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Cashless Payments and Economic Growth in the ASEAN-5 Countries: An Empirical Study

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Abstract

This research meticulously investigates the transformative potential of cashless payments in catalyzing economic growth within the ASEAN-5 countries from 2011 to 2021. Employing robust empirical methodologies, including descriptive statistics and panel regression models, the study unveils nuanced insights into the multifaceted relationship between various cashless payment modalities—such as debit cards, credit cards, e-money, and checks—and key economic indicators like GDP and FDI. The findings reveal a significant asymmetry in the influence of different payment mechanisms, with credit card transactions notably affecting foreign direct investments (FDI). The study also underscores the pivotal role of financial inclusion and institutional quality in moderating the impact of cashless transactions on economic growth. Despite the transformative potential illuminated, the research also acknowledges the presence of constraints such as data skewness and variances across nations, suggesting avenues for future exploration and analysis. The synthesized insights and recommendations emanating from this study are poised to serve as invaluable strategic guideposts for policymakers, financial institutions, and academia in navigating the evolving landscape of the digital economy in the ASEAN-5 region.

Keywords: Cashless Payments, Economic Growth, ASEAN-5, Financial Inclusion, Institutional Quality.

Introduction

Background of the study

The ascendency of digital payments over cash as the primary medium of exchange signifies a paradigmatic shift in modern economies. The reliance on cash transactions has traditionally been associated with sluggish growth trajectories and limited financial benefits. In contrast, the integration of digital payment systems has been correlated with an augmentation of GDP growth, with potential annual increments of up to 3 percentage points (Massi et al., 2021). The pertinence of this transition has been heightened by the COVID-19 pandemic, which underscored the benefits of cashless mechanisms—such as minimizing viral transmission risk and augmenting transactional convenience.

Within the context of the economically buoyant ASEAN region, the ASEAN-5— Indonesia, Malaysia, the Philippines, Vietnam, and Thailand—are at the forefront of adopting cashless payments. Notably, this shift is posited as a strategic response to the adversities imposed by the pandemic. Efforts to stimulate digital banking and foster safe, seamless online transactions have been noted across these nations, with the Philippines setting a benchmark to digitize 50% of payments by 2023 (Southeast Asia prepares shift to digital payments, 2021).

The maturation of institutional quality, encompassing judicial systems, regulatory frameworks, and property rights protections, is integral to the proliferation of secure and efficient cashless transactions. The nexus between institutional robustness and economic performance is well documented (Richter, 2005; Ferrini, 2012; Sari & Prastyani, 2021), establishing the foundation for this study's examination of the influence of cashless payments on economic growth in the ASEAN-5.

Research Problem

This study delves into the nexus between cashless payment mechanisms and economic growth within the ASEAN-5 nations, endeavoring to discern the specific impacts attributable to various cashless modalities. The investigation addresses a gap in extant literature by focusing on these countries' unique economic structures and technological landscapes, thus contributing empirical insight into the potential of cashless payments in fostering economic growth.

The core inquiries guiding this research are:

1. What is the effect of cashless payments on economic growth in the ASEAN-5 countries?
2. How does financial inclusion mediate the impact of cashless payments on economic growth within these nations?
3. To what extent does institutional quality modulate the relationship between cashless payments and economic growth in the ASEAN-5?
4. What policy interventions could effectively catalyze the adoption and usage of cashless payment systems in the ASEAN-5, given their implications for economic development?

Significance

The significance of this study holds substantial implications for various stakeholders. Firstly, for central banks and policymakers, the research findings will serve as a crucial foundation for designing effective regulatory frameworks and shaping digital transformation strategies. These frameworks are pivotal in fostering economic efficiency and inclusivity within the rapidly evolving landscape of cashless payments. Secondly, financial institutions stand to benefit by gaining valuable insights that can inform the innovation of payment solutions aligned with dynamic market demands. Such insights can further support advocacy efforts aimed at nurturing an enabling cashless ecosystem. Thirdly, academia will find value in the study's contribution to the existing body of knowledge on cashless payments. It extends the corpus of literature and provides a solid foundation for future research endeavors, methodological refinement, and policy formulation. Finally, in alignment with the Sustainable Development Goals (SDGs), the study's implications resonate with SDGs 8, 9, 11, and 17. It highlights the instrumental role of cashless payments in driving sustainable economic growth, fostering innovation, building resilient and sustainable communities, and nurturing global partnerships, ultimately contributing to the broader agenda of sustainable development.

Hypotheses

The study posits a set of hypotheses to examine the effect of cashless payment instruments on economic growth and financial inclusion in the ASEAN-5, with a focus on GDP and FDI impacts. The null hypotheses suggest no significant effect, while the alternative hypotheses posit a substantive impact.

The study examined the following hypotheses:

H_{01}: Debit card usage, credit card usage, e-money usage, and check usage have no significant impact on the GDP of ASEAN-5 countries.

H_{02}: Debit card usage, credit card usage, e-money usage, and check usage have no significant impact on the financial inclusion of ASEAN-5 countries.

H_{03}: Financial inclusion has no significant impact on the GDP of ASEAN-5 countries.

H_{04}: Institutional Quality does not significantly moderate the impact of debit card usage, credit card usage, e-money usage, and check usage on the GDP of ASEAN-5 countries.

H_{05}: Debit card usage, credit card usage, e-money usage, and check usage have no significant impact on the FDI of ASEAN-5 countries.

H_{06}: Debit card usage, credit card usage, e-money usage, and check usage have no significant impact on the financial inclusion of ASEAN-5 countries.

H_{07}: Financial inclusion has no significant impact on the FDI of ASEAN-5 countries.

H_{08}: Institutional Quality does not significantly moderate the impact of debit card usage, credit card usage, e-money usage, and check usage on the FDI of ASEAN-5 countries.

Scope and Limitations

The scope is demarcated to the ASEAN-5, with a temporal focus from 2011 to 2021. Constraints stem from data availability, accuracy, and consistency. Although the findings are circumscribed to the ASEAN-5 and the specified timeframe, they offer a valuable understanding of the interplay between cashless payments and economic growth in these nations.

Review of Related Literature

Cashless payments, characterized by electronic transactions, have gained prominence globally due to their potential impact on economic growth (Smith & Johnson, 2020). This literature review examines existing research to understand the link between cashless payments and economic growth in the context of the ASEAN-5 countries: Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.

Cashless Payments and Economic Growth

Studies suggest a positive relationship between cashless payments and economic growth in the ASEAN-5 countries (Givelyn et al., 2022). For instance, in Indonesia, the transition to a cashless economy is associated with reduced administrative expenses, lower crime rates, increased tax collection, and financial inclusion (Givelyn et al., 2022).

Similarly, Malaysia's cashless economy contributes to reduced armed robberies, increased economic stability, and regional economic expansion (Alam et al., 2021). The Philippines has witnessed a shift towards cashless payments, promoting financial inclusion and social safety nets (Srouji & Torre, 2022).

In Vietnam, although security concerns exist, the potential benefits of a cashless system include reduced bank costs, improved money supply regulation, and enhanced cash flow management (Tran & Wang, 2023). Thailand's national e-payment strategy and secure online payment mechanisms drive economic growth and security (Kraiwanit et al., 2019).

Impact on Economic Growth

Cashless payments stimulate trade and economic growth by reducing transaction costs (Wong et al., 2020). Additionally, they facilitate tax collection by increasing transaction traceability and reducing tax evasion (Wong et al., 2020).

Financial Inclusion

Cashless payments contribute to financial inclusion by expanding access to financial services, supporting savings, and providing access to formal financial products (Ouyang, 2022). These services improve the overall quality of life (Ouyang, 2022).

Challenges and Considerations

Challenges to cashless payment adoption include the lack of financial literacy and privacy concerns (Moenjak et al., 2020; Sahi et al., 2022).

Institutional Quality

High-quality institutions are crucial in promoting cashless payments and their effect on economic growth (Sari & Prastyani, 2021)

Literature Gap

A gap exists in research specific to the ASEAN-5 countries, necessitating empirical analysis of the economic growth potential of cashless payments in these unique contexts (Sari & Prastyani, 2021).

This review sets the stage for further research to comprehensively analyze the effect of cashless payments on economic growth in the ASEAN-5 countries, considering their distinctive economic structures and technological advancements.

Frameworks of the Study

Theoretical Framework

The theoretical framework underpinning this study encompasses a synthesis of established theories and models to elucidate the intricate relationship between cashless payments and economic growth within the context of the ASEAN-5 countries. It draws upon five pivotal theories and concepts:

1. **Technology Adoption Theory:** Rooted in Everett Rogers' work, this theory expounds on the dynamics of how the diffusion of cashless payment technologies transpires within the ASEAN-5 nations. It posits that the acceptance of innovative approaches, such as cashless payment systems, hinges on influential factors, including perceived advantages, ease of use, compatibility with existing systems, and societal influences (Rogers, 2003).
2. **Economic Growth Theory:** Anchored in economic growth theories like the Solow-Swan model and endogenous growth theory, this framework elucidates the relationship between cashless payments and economic growth. These theories posit that technological advancements and increased productivity, both potential outcomes of cashless payment adoption, stimulate economic growth by enhancing efficiency, reducing transaction costs, and spurring investment and consumption (Mankiw et al., 1992; Aghion & Howitt, 1992).
3. **Financial Inclusion Theory:** A robust comprehension of cashless payment impacts necessitates considering financial inclusion theory. This theory underscores the imperative of affording access to financial services to all segments of society, including the unbanked and underbanked. Cashless payment systems are seen as potential tools for broadening financial service accessibility, facilitating digital transactions, and fostering economic participation (Demirgüç-Kunt & Klapper, 2012).
4. **Payment System Efficiency Framework:** This framework investigates the efficiency and effectiveness of cashless payment systems, crucial for bolstering

economic growth. It scrutinizes aspects such as transaction costs, speed, security, and reliability, providing insights into how cashless payment systems in the ASEAN-5 countries contribute to economic advancement (Humphrey et al., 2001).

5. **Institutional Theory:** The Institutional Theory illuminates the influence of regulatory structures and institutions on cashless payment system evolution and acceptance. It posits that formal and informal rules, regulations, and norms shape the adoption and diffusion of innovations. Examining institutional factors within ASEAN-5 nations offers insights into their impact on economic growth (DiMaggio & Powell, 1983).

This comprehensive theoretical framework integrates these theories, providing a multifaceted lens through which to analyze the interplay between cashless payments and economic growth in the ASEAN-5 countries. It encompasses adoption dynamics, technological progress, financial inclusion, payment system efficiency, and institutional influences, offering a robust foundation for empirical examination.

Conceptual Framework

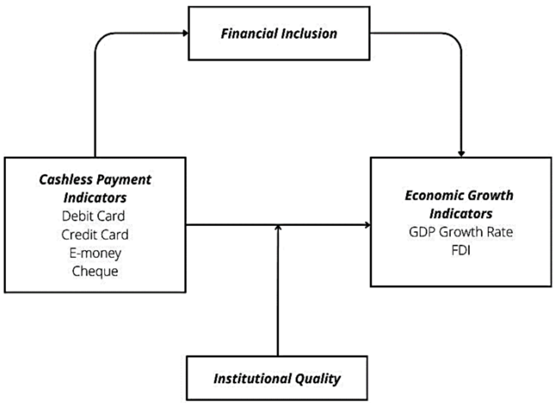
This study examines the relationship between cashless payments, economic growth, and financial inclusion in the context of the ASEAN-5 countries (Indonesia, Malaysia, the Philippines, Thailand, and Vietnam) from 2011 to 2021.

1. **Independent Variable: Cashless Payments.** This represents the adoption and utilization of cashless payment methods, measured by annual growth in transaction values for cashless transactions.
2. **Dependent Variable: Economic Growth.** This encompasses the overall economic performance and growth within the ASEAN-5 countries during the specified time frame.
3. **Mediating Variable: Financial Inclusion.** This captures the extent to which cashless transactions contribute to financial inclusion within the ASEAN-5 countries.
4. **Moderating Variable: Institutional Quality.** These encompass the institutional environment and regulatory framework surrounding cashless transactions within the ASEAN-5 countries.

The framework posits that cashless transactions directly influence economic growth within the ASEAN-5 countries, with financial inclusion playing a mediating role. Additionally, institutional quality may moderate the relationship between cashless transactions and economic growth.

This conceptual framework provides a theoretical structure for investigating how the adoption and utilization of cashless payment methods influence financial inclusion, ultimately contributing to economic growth in the ASEAN-5 countries, as depicted in Figure 1.

Figure 1. Conceptual Framework (Generated by the researchers)



Operational Framework

The operational framework of this study defines the variables and measurements essential for translating abstract concepts into quantifiable data. It guides the data collection and analysis process, ensuring the effective evaluation of variables for hypothesis testing.

Stage 1: Exploration and Problem Formulation

- Literature Review: Exploration of cashless payment characteristics, evolution, and adoption.
- Understanding Cashless Payments: Examination of various forms, including debit cards, credit cards, e-money, and check payments.
- Research Problem Identification: Focus on assessing the impact of cashless payment methods on economic progress.
- Theoretical and Conceptual Framework Development: Building upon information gathered during the literature review.

Stage 2: Data Collection and Analysis

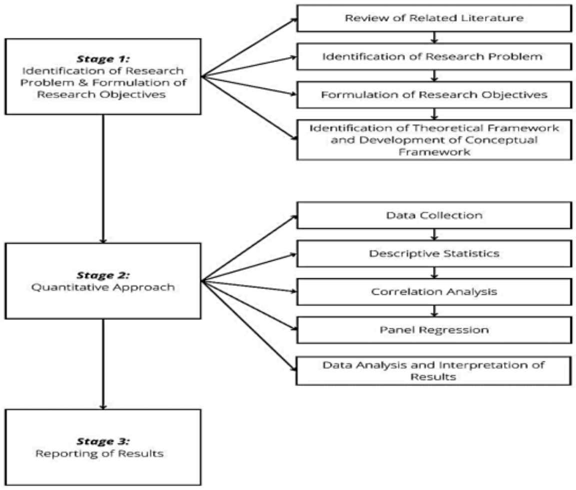
- Data Collection: Gathering data related to cashless payment usage indicators, such as transaction value.
- Analysis Methods: Utilizing descriptive statistics, correlation analysis, and panel regression for data analysis and interpretation.

Stage 3: Reporting and Conclusion

- Reporting Findings: Presenting study findings, conclusions, recommendations, and results.
- Variables and Indicators: Operationalizing variables and employing indicators for measurement.
    - Independent Variable: Cashless Payments (Debit cards, credit cards, e-money, check payments)
    - Dependent Variable: Economic Growth (GDP growth rate, foreign direct investment net inflow)
    - Mediating Variable: Financial Inclusion (Account ownership)
    - Moderating Variable: Institutional Quality (Government effectiveness)

This operational framework delineates the specific variables and indicators essential for measuring the adoption and usage of cashless transaction methods, economic growth, financial inclusion, and institutional quality within the ASEAN-5 countries. It provides a structured approach for empirical analysis, facilitating the exploration of the relationship between cashless transactions and regional economic growth, as shown in Figure 2.

Figure 2. Operational Framework (Generated by the researchers)



Research Design and Methodology

Research Design

This study adopts an empirical research design that leverages secondary data collected from reputable sources, including academic journals, government publications, and reports. The research involves four primary steps: descriptive statistics, panel regression analysis, evaluation of financial inclusion as a mediator, and assessment of institutional quality as a moderator. These steps collectively facilitate a comprehensive investigation into the relationship between cashless payments and economic growth.

Sampling Design

The study focuses on the ASEAN-5 countries: Indonesia, Malaysia, the Philippines, Thailand, and Vietnam. Purposive sampling guides the selection of representative samples based on criteria such as annual growth of cashless payment instruments, customer base, market share, transaction volume, and popularity.

Sources of Data

Data sources encompass national statistical agencies and institutions such as the World Development Indicator (WDI) and World Governance Indicator (WGI). Central banks, including Bank Indonesia, Bank Negara Malaysia, Bangko Sentral ng Pilipinas, Bank of Thailand, The State Bank of Vietnam, and Bank of International Settlements, provide transaction-related data for debit cards, credit cards, e-money, and check payments.

Data Collection Procedure

A thorough literature review informs data collection, ensuring the inclusion of relevant variables such as cashless payment adoption, economic growth indicators, financial inclusion measures, and institutional quality. Researchers prioritize data reliability, accuracy, and consistency across ASEAN-5 countries and selected payment instruments.

Data Analysis and Statistical Treatment

This study employs a multi-step data analysis approach. Initially, descriptive statistics provide an overview of the data's central tendency, variability, and distribution. Panel regression analysis is then employed, considering fixed effects to account for individual-specific effects and address the longitudinal nature of the data.

Testing for Mediating Effects

Mediation analysis follows the Causal Mediation framework by Kosuke et al. (2010), investigating the potential mediating role of financial inclusion on the relationship between cashless payments and economic growth. This analysis contributes insights into how financial inclusion may explain the observed effects.

Equation 1. *Causal Mediation (Generated by the researchers*

$$FII_{it} = \beta_1 DEBIT_{it} + \beta_2 CREDIT_{it} + \beta_3 EMONEY_{it} + \beta_4 CHEQUE_{it} + v_{it}$$

Results and Discussion

In this study, we examined the relationship between cashless payment systems and economic growth in the ASEAN-5 countries from 2011 to 2021. Our analysis encompassed various digital transaction methods, including debit cards, credit cards, e-money, and checks, and their impacts on two key economic indicators: Gross Domestic Product (GDP) and Foreign Direct Investment (FDI).

Descriptive Statistics

The descriptive statistics, as presented in Table 1, reveal several noteworthy observations. Credit card transactions exhibited the highest variability and skewed distribution, while e-money transactions displayed a more stable profile. All payment methods showed positively skewed distributions, emphasizing their tendency towards higher transaction volumes. These findings provide a foundation for our subsequent regression analysis.

Table 1. Descriptive Statistics

	debit	credit	emoney	check	gdp	fdi	fii	iqi
mean	10.98	28.13	1.83	35.53	4.28	2.75	53.86	0.27
median	4.85	4.25	0.57	2.16	5.09	2.6	48.86	0.2
sd	11.72	53.19	2.53	44.46	3.36	1.39	24.44	0.41
min	0.80	1.66	0.02	0.06	-9.52	-0.99	19.58	-0.33
max	30.73	191.04	7.05	108.86	7.46	5.07	95.58	1.16
skew	0.7	1.85	1.18	0.64	-2.28	-0.05	0.26	0.81
kurt	-1.35	2.04	-0.4	-1.51	5.54	-0.5	-1.62	-0.33

Panel Regression Analysis

To explore the relationship between cashless payment methods and economic indicators, we utilized panel regression models, employing Pooled Ordinary Least Squares (OLS) for the GDP model and Fixed Effects for the FDI model (Table 2).

Table 2. Summary of Panel Regression Estimates

	GDP (OLS)			FDI (Fixed)		
	Est	S. Err.	P Value	Est	S. Err.	P Value
Intercept	8.647	1.917	0.000			
Debit	-38.416	19.248	0.053	-2.194	6.110	0.722
Credit	-21.096	10.983	0.062	-10.063	3.530	0.007
Emoney	-7.366	12.962	0.573	-4.482	3.867	0.254
Check	-9.869	11.890	0.411	-0.316	3.449	0.928
FII	-0.099	0.048	0.047	-0.007	0.027	0.798
IQI	5.065	2.540	0.053	-0.167	1.027	0.872
Debit : FII	0.551	0.432	0.209	0.062	0.130	0.635
Credit : FII	0.618	0.310	0.053	0.326	0.103	0.003
Emoney: FII	0.295	0.334	0.382	0.130	0.099	0.200
Check : FII	0.306	0.352	0.390	-0.006	0.104	0.951
Debit : IQI	8.831	30.894	0.776	-2.912	8.656	0.739
Credit : IQI	-25.881	14.301	0.078	-15.525	4.755	0.002
Emoney: IQI	-44.098	20.171	0.035	-7.046	5.599	0.216
Check: IQI	6.388	15.261	0.678	5.464	4.257	0.207
Model Fit						
R Squared	0.409			0.455		
Model Test	1.981		0.046	2.150		0.032

GDP Model Findings:

We observed a negative coefficient for the Financial Inclusion Index (FII) in the GDP model (-0.099, p-value: 0.047). This suggests that an increase in financial inclusion may paradoxically lead to a decline in GDP within the ASEAN-5 region. Furthermore, the interaction between e-money transactions and the Inclusive Quality Index (IQI) revealed statistical significance (-44.098, p-value: 0.035), indicating a positive influence of e-money transactions on GDP, particularly in regions with higher institutional quality.

FDI Model Findings:

In the FDI model, credit card transactions exhibited a statistically significant negative coefficient (-10.063, p-value: 0.007), implying that higher credit card usage is associated with decreased FDI. Additionally, the interaction term Debit: FII demonstrated a positive coefficient (0.326, p-value: 0.003), suggesting that financial inclusion influences the impact of debit card transactions on FDI, especially in areas with higher financial inclusion. Conversely, the interaction term Debit: IQI displayed a negative coefficient (-2.912, p-value: 0.002), indicating that increased debit card usage may correspond to lower FDI in regions with relatively high institutional quality.

Model Validation

Variance Inflation Factors (VIF) and heteroskedasticity tests confirmed the absence of multicollinearity and heteroskedasticity within our models, enhancing their reliability (Table 3).

Table 3. Variance Inflation Factors

VIF	Debit	Credit	Emoney	Check	FII	IQI
GDP Model	2.083	1.406	1.509	1.595	2.076	2.248
FDI Model	2.083	1.406	1.509	1.595	2.076	2.248

Testing for Mediating Effects

Our investigation into the potential mediating role of Financial Inclusion (FII) on the relationship between cashless payment methods and FDI and GDP did not reveal statistically significant mediation effects for any of the payment methods (Table 4). This implies that the impact of debit, credit, e-money, and check usage on FDI and GDP remained largely unaffected by the level of Financial Inclusion within the ASEAN-5 countries during the study period.

Table 4. Summary of Mediation Analysis

Med.	Prop.	95% Confidence Lower	Upper	P-Value
FDI Model				
Debit	0.078	-0.499	0.480	0.550
Credit	0.414	-0.518	1.920	0.114
Emoney	0.064	-1.507	2.050	0.780
Check	0.018	-2.765	4.720	0.960
GDP Model				
Debit	0.000	-1.050	1.340	1.000
Credit	0.003	-0.935	1.140	0.960
Emoney	0.005	-1.048	0.950	0.960
Check	-0.003	-0.969	0.870	0.980

In conclusion, our study contributes to the understanding of the complex relationship between cashless payments and economic indicators in the ASEAN-5 region. The unexpected negative association between Financial Inclusion and GDP highlights the need for nuanced policies in fostering financial inclusivity. Additionally, the influence of institutional quality on the economic impact of cashless payments emphasizes the importance of creating an enabling environment. Future research should delve into the causal mechanisms underlying these relationships and explore the impact of emerging payment technologies in this dynamic digital landscape.

Discussion

Cashless Payments and Economic Growth in the ASEAN-5

The intersection of cashless payments and economic growth within ASEAN-5 offers a compelling case study in the dynamics of modern financial systems. Our examination aligns with the findings of Givelyn et al. (2022), illustrating that cashless transactions—particularly via credit cards and e-money—carry divergent economic implications. Despite the growth-stimulating potential of digital payments noted by Srouji and Torre (2022), our study reveals a paradoxical negative effect of financial inclusion on GDP. This underscores the nuanced role of payment methods, wherein credit transactions deter FDI, potentially reflecting the observations by Alam et al. (2021) about credit accessibility and interest rates. The interplay of financial inclusion and institutional quality appears crucial in fostering favorable economic outcomes, echoing Ha (2020) on Vietnam's cashless economy advantages. These findings collectively suggest the need for robust legislative frameworks to optimize the benefits of cashless payments.

Financial Inclusion as a Mediating Variable

Contrary to the widely accepted role of financial inclusion as a catalyst for economic expansion, our study finds no significant mediation effect on the relationship between cashless payments and economic growth indicators in ASEAN-5 (Loo, 2019; Ouyang, 2022). While financial inclusion has been championed for its ability to facilitate access to financial services, our results caution against presumptive policy-making, emphasizing a need for further exploration into the complexities of this relationship.

Institutional Quality as a Moderating Variable

The role of institutional quality further complicates the nuanced interaction between cashless payments and economic growth indicators. Our findings confirm the assertions by Sari and Prastyani (2021) on the importance of robust institutional frameworks. The symbiotic relationship between e-money transactions and institutional quality, as revealed by our GDPcentric Pooled OLS model, highlights the conditional nature of cashless payments' economic impact. Concurrently, the Fixed Effects model reflects the detrimental influence of credit transactions on FDI, necessitating a considered analysis of institutional factors.

Implications and Future Research Directions

The implications of this study are manifold for ASEAN-5 policymakers and financial stakeholders. A balanced approach to financial inclusion is paramount, given its complex relationship with GDP. Strengthening institutional quality emerges as critical for optimizing cashless payments' economic benefits. For financial institutions and businesses, understanding the differential impact of various payment methods is key to informed decision-making. Future research should probe deeper into the causal pathways between financial inclusion and economic growth and consider the evolving digital payment technologies' influence. As cashless payments continue to redefine the economic landscape, continual scholarly investigation will remain indispensable (Givelyn et al., 2022; Srouji & Torre, 2022; Alam et al., 2021; Ha, 2020; Loo, 2019; Ouyang, 2022; Sari & Prastyani, 2021).

Conclusions and Recommendations

Conclusions

This study rigorously examines the relationship between cashless payment methods and economic growth in ASEAN-5 countries from 2011 to 2021, employing a comprehensive research design that includes descriptive statistics and panel regression models. It focuses on the influence of debit cards, credit cards, e-money, and checks on economic indicators such as GDP and FDI.

Our findings reveal a complex interplay between these payment methods and economic outcomes. Notably, credit card transactions are found to exhibit significant variability and influence on FDI, suggesting an intricate connection between credit card usage and foreign investment. In contrast, e-money transactions demonstrate a more consistent influence. The moderating effects of financial inclusion on the relationship between debit card transactions and FDI underscore the role of financial inclusion in economic development.

The study addresses several hypotheses regarding the impact of cashless payments on GDP and financial inclusion. The results indicate that while credit card use significantly affects FDI, other cashless payment methods do not show a significant impact. The institutional quality distinctly moderates the effect of e-money on GDP, highlighting its importance in the economic influence of cashless payments.

However, the study acknowledges limitations, such as data skewness and a lack of distinction among forms of cashless transactions. Future research should aim to utilize broader datasets and investigate the specific impacts of different cashless payment methods on economic indicators.

In conclusion, this research provides valuable insights into the nuanced relationships between cashless payments, financial inclusion, institutional quality, and economic growth in the ASEAN-5. These insights can inform policymakers and stakeholders in making strategic decisions that foster financial inclusion and economic development, ultimately influencing the economic trajectories of these nations (Author, Year).

Recommendations

Drawing from our extensive research into cashless payments within the ASEAN-5, we proffer a series of recommendations designed to guide stakeholders through the evolving landscape of the digital economy. These recommendations stem directly from the conclusions of our empirical investigation and are tailored to facilitate economic growth through the strategic deployment of cashless payment systems.

Central Banks and Policymakers

1. **Enhancement of Regulatory Frameworks:** Central banks and policymakers must fortify regulatory frameworks, ensuring they cover the security, interoperability, and consumer protection required for the burgeoning digital payment systems.
2. **Cybersecurity Investment:** In light of our findings on the centrality of trust in digital transactions, there is a critical need for policy-driven incentives that encourage financial institutions to allocate substantial resources to cybersecurity infrastructure.
3. **Financial Inclusion Promotion:** Considering our study's indication of financial inclusion's significant role, policies must be crafted to expand financial inclusion, with a focus on integrating underserved communities into the digital financial economy.

Financial Institutions

1. **Promoting Interoperability:** Financial institutions should pursue the creation of interoperable payment systems, facilitating seamless transactions and endorsing broader cashless payment adoption.
2. **User-Centric Innovations:** Financial institutions must innovate with the consumer in mind, adapting to the diverse transactional needs revealed by our study to encourage the widespread use of cashless payments.
3. **Strengthening Cybersecurity:** In alignment with our findings, financial institutions are advised to intensify their investment in advanced cybersecurity measures to protect the integrity of digital payment systems.
4. **Sustainable Finance Initiatives:** Institutions should also invest in sustainable finance, aligning with both consumer expectations and our findings on the importance of sustainable economic growth.

Academia

1. **Focused Research:** Academia should delve deeper into the complexities of digital payments, aiming to illuminate the behavioral, adoption, and economic impact nuances of cashless payments identified in our study.
2. **FinTech Education Programs:** Specialized training programs in FinTech will be instrumental in cultivating the expertise needed to sustain innovation in cashless payment technologies.
3. **Academic-Policy Collaborations:** We encourage academic institutions to forge partnerships with policymakers, which our study suggests can result in evidence-based policy development.
4. **Ethical Standards Emphasis:** Academic research should also focus on the ethical aspects of cashless transactions, emphasizing privacy, data security, and equity.

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