth, availability and cost of credit, government policies, as well as consumer preferences and psychological factors.

Overall, the study provides important insights into how sustainable economic development and digital payments impact household consumption. The GRDP variable has a coefficient of 0.0638068, indicating that when GRDP increases by 1 percent, household consumption rises by 0.0638068 percent. Indonesia's national GRDP grew by 2.07 percent in 2020, and by 3.74 percent in 2021 as the impact of the pandemic began to wane. This growth indicates an economic recovery that supports household consumption. Economic recovery after the pandemic, particularly reflected in sectors such as trade, services, and manufacturing, has increased household income. Higher incomes tend to drive

further consumption, as people have more disposable funds. Social assistance programs and increased infrastructure spending can boost GRDP by stimulating economic activity across various sectors, providing an additional boost to household consumption, especially during the post-pandemic recovery.

Population density positively affects household consumption in Indonesia, as indicated by a significant coefficient of 0.0399548, meaning that a 1 percent increase in population density leads to a 0.0399548 percent increase in household consumption. In 2020, the Population Census results showed that Indonesia's population reached 270.20 million. The percentage of the population living on Java Island decreased from 59.1 percent in 2000 to 56.10 percent in 2020, while the percentage in Kalimantan increased from 5.5 percent to 6.15 percent (Badan Pusat Statistik, 2020).

The majority of Indonesia's population is within the productive age group (15-64 years) at 70.72 percent, reflecting a demographic bonus. The young age group (0-14 years) accounts for 23.33 percent, and those aged 65 and above comprise 5.95 percent. The increase in the elderly population percentage indicates improvements in health and lifestyle. With a growing number of people in the productive age group, there is increased potential for household consumption, as this group generally has higher incomes and greater purchasing power. Additionally, demographic shifts, with Generation Z and Millennials dominating the population, also influence consumption patterns, as they tend to be more responsive to digital trends and product innovations (Sekretariat Kabinet Republik Indonesia, 2020).

HDI was taken as a variable for the social pillar representing health and education in sustainable development. The study findings show that the HDI variable coefficient in the best estimation model is -0.0202314, achieving significance at the 5 percent level. The research suggests that HDI affects household welfare by increasing income and consumption capability, leading to a tendency for higher education levels to be associated with greater awareness of the importance of saving and investing for the future rather than immediate consumption. More educated individuals are more likely to save for their children's education or retirement, reducing their current consumption. Improvements in health and education often make people more conscious of healthy lifestyles, which can reduce consumption of unhealthy or unnecessary goods.

The EQI variable coefficient obtained in the best estimation model is 0.0146903, indicating that a 1 percent increase in EQI leads to a 0.0146903 percent increase in household consumption. EQI significantly and positively influences household consumption in Indonesia. The environment can drive higher consumption levels through several mechanisms, particularly related to climate change, the availability of natural resources, and increased awareness of health and sustainability. Growing awareness of a good environment can drive the consumption of organic, environmentally friendly, and sustainable products. People increasingly aware of the negative impacts of conventional products on health and the environment are more inclined to purchase products considered safer and more responsible. Good environmental quality increases the consumption of certain environmentally friendly or healthy products. The research aligns with findings by Saari (2021), which state that environmental knowledge significantly affects

environmental risk perception, influencing environmental awareness and directly impacting sustainable consumption behavior.

The research results show that the credit card variable reaches significance at the 5 percent level, with a positive coefficient of 0.031061. According to a BAPPENAS report for the second quarter of 2023, credit distribution remained stable, although growth slightly slowed to 7.76 percent (yoy), down from 9.93 percent (yoy) in the previous quarter. Credit growth was mainly driven by consumption credit, which grew by 12.69 percent (yoy).

Credit cards have significantly contributed to increased consumer spending. Credit cards offer easy access to purchase goods and services without carrying cash. Additionally, promotions like discounts and cashback are often offered by credit card issuers, enhancing the appeal for consumers to use credit cards as their primary payment method. The COVID-19 pandemic forced many people to shift to online shopping, and credit cards became one of the most convenient payment methods for online transactions. The rise in e-commerce usage during the pandemic also contributed to increased credit card usage. Credit cards allow consumers to delay payments until the end of the month or longer with instalment systems, providing financial flexibility that encourages consumers to spend more than they would if relying solely on their monthly income. Despite the economic challenges due to the pandemic, some sectors continued to grow, and the income of some households remained stable or even increased. This increased consumers' ability and confidence to shop using credit cards.

CONCLUSION

This study examines the impact of sustainable economic development and digital payments on household consumption in Indonesia. The findings reveal that the three pillars of sustainable economic development—economic (GRDP), social (PD and HDI), and environmental (EQI)—significantly influence consumption patterns. Research demonstrates that GRDP propels consumption growth, aligning with Keynes' theory about the significance of aggregate expenditure in the economy. Social factors, such as population density and HDI, affect consumption through changes in income and societal preferences. Additionally, the adoption of digital payments, such as credit cards, contributes to increased consumption by providing convenience and transaction flexibility.

Overall, this study highlights that sustainable economic development, supported by GRDP growth, social connectivity, and environmental awareness, along with the push from digital payment technologies, positively contributes to household consumption in Indonesia. Policies that support sustainable economic growth, enhance digital literacy, and improve access to financial infrastructure are key factors in promoting more equitable and inclusive consumption and societal well-being.

Practically speaking, the results of this study indicate the need for policies focused on sustainable development. The government and policymakers can promote economic growth by considering social and environmental aspects. Enhancing infrastructure, education, and access to technology should go hand in hand with economic development to ensure that household consumption grows inclusively. The government needs to give special attention to efforts in boosting household consumption, as it is a key component of Gross Domestic Product (GDP)

and plays a crucial role in maintaining people's purchasing power and overall economic growth.

From a policy perspective, these findings highlight the importance of expanding access to digital payments across all segments of society, particularly in underserved areas. The government needs to broaden access and provide education on digital payments throughout Indonesia, especially in remote regions, so that the adoption of this technology can speed up transactions, boost household consumption, and promote financial inclusion by offering tax incentives to businesses that support and expand digital infrastructure. Collaboration between the government and the private sector is also crucial for creating a digital ecosystem that supports sustainability, with policies encouraging technological innovations like e-commerce and digital payment platforms integrated with sustainable development efforts.

Policy synergy is needed among various institutions: the Ministry of Finance through increased social spending and direct cash assistance (BLT) for vulnerable groups; Bank Indonesia through accommodative monetary policies to maintain purchasing power and support consumer credit; the Ministry of Cooperatives and SMEs along with the Ministry of Trade in strengthening supply chains and stabilizing the prices of basic goods; and Statistics Indonesia (BPS) by providing real-time, region- and demographic-based consumption data. Local governments also play an active role in empowering the local economy. All these efforts should be supported by the optimization of digital payments to enhance the efficiency of aid distribution and transactions, while also taking into account social aspects such as population density, education levels, and environmental sustainability to ensure inclusive, adaptive, and sustainable policies.

Social development should also be prioritized by improving education and healthcare services, raising public awareness about the importance of healthy and eco-friendly lifestyles. The government could conduct a national survey to track changes in consumption patterns and assess the environmental impact of economic development. This would help evaluate whether sustainable development policies and financial digitalization are having the desired effect on consumer behavior. In this way, consumption would not only meet economic needs but also align with long-term sustainability goals.

This study can serve as a reference for future research, particularly in the areas of sustainable economic development and digital payment systems. There is still room to expand the scope of the study, such as by incorporating cultural and psychological aspects to better understand consumer preferences. Future research could also explore consumer behavior over time, especially the transition from conventional to environmentally friendly consumption.

In addition, the coverage of digital payment variables could be broadened by including popular local e-wallet platforms in Indonesia (such as OVO, DANA, and GoPay), which have not yet been analyzed separately. This study is limited to proxy variables of sustainable economic development. Future studies may include additional variables to provide a more comprehensive understanding of the impact of sustainable economic development and digital payments on household consumption in Indonesia, as well as other relevant measurements and factors.

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REFERENCES

- Alisjahbana, A. S. & Murniningtyas, E. (2018). *Tujuan pembangunan berkelanjutan di Indonesia (2nd ed)*. Unpad Press.
- Badan Pusat Statistik. (2020). *Hasil Sensus Penduduk 2020*. <https://www.bps.go.id/id/pressrelease/2021/01/21/1854/hasil-sensus-penduduk--sp2020--pada-september-2020-mencatat-jumlah-penduduk-sebesar-270-20-juta-jiwa-.html>
- Badan Pusat Statistik. (2022). *Pengeluaran untuk konsumsi penduduk Indonesia. Berdasarkan hasil Susenas Maret 2022*. <https://www.bps.go.id/id/publication/2022/10/20/b9e45d7c9aeb2112005aaf53/pengeluaran-untuk-konsumsi-penduduk-indonesia--maret-2022.pdf>
- Badan Pusat Statistik. (2022). *Pertumbuhan ekonomi indonesia triwulan iv-2022*. <https://www.bps.go.id/pressrelease/2023/02/06/1997/ekonomi-indonesia-tahun-2022-tumbuh-5-31-persen.html>
- Badan Pusat Statistik. (2023). *Pertumbuhan ekonomi indonesia triwulan iv-2023*. <https://www.bps.go.id/id/pressrelease/2021/02/05/1811/ekonomi-indonesia-2020-turun-sebesar-2-07-persen--c-to-c-.html>
- Baltagi, B. H. (2005). Econometric analysis of panel data. In *John Wiley & Sons (Third)*. <https://doi.org/10.3109/00498257509056115>
- Bank Indonesia. (2020). *Fungsi Utama, Sistem Pembayaran dan Pengelolaan uang rupiah*. <https://www.bi.go.id/id/fungsi-utama/sistem-pembayaran/default.aspx>
- Bank Indonesia. (2023). *Statistik sistem pembayaran dan infrastruktur pasar keuangan (SPIP)*. <https://www.bi.go.id/id/statistik/ekonomi-keuangan/spip/Pages/SPIP-Desember-2023.aspx>.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., & Ansar, S. (2022). The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of covid-19. In *The Global Findex Database*. <https://www.worldbank.org/en/publication/globalfindex>
- Dumairy. (1996). *Perekonomian Indonesia*. Erlangga.
- Geoffrey, H. (2005). National Income and The Environment. In J. R. Vincent, K.G. and Maler (Ed.), *Elsevier B.V* (Vol. 3). Department of Forest Economics, 901 83 Umea, Sweden. [https://doi.org/10.1016/S1574-0099\(05\)03022-6](https://doi.org/10.1016/S1574-0099(05)03022-6)
- Hoechle, D. 2007. Robust standard errors for panel regressions with crosssectional dependence. *The stata journal*, 7(3), 281-312. DOI:10.1177/1536867X0700700301
- IMF. (2020). World Economic Outlook Update Juni 2020: A Crisis Like No Other, An Uncertain Recovery. IMF.
- Keynes, J. M. (1937). The general theory of employment. *Quarterly Journal of Economics*, 51(2), 209–223. <https://doi.org/10.2307/1882087>
- Li, J., Wu, Y., & Xiao, J. J. (2020). The impact of digital finance on household consumption: Evidence from China. *Economic Modelling*, 86, 317–326. <https://doi.org/https://doi.org/10.1016/j.econmod.2019.09.027>

- Lin, B., & Shi, L. (2022). Do environmental quality and policy changes affect the evolution of consumers' intentions to buy new energy vehicles. *Applied Energy*, 310, 118582. <https://doi.org/10.1016/j.apenergy.2022.118582>.
- Mangukiya, R. D., & Sklarew, D. M. (2023). Analyzing three pillars of sustainable development goals at sub-national scales within the USA. *World Development Sustainability*, 2, 100058. <https://doi.org/10.1016/j.wds.2023.100058>
- Parsaulian, B., Aimon, H., & Anis, A. (2013). Analisis konsumsi masyarakat di Indonesia. *Jurnal Kajian Ekonomi*, 1(2). <https://ejournal.unp.ac.id/index.php/ekonomi/article/view/753/622>
- Purvis, B., Mao, Y., & Robinson, D. (2019). Three pillars of sustainability: in search of conceptual origins. *Sustainability Science*, 14(3), 681–695. <https://doi.org/10.1007/s11625-018-0627-5>
- Saari, U. A., Damberg, S., Frömbing, L., & Ringle, C. M. (2021). *Sustainable consumption behavior through the mediation of environmental concern and behavioral intention*. *Ecological Economics*, 185, 107155. <https://doi.org/10.1016/j.ecolecon.2021.107155>
- Samuelson, P. A. and William, D. N. (2002). *Economics International Edition (17th ed)*. McGraw-Hill.
- Sanusi, Y. A. (2008). Application of human development index to measurement of deprivations among urban households in Minna, Nigeria. *Habitat International*, 32(4), 384–398. doi:10.1016/j.habitatint.2007.11.009.
- Sugiarto., Herlambang, T., Brastoro., Sidjana, R., & Kelana, S. (2005). *Ekonomi Mikro*. PT Gramedia Pustaka Utama.
- Teoh, W. M. Y., Chong, S. C., Lin, B., & Chua, J. W. (2013). Factors affecting consumers' perception of electronic payment: An empirical analysis. *Internet Research*, 23(4), 465–485. <https://doi.org/10.1108/IntR-09-2012-0199>
- Wang, Z., & Huang, X. (2023). Understanding the role of digital finance in facilitating consumer online purchases: An empirical investigation. *Finance Research Letters*, 55, 103939. <https://doi.org/10.1016/j.frl.2023.103939>