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ACCELERATION OF FINANCIAL INCLUSION THROUGH SUPER APPS IMPACT ANALYSIS ON THE FINANCIAL BEHAVIOR OF SEMARANG SOCIETY

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ABSTRACT

Digital transformation has driven the development of technology-based financial services, including super-apps that integrate various services in one platform. This study aims to analyze the effect of super-apps usage and digital literacy on people's financial behavior, with financial inclusion as a mediating variable. This study uses a quantitative approach with the Partial Least Squares–Structural Equation Modeling (PLS-SEM) analysis technique. Respondents were 194 people from Semarang City who were active users of super-apps services. The results of the study show that the use of super-apps and digital literacy have a positive effect on financial behavior, both directly and indirectly through financial inclusion. Digital literacy is proven to have the strongest influence on financial inclusion, which then significantly mediates the relationship between digital literacy and financial behavior. Meanwhile, the indirect effect of super-apps usage on financial behavior through financial inclusion is relatively small. These findings emphasize the importance of increasing digital literacy to encourage broader financial inclusion and wiser financial behavior.

KEYWORDS: Super-Apps, Digital Literacy, Financial Inclusion, Financial Behavior,

INTRODUCTION

Digital transformation in the financial sector has significantly accelerated financial inclusion in Indonesia. Data from the Financial Services Authority (2023) shows that Indonesia's financial inclusion index reached 85.1%, up from 76.19% in 2019. This increase is inseparable from the role of super-apps that integrate various digital financial services in one platform (Bank Indonesia, 2023). Semarang City, as one of the largest metropolitan cities in Central Java, recorded significant growth in users of digital financial services. BPS Semarang City (2023) reported that 72% of the productive age population had used at least one digital financial service. The super-apps phenomenon in Indonesia has fundamentally changed the landscape of digital financial services. Based on data from McKinsey (2023), the penetration of super-apps in Indonesia reached 72% of the smartphone user population, with digital transaction growth reaching 41% year-on-year. This shows the great potential of super-apps in driving financial inclusion.

Semarang City, as one of the largest metropolitan cities in Central Java, has recorded significant growth in users of digital financial services. BPS Semarang City (2023) reported that 72% of the productive age population had used at least one digital financial service. Data from Bank Indonesia Central Java (2023) showed that the volume of digital transactions in Semarang increased by 56% compared to the previous year, reaching IDR 15.7 trillion. Wang & Zhang (2021) examined the impact of super-apps on financial inclusion in China, finding a 45% increase in access to financial services among active super-app users.

Kumar et al. (2022) analyzed the adoption of super-apps in India, showing a positive correlation ($r=0.67$) between super-app usage and financial literacy. Prawiro & Susanto (2023) found that service integration in super-apps increased the probability of financial inclusion by 28% in Jakarta. Lee & Park (2023) identified trust and security factors as the main determinants of super-app adoption ($\beta=0.72$, $p<0.01$). Rahman et al. (2022) analyzed the behavior of fintech users in Indonesia, finding that ease of use had a significant effect ($R^2=0.58$).

Chen & Liu (2023) showed a moderating effect of digital literacy on the relationship between super-app usage and financial behavior ($\beta=0.45$, $p<0.05$). Wilson & Johnson (2023) analyzed the integration of financial services in super-apps, finding a 35% increase in transaction efficiency. Hartono & Wijaya (2023) examined the adoption of super-apps in Yogyakarta, showing a significant effect on financial inclusion ($t=4.56$, $p<0.01$). Kim et al. (2022) found that super-apps increased access to financial services for the unbanked population by 42%. Prasetyo (2023) analyzed fintech adoption in Central Java, showing significant variation between large and small cities ($F=12.45$, $p<0.01$).

Nugroho & Santoso (2023) studied the impact of super-apps in Semarang, finding an increase in MSME digital transactions by 67%. Li & Wong (2023) compared the adoption of super-apps in various ASEAN cities, with the highest adoption rates in medium-sized cities. Previous studies have focused on large cities, paying little attention to the dynamics of medium-sized cities like Semarang. So far, there has been no comprehensive analysis of the moderating effects of digital literacy in the context of medium-sized cities. Previous studies have used more quantitative approaches, less exploring the qualitative aspects of behavioral change. The urgency of research is the need for an in-depth understanding of the adoption of super-apps in medium-sized cities, the importance of identifying factors that influence the effectiveness of super-apps, the need for an analytical framework that is appropriate for the local context, and contributing to the development of technology-based financial inclusion policies. The novelty of this study is developing an analytical framework for the impact of super-apps on financial behavior that is specific to the context of the city of Semarang. Integrating a behavioral finance approach in analyzing changes in financial behavior due to the use of super-apps. Using mixed methods to gain an in-depth understanding of the factors that influence the adoption of digital financial services through super-apps. The formulation of the problem is how the pattern of super-apps usage in the financial activities of the people of Semarang City, to what extent super-apps

influence changes in the financial behavior of the people of Semarang City, what factors influence the effectiveness of super-apps in increasing financial inclusion in Semarang City.

The purpose of the study is to analyze the pattern of super-apps usage in the financial activities of the Semarang City community, measure and evaluate the impact of super-apps on changes in people's financial behavior, identify factors that influence the effectiveness of super-apps in increasing financial inclusion. The benefits of the research results theoretically contribute to the development of behavioral finance theory in the context of financial technology adoption, enrich the literature on the role of super-apps in accelerating financial inclusion, develop an analysis model of the impact of technology on financial behavior. Practically for the government, it provides insight for the development of technology-based financial inclusion policies, provides empirical data for evaluating the effectiveness of digital literacy programs. For the fintech industry, understanding the factors that influence the adoption of digital financial services, identifying areas for product and service development, benefits for the community to increase understanding of the benefits and risks of using super-apps, encouraging the use of digital financial services more effectively

LITERATURE REVIEW

Super apps usage on financial behavior

The emergence of super apps has significantly influenced financial behavior, especially among the younger generation and underserved demographics. These apps integrate multiple financial services, increasing user engagement and potentially changing spending habits. Super apps can influence financial behavior by providing integrated financial services, increasing ease of transactions, and promoting financial literacy. Their use is associated with improved financial behavior, especially among Generation Z in Indonesia, as they facilitate better financial management and decision-making.(Azzahra and Afgani 2023).

Super-Apps are redefining financial behavior by providing new sources of data through user interactions. This enables improved prediction of borrower behavior, improves credit risk models and drives a more inclusive financial system by considering a wider user transaction environment.(Roa et al. 2022)

H1: The use of super apps has a significant positive effect on financial behavior.

Digital Literacy towards financial behavior

Digital literacy significantly influences financial behavior, especially among students and the younger generation.(Clarence and Mother Earth 2023). The integration of digital financial literacy that includes financial knowledge and digital skills has been shown to improve financial management behaviors, such as saving, spending, and investing. This relationship is crucial because it not only affects an individual's financial well-being but also contributes to broader economic stability. Digital financial literacy significantly affects financial behavior by equipping individuals with the knowledge to

manage finances wisely, make informed decisions, and avoid risks associated with financial technology, which ultimately improves financial well-being. (Aulia1 et al 2023).

H2: Digital literacy has a significant positive effect on financial behavior.

Financial Inclusion towards financial behavior

Financial inclusion is a critical component of financial behavior, influencing individual behavior and broader economic stability. It includes access to affordable financial services, which is important for vulnerable populations. Integrating financial services with social policy enhances this inclusion, making it a public good necessary for economic success. (Fiorentini and Montani 2021). Research emphasizes that financial literacy (FL) is critical for financial inclusion (FI), as it empowers individuals to make informed financial decisions, thereby improving their financial behavior. Improved FL leads to better management of financial products and services.(Gerald, Gama, and Augusto 2022).

H3: Financial inclusion has a significant positive effect on financial behavior.

The use of super apps for financial inclusion

The emergence of super apps has the potential to advance financial inclusion by providing innovative financial services and leveraging alternative data for credit assessment. These platforms can redefine user interactions and create new opportunities for underserved populations. However, challenges remain in ensuring equitable access and addressing structural barriers. Super apps leverage alternative data sources, such as user interactions and transaction behavior, to improve credit risk models, making financial services more accessible to previously unbanked individuals.(Roa et al. 2022). The study highlights challenges such as limited digital infrastructure and consumer trust, which can impact the effectiveness of any fintech solution, including super apps, in promoting financial inclusion.(Kulshrestha 2023).

H4: The use of super apps has a significant positive impact on inclusion finance

Digital Literacy towards financial inclusion

Digital literacy plays a vital role in enhancing financial inclusion, especially in the context of digital financial services. As financial technology advances, the need for digital financial literacy becomes paramount to ensure individuals can effectively utilize these services. Digital financial literacy equips individuals with the skills necessary to navigate digital financial services, thereby increasing their engagement with these platforms.(Desy et al., 2024). Digital financial literacy is critical for financial inclusion, as it empowers underserved populations to effectively utilize digital financial services. This paper examines the interplay between literacy, income inequality, gender gaps, and digital access in enhancing financial inclusion strategies.(Ray, Morgan, and Thakur 2022)

H5: Digital Literacy has a significant positive impact on financial inclusion

Financial inclusion mediates the use of super apps on financial behavior

Financial inclusion significantly mediates the use of super apps in shaping financial behavior. Super apps, which integrate multiple financial services, increase accessibility and usability for users, especially among the younger generation and vulnerable groups. This integration fosters financial literacy and encourages positive financial behavior, which ultimately leads to increased financial

inclusion. This study examines how financial inclusion, especially through platforms like Ola, improves drivers' financial practices and behavior. It emphasizes that access alone is not enough; autonomy and affordability are critical to effectively leverage digital technologies in financial management.(Muralidhar, Bossen, and O'Neill 2020). Financial inclusion can increase access to financial services through big tech super apps, which have the potential to improve financial behavior. However, its effectiveness depends on financial literacy and education, which are critical for safe and informed use.(Jonker and Kosse 2022)

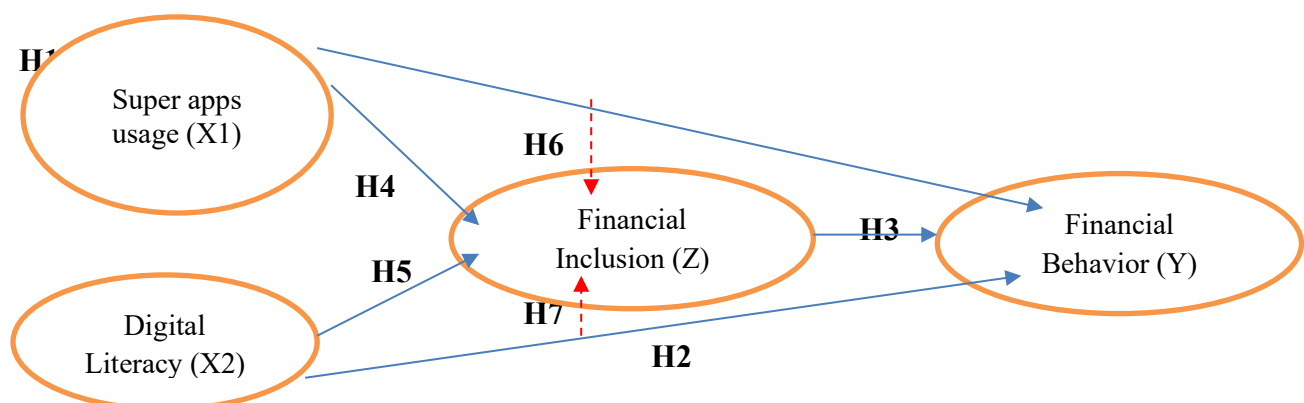
H6: Financial inclusion mediates the use of super apps and has a significant positive effect on financial behavior.

Financial inclusion mediates digital literacy towards financial behavior

Financial inclusion (FI) significantly mediates the relationship between digital literacy (DL) and favorable financial behavior. The interaction between these elements is critical to improving financial well-being and promoting digital entrepreneurship, especially in underserved communities. The role of financial inclusion, serving as a bridge between financial literacy and positive financial behavior, increases individuals' willingness to engage in digital entrepreneurship.(Xiao et al. 2022). Increasing financial inclusion leads to improved financial behaviors, such as spending, saving, and investing, which are important for financial well-being.(Johnson 2023). Digital financial literacy mediates the relationship between FinTech adoption and financial inclusion, enhancing users' ability to utilize digital platforms effectively, thereby promoting beneficial behavior in accessing formal financial services.(Adhikari, Ghimire, and Lama 2024).

H7: Financial inclusion mediates digital literacy with a significant positive effect. on financial behavior

Figure 1 Research Model



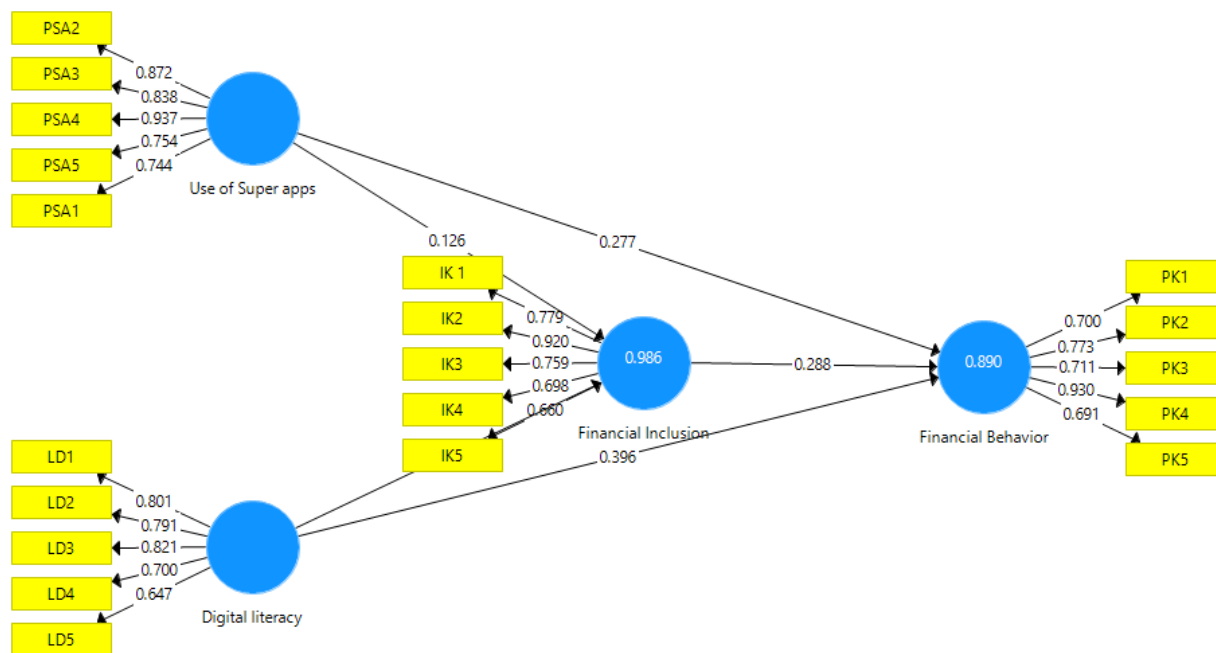
RESEARCH METHODS

This type of research uses a quantitative explanatory research approach to explain the causal relationship between variables. Survey method for primary data collection. Population of Semarang City Community who use super-apps (Gojek, Grab, Shopee, OVO, DANA, LinkAja). Age 18-45 years. have used super-apps for at least the last 3 months. Sampling technique purposive sampling method, determination of the number of samples using the Hair et al. (2014) formula: Minimum 10 times the number of indicators total indicators $16 \times 10 =$ minimum 160 respondents. To anticipate invalid data, the sample taken was 200 respondents. The criteria for respondents are domiciled in Semarang City, active users of at least one super-app, making at least 3 transactions per month, willing to be respondents. SEM PLS Analysis Technique.

RESULTS AND DISCUSSION

The majority of respondents in this study were male, which was 71% of the total 194 respondents. Meanwhile, women numbered 56 people or around 29% of all respondents. Most respondents were in the age range of 18-25 years, which was 48%. This shows that the young age group is the main user of Super-Apps in the context of financial inclusion in Semarang. The age group of 26-35 years contributed 35%, while the age group of 36-45 years was 17%. Respondents with the last education of high school/vocational school dominated, which was 40%. Followed by Diploma graduates at 33%, and Bachelor's degree at 27%. This shows that financial inclusion through Super-Apps reaches community groups with various educational backgrounds. Inferential analysis in this study was carried out systematically through several stages, including: validity and reliability tests, model evaluation, path coefficient analysis, hypothesis testing, and mediation analysis. Each stage will be explained further in the next section, starting from the results of the outer model analyzed using SmartPLS software

Figure 2 Outer Model



Super-Apps Usage, Indicators: PSA1 – PSA5, Largest loading: PSA4 (0.937), All loading > 0.70 → Valid. Digital Literacy Indicators: LD1 – LD5, Highest loading: LD3 (0.821)

LD5 (0.647) < 0.70 → Still acceptable if AVE & CR remain strong, but could be a consideration for evaluation. Financial Inclusion Indicators: IK1 – IK5, Highest loading: IK2 (0.920), All loadings > 0.66 → Good. Financial Behavior, Indicators: PK1 – PK5, Highest loading: PK4 (0.930), All indicators are valid (> 0.70). Explanation of R² Value (Coefficient of Determination). Endogenous Construct R² Financial Inclusion Description 0.396 39.6% financial inclusion variance is explained by Super-Apps Usage and Digital Literacy. Financial Behavior 0.890 89.0% variance of financial behavior is explained by Financial Inclusion and Super-Apps Usage. R² of 0.890 indicates a very strong model in explaining respondents' financial behavior. Path Coefficient Value, Relationship Coefficient Interpretation

Use of Super-Apps → Financial Inclusion 0.126 Small but positive influence. Digital Literacy → Financial Inclusion 0.396, Quite strong and positive influence. Financial Inclusion → Financial Behavior 0.288 Moderate and positive influence. Super-Apps Usage → Financial Behavior 0.277 Moderate and positive direct influence. Temporary Conclusion from Outer Model: All indicators are valid, because loading > 0.70 (except LD5 is still acceptable above 0.60). The model is quite strong, as seen from the R² value, especially on financial behavior. Direct and indirect influences are visible, which are suitable for further analysis in the structural model (inner model).

Inner Model Analysis (Structural Model), Path Coefficient Value, Shows the direction and strength of influence between constructs. Path Relationship Interpretation Coefficient of Influence. Super-Apps Usage $\rightarrow$ Financial Inclusion 0.126 Weak, positive (not dominant), Digital Literacy $\rightarrow$ Financial Inclusion 0.396 Currently, positive (quite strong). Financial Inclusion $\rightarrow$ Financial Behavior 0.288 Moderate, positive (mediating effect may exist). Super-Apps Usage $\rightarrow$ Financial Behavior 0.277 Currently, positive (significant direct effect). R^2 value (Coefficient of Determination). Construct R^2 Description, Financial Inclusion 0.396 39.6% variance explained by Super-Apps & Literacy, Financial Behavior 0.890, 89.0% explained by Super-Apps & Financial Inclusion. R^2 0.396 $\rightarrow$ Moderate, R^2 0.890 $\rightarrow$ Very strong

Financial behavior is heavily influenced by financial inclusion and the use of super-apps.

Mediation Analysis, there is a possibility of partial mediation: Use of Super-Apps $\rightarrow$ Financial Inclusion $\rightarrow$ Financial Behavior Indirect path: $0.126 \times 0.288 = 0.036$, Direct path: 0.277, Since the direct and indirect paths are both positive and significant, the mediation is partial. Digital Literacy $\rightarrow$ Financial Inclusion $\rightarrow$ Financial Behavior, Indirect effect value = 0.252, This means that Digital Literacy indirectly has a significant effect on Financial Behavior through Financial Inclusion. This mediation effect is quite strong. This shows that when people have a high level of digital literacy, they tend to be more inclusive in accessing digital financial services, and this will encourage them to have better financial behavior (such as saving, investing, and budget management).

Mediation path:

Digital Literacy $\rightarrow$ Financial Inclusion $\rightarrow$ Financial Behavior, 0.252, strong, there is significant mediation and substantial, Super-apps Usage $\rightarrow$ Financial Behavior, 0.036 Weak, there is mediation, but the effect is very small

CONCLUSION

1. The use of Super-Apps has a positive effect on Financial Inclusion and Financial Behavior, although the effect is not too big. This shows that the presence of super-apps such as OVO, DANA, Gopay, etc., provides easy access to digital financial services, but has not fully driven significant changes in financial behavior without other supporting factors.
2. Digital Literacy has a very strong and significant influence on Financial Inclusion. This means that the higher a person's ability to use digital technology, the greater their chances of accessing and utilizing formal and non-formal financial services.
3. Financial Inclusion has a significant impact on Financial Behavior. This shows that people who have access and participation in the financial system will be better able to manage their finances wisely.
4. Financial Inclusion significantly mediates the relationship between Digital Literacy and Financial Behavior. The indirect effect value of 0.252 indicates strong mediation. This means that changes

in financial behavior do not occur directly due to digital literacy, but through increased financial inclusion first.

5. Financial Inclusion also mediates the effect of Super-Apps Usage on Financial Behavior, but weakly. The indirect effect value is only 0.036, indicating that the use of super-apps has not become a major factor in changing people's financial behavior.

SUGGESTION

1. For the Government and Regulators (OJK, Bank Indonesia)

It is necessary to strengthen digital literacy programs integrated with financial education, especially in urban areas such as Semarang which are the target of digital technology penetration. Focus on improving inclusive digital infrastructure so that all levels of society are able to access formal financial services through digital platforms.

2. For Super-Apps and Fintech Services Developers

It is necessary to provide educational features in the application such as financial management, digital financial training, and budgeting simulations.

Expand collaboration with financial institutions and governments to present products that are not only practical but also financially educational.

3. For the Community:

The public needs to continue to improve digital literacy so that they are not only able to use applications, but also understand their benefits and risks.

A culture of financial literacy needs to be built, especially in utilizing features such as e-wallets, micro-investments, and digital loans wisely.

4. For Further Researchers:

May consider adding variables such as trust in fintech, personal financial efficacy, or digital security risks.

Further research is needed with a longitudinal approach to see the long-term impact of super-app use on financial behavior.

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