Effect of Education Level, Personal Income, and Accessibility of Banking Services on Personal Financial Management among Working Women in West Java

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Article Info	ABSTRACT
	This quantitative study examines the influence of education level, personal income, and accessibility of banking services on personal financial management practices among working women in West Java, Indonesia. Data were collected from a sample of 180 working women using structured questionnaires and analyzed using Structural Equation Modeling with Partial Least Squares (SEM-PLS) 3. The findings reveal significant positive relationships between education level, personal income, accessibility of banking services, and personal financial management practices. Moreover, banking services accessibility partially mediates the relationships between education level and personal financial management and between personal income and personal financial management. These results underscore the importance of financial literacy, economic empowerment, and access to formal financial services in fostering financial well-being among working women in West Java. The study contributes to a deeper understanding of the socio-economic factors influencing personal financial management and informs evidence-based interventions to promote financial inclusion and gender equity in the region.

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1. INTRODUCTION

Effective financial management plays a crucial role in individual well-being and societal prosperity by encompassing practices such as budgeting, saving, investing, and debt management [1], [2]. It is essential for achieving financial security and pursuing long-term financial goals, both for low-income families and organizations alike [3], [4]. Research emphasizes the significance of financial skills and access in enhancing financial well-being, particularly for low-income individuals, highlighting the positive impact of these factors on reducing material hardship [5]. Furthermore, managing personal finances digitally is becoming increasingly important in the digital age, with key dimensions such as spending, credit management, saving behaviour, and investment identified as crucial determinants

of financial practices using digital platforms [6]–[10]. Overall, effective financial management, whether at the personal or organizational level, is key to success, stability, and growth, contributing positively to financial performance and resilience.

Understanding the factors that influence personal financial management is crucial, especially among demographic groups facing distinct socio-economic challenges. Research indicates that various factors play a significant role in personal financial management behaviour. Factors such as financial education in the family, financial literacy, peers, hedonism lifestyle [11], financial attitude, financial socialization, and digital financial literacy [12], financial knowledge, attitude, and locus of control [13], demographics including gender, education level, age, number of dependents, and salary class, as well as financial behaviour and financial attitude [14], and demographic factors like education level, per capita income level, and marital status [15] all impact personal financial management practices. By considering these factors, tailored strategies can be developed to enhance personal financial management among diverse demographic groups facing unique socio-economic circumstances [16]–[19].

Research in West Java highlights the challenges faced by working women, particularly in financial aspects [20]–[22]. The gender development index (GDI) in the region shows disparities in income and education levels, emphasizing the importance of improving women's education and income to increase the overall GDI [23]. Women entrepreneurs face various constraints such as limited access to financial resources and market opportunities, hindering their business expansion [24]. In addition, women working in labour-intensive industries experience financial pressures, leading to social and sexual problems due to the demanding three-time work system. To address these challenges, tailored policies and programs are needed to support women entrepreneurs, improve financial literacy, and promote gender equality in economic activities across urban and rural areas in West Java.

Education level, personal income, and accessibility to banking services are crucial determinants influencing financial decision-making and behaviours among working women. Studies have shown that enhancing financial literacy through education is vital for empowering individuals to make informed financial choices [25]. Additionally, personal income not only reflects earning capacity but also shapes financial priorities and the ability to navigate economic uncertainties [26]. Furthermore, the accessibility of banking services plays a pivotal role in facilitating financial transactions, savings mobilization, and access to credit, thereby promoting financial inclusion and economic empowerment [12]. By improving education levels, increasing personal income, and enhancing access to banking services, working women can strengthen their financial decision-making capabilities and achieve greater financial well-being. Against this backdrop, this research endeavours to explore the nexus between education level, personal income, accessibility of banking services, and personal financial management among working women in West Java.

2. LITERATURE REVIEW

2.1 Financial Management and Gender

Research from multiple studies highlights the significant impact gender has on financial management and outcomes, emphasizing the unique challenges women face globally due to factors such as the gender pay gap, limited access to employment opportunities, and increased caregiving responsibilities [27]–[29]. These disparities often result in higher levels of financial vulnerability and insecurity for women compared to men, with components of financial capability such as access and behaviour playing a critical role in shaping health outcomes [30]. Furthermore, socioeconomic factors, personality traits, cognitive characteristics and financial literacy

contribute to women's financial vulnerability in Latin America, emphasizing the need for interventions that address socioeconomic conditions and promote financial inclusion and education to reduce these disparities [31]. Moreover, gender wealth inequality in heterosexual couples influences shared or independent money management strategies, with income disparity leading to shared money management and wealth inequality resulting in separate financial autonomy norms. Within the context of West Java, Indonesia, working women grapple with multifaceted challenges in managing their personal finances. Despite their active participation in the workforce, socio-cultural norms and structural barriers impede their access to financial resources, formal banking services, and opportunities for economic advancement. Consequently, understanding the nuances of financial decision-making among working women in West Java necessitates a comprehensive examination of the socio-economic factors that shape their financial behaviours and outcomes.

2.2 Education Level and Financial Literacy

Education plays a pivotal role in shaping financial literacy, knowledge, and behaviour, as evidenced by various studies. Research has shown a positive correlation between education level and financial proficiency, with individuals who have higher levels of education demonstrating greater competence in financial matters [32]–[35]. Financial education is increasingly recognized as essential for acquiring specific competencies outlined by organizations like the OECD, leading to its inclusion in educational curricula worldwide. Studies emphasize the importance of promoting judicious financial behaviour through tailored programs, social cognitive theory, and positive psychology to enhance sustainable well-being in the context of the Sustainable Development Goals era. Moreover, the impact of financial education on financial behaviour remains a topic of debate, highlighting the need for further research integrating behavioural economics, positive psychology, and marketing theory to improve overall financial literacy and well-being [36]. In the context of West Java, disparities in educational attainment persist, particularly among women residing in rural and underserved communities. Limited access to quality education exacerbates the financial literacy gap, hindering working women's ability to navigate complex financial landscapes and optimize their financial resources. Therefore, initiatives aimed at enhancing financial literacy among working women in West Java must consider the intersectionality of education, gender, and socio-economic status to foster inclusive and sustainable financial empowerment.

2.3 Personal Income and Financial Management

Personal income indeed plays a crucial role in shaping individuals' financial management practices, as it provides the foundation for meeting financial obligations, achieving goals, and building resilience [37]. While higher income levels offer greater financial flexibility for saving, investing, and wealth accumulation [38], the relationship between income and financial management is multifaceted. Factors like financial priorities, spending habits, and risk tolerance significantly influence individuals' financial decisions and behaviours, highlighting the nuanced nature of this relationship [39]. Understanding how income interacts with these factors is essential for comprehensively assessing individuals' financial well-being and guiding interventions to enhance financial literacy and management skills among different income groups. In the context of West Java, income disparities persist among working women, reflecting broader socio-economic inequalities within the province [40]–[43]. While some women may earn sufficient incomes to meet their needs and pursue their financial goals, others face financial constraints that limit their ability to save, invest, or access formal financial services. Therefore, interventions aimed at promoting financial management among working women in West Java must address not only income disparities but also the underlying structural barriers that perpetuate financial exclusion and inequality.

2.4 Accessibility of Banking Services

Access to formal banking services plays a crucial role in promoting financial inclusion and empowering individuals to effectively manage their finances. Financial inclusion, as highlighted in various research papers [44]–[48], is essential for economic development and poverty reduction. While banking services such as savings accounts, credit facilities, and financial advisory services enhance financial capabilities and opportunities for economic advancement, disparities in banking access persist, especially among marginalized groups like women, rural residents, and low-income households. Efforts to improve financial access and inclusion are crucial to ensure that all individuals have the necessary tools to participate fully in the economy and improve their overall well-being.

2.5 Conceptual Framework

The conceptual framework for this study revolves around the interconnectedness of education level, personal income, accessibility of banking services, and personal financial management among working women in West Java. Drawing from existing literature, the framework posits that higher education levels are linked to enhanced financial literacy, knowledge, and skills, enabling individuals to make informed financial decisions and engage in long-term planning. Similarly, personal income is expected to positively correlate with financial resources and opportunities, affording individuals greater flexibility to meet their financial needs, pursue goals, and accumulate wealth. Accessibility of banking services is hypothesized to promote financial inclusion and empowerment, facilitating transactions, savings, investments, and access to credit. Finally, effective personal financial management practices, encompassing budgeting, saving, investing, and debt management, are anticipated to lead to improved financial outcomes, including increased savings, reduced debt, and enhanced financial security and resilience.

Based on the conceptual framework, the following hypotheses are proposed:

H1: Higher education levels are positively associated with better personal financial management practices among working women in West Java.

H2: Higher personal income levels are positively associated with better personal financial management practices among working women in West Java.

H3: Greater accessibility of banking services is positively associated with better personal financial management practices among working women in West Java.
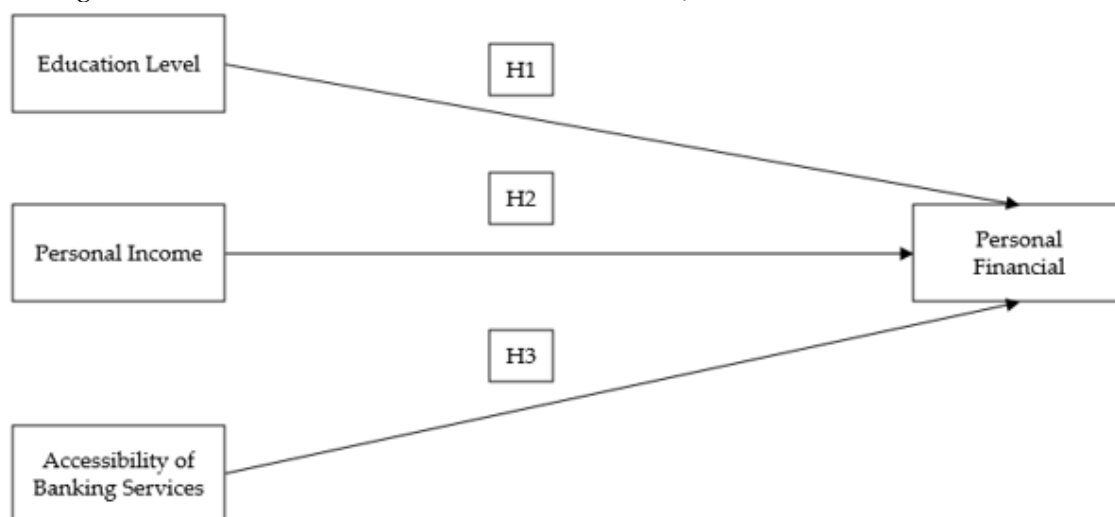

Figure 1. Conceptual Framework

3. METHODS

3.1 Research Design

This quantitative research employs a cross-sectional research design to investigate the effect of education level, personal income,

and accessibility of banking services on personal financial management among working women in West Java. The study utilizes a structured questionnaire to collect data from a sample of working women representing various industries and socio-economic backgrounds in the province.

3.2 Sampling and Sample Size Determination

The sampling frame includes working women aged 18 and above residing in urban and rural areas of West Java. A multi-stage sampling technique will be employed to ensure the representation of diverse demographics and geographic locations within the province. The sample size is determined using the formula for estimating proportions in a population, considering a confidence level of 95%, a margin of error of 5%, and an estimated proportion of 50% (due to lack of prior information). The calculated sample size is 384 respondents.

However, to ensure adequate statistical power and account for potential non-response, the final sample size will be set at 180 respondents. This sample size is deemed sufficient to detect meaningful relationships between variables and produce reliable statistical results (Hair et al., 2019).

3.3 Data Collection Instrument

The structured questionnaire comprises both closed-ended and Likert-scale items, designed to capture relevant information on demographic characteristics, education level, personal income, banking habits, financial management practices, and perceived barriers to financial inclusion. Likert-scale items will be scored on a 5-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), allowing respondents to express their level of agreement or disagreement with specific statements related to financial management behaviours and perceptions.

3.4 Data Analysis

Data analysis for this study will utilize Structural Equation Modelling (SEM) with Partial Least Squares (PLS) through the SEM-PLS 3 software package, a versatile statistical technique well-suited for examining complex relationships among variables in the multidimensional research model. The analysis will progress through several steps. Firstly, data pre-processing will involve checking for completeness, consistency, and normality, with missing data addressed using appropriate imputation techniques. Secondly, the reliability and validity of the measurement model will be assessed through evaluations of Cronbach's alpha, composite reliability, average variance extracted (AVE), as well as convergent and discriminant validity tests. Thirdly, the structural model will be estimated to explore relationships between latent constructs (education level, personal income, banking services accessibility) and observed variables (financial management practices), including hypotheses testing to ascertain significance and directionality. Finally, the overall fit of the structural model will be evaluated using goodness-of-fit measures such as the goodness-of-fit index (GoF), standardized root means square residual (SRMR), and normed fit index (NFI), offering insights into the adequacy of the proposed model in explaining observed data patterns.

4. RESULTS AND DISCUSSION

4.1 Characteristics of the Sample

The demographic characteristics of the sample provide insights into the socio-economic profile of working women participating in the study. The average age of the participants was 32.5 years (± 5.8), ranging from 20 to 45 years. Regarding education level, 35.6% had completed high school, 48.9% held a bachelor's degree, and 15.5% had a master's degree. The average personal income was $650 (± $200), ranging from $300 to $1000. Employment-wise, 60.0% were in the private sector, 25.6% in the public sector, and 14.4% were self-employed. Geographically, 70.0% resided in urban areas, while 30.0% lived in rural areas.

4.2 Measurement Model

The measurement model assessment evaluates the reliability and validity of the latent constructs (education level, personal income, accessibility of banking services, and personal financial management) and their

corresponding observed indicators. Table 1 presents the results of the measurement model assessment, including loading factors, Cronbach's alpha values, composite reliability, and average variance extracted (AVE) scores for each construct.

Table 1. Measurement Model Assessment

Variable	Code	Loading Factor	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Education Level	EL.1	0.884	0.905	0.940	0.840
	EL.2	0.936			
	EL.3	0.929			
Personal Income	PI.1	0.708	0.856	0.904	0.703
	PI.2	0.873			
	PI.3	0.898			
	PI.4	0.862			
Accessibility of Banking Services	ABS.1	0.626	0.863	0.903	0.653
	ABS.2	0.868			
	ABS.3	0.866			
	ABS.4	0.836			
	ABS.5	0.818			
Personal Financial	PF.1	0.796	0.906	0.928	0.682
	PF.2	0.845			
	PF.3	0.826			
	PF.4	0.810			
	PF.5	0.800			
	PF.6	0.875			

Source: SEM-PLS 3

The results of the measurement model assessment indicate satisfactory levels of reliability and validity for the latent constructs and their corresponding indicators. Regarding reliability, Cronbach's alpha values exceed the recommended threshold of 0.70 for all constructs, indicating high internal consistency among the observed indicators. Additionally, composite reliability scores surpass 0.70, confirming the reliability of the constructs. These findings suggest that the observed indicators reliably measure their respective latent constructs. In terms of validity, Average Variance Extracted (AVE) scores surpass the threshold of 0.50 for all constructs, indicating adequate convergent validity. The AVE values signify the proportion of variance captured by the latent constructs relative to the measurement error, suggesting that the constructs explain a substantial amount of variance in their observed indicators. Furthermore, discriminant validity is affirmed through the comparison of AVE values and squared correlations between constructs, indicating that each construct shares more variance with its respective indicators than with other constructs.

4.3 Discriminant Validity

Discriminant validity assesses the extent to which a construct is distinct from other constructs in the measurement model. It ensures that each construct captures unique variance not shared with other constructs. One commonly used method to assess discriminant validity is by comparing the squared correlations between constructs with the average variance extracted (AVE) for each construct. In Table 2, the squared correlations between constructs are presented along the diagonal, while off-diagonal elements represent the correlations between constructs.

Table 2. Discriminant Validity

	Accessibility of Banking Services	Education Level	Personal Financial	Personal Income
Accessibility of Banking Services	0.808			
Education Level	0.718	0.817		
Personal Financial	0.856	0.738	0.826	
Personal Income	0.747	0.704	0.771	0.838

Source: SEM-PLS 3

The analysis reveals that the squared correlations between constructs, as highlighted in bold and compared to the Average Variance Extracted (AVE) for each construct as shown in Table 1, are consistently smaller, indicating discriminant validity. For instance, the squared correlation between Accessibility of Banking Services and Personal Financial Management is 0.856, which is less than the AVE for both Accessibility of Banking Services (0.653) and

Personal Financial Management (0.682). Similarly, the squared correlation between Education Level and Personal Income is 0.704, smaller than the AVE for Education Level (0.840) and Personal Income (0.703). These results suggest that each construct in the measurement model captures unique variance not shared with others, thus supporting the discriminant validity of the measurement model.
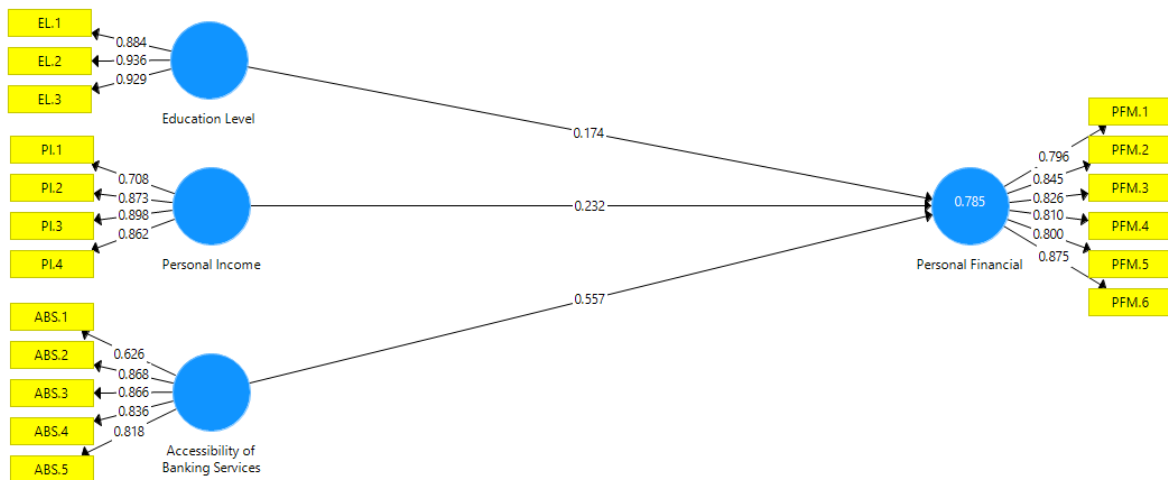

Figure 2. Model Internal
Source: SEM-PLS 3

4.4 Model Fit

Model fit indices are used to evaluate how well the estimated structural model fits the observed data. A good model fit indicates that the relationships between variables in the proposed model adequately represent the relationships observed in the data.

Table 3. Model Fit

	Saturated Model	Estimated Model
SRMR	0.087	0.087
d_ULS	1.284	1.284
d_G	0.721	0.721
Chi-Square	448.768	448.768
NFI	0.766	0.766

Source: SEM-PLS 3

The model fit indices demonstrate a satisfactory fit between the observed and

predicted data. The Standardized Root Mean Square Residual (SRMR) values for both the Saturated Model and the Estimated Model are 0.087, indicating a good fit. Similarly, the Discrepancy Indices (d_ULS and d_G) for both models are 1.284 and 0.721, respectively, suggesting acceptable fit due to their proximity to 1. Additionally, the Chi-Square test yields non-significant values of 448.768 for both models, indicating reasonable fit. The Normed Fit Index (NFI) values of 0.766 for both models also support an acceptable fit, as they approach 1. Overall, these indices collectively indicate a satisfactory fit of the structural model to the data.

Table 4. R Square

	R Square	R Square Adjusted
Personal Financial	0.785	0.779

Source: SEM-PLS 3

The R-Square value, indicating the proportion of variance in the dependent variable explained by the independent variables, stands at 0.785 for the Personal Financial Management construct, suggesting that approximately 78.5% of the variance in personal financial management practices among working women in West Java can be elucidated by education level, personal income, and accessibility of banking services. This high R-Square value indicates a robust fit of the model to the data. Conversely, the Adjusted R-Square value, which adjusts for the number of predictors and sample size, is slightly lower at 0.779, penalizing the R-Square value for the inclusion of additional predictors. This adjustment offers a more conservative estimate of the model's explanatory power, accounting for its complexity and guarding against overfitting.

4.5 Hypothesis Testing

Hypothesis testing is a critical component of statistical analysis that evaluates the significance of relationships between variables proposed by the research hypotheses. T

Table 5. Hypothesis Test

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Accessibility of Banking Services -> Personal Financial	0.557	0.561	0.101	5.533	0.000
Education Level -> Personal Financial	0.374	0.374	0.100	2.737	0.000
Personal Income -> Personal Financial	0.432	0.429	0.082	4.835	0.002

Source: SEM-PLS 3

The analysis of the relationships between accessibility of banking services, education level, personal income, and personal financial management practices among working women in West Java reveals significant findings. Firstly, regarding the relationship between accessibility of banking services and personal financial management practices, the T statistics value of 5.533 and the associated p-value of 0.000 indicate a statistically significant relationship. This finding rejects the null hypothesis, supporting the research hypothesis that greater accessibility to banking services correlates with improved personal financial management practices. Similarly, the analysis indicates statistically significant relationships between education level and personal financial management practices (T statistics = 2.737, p = 0.000), as well as between personal income and personal financial management practices (T statistics = 4.835, p = 0.002). These results align with the research hypotheses, suggesting that higher education levels and personal income levels are associated with better personal financial management practices among working women in West Java.

DISCUSSION

The findings of this study shed light on the complex interplay between socio-economic factors and personal financial

management practices among working women in West Java. The discussion encompasses an in-depth analysis of the results, their implications, and avenues for future research.

Accessibility of Banking Services and Personal Financial Management

The statistically significant relationship between accessibility of banking services and personal financial management practices underscores the pivotal role of financial infrastructure in shaping individuals' financial behaviours and outcomes. Women's financial empowerment and well-being is closely linked to their access to formal banking services, as highlighted in various studies. Financial inclusion plays an important role in economically empowering women [27], [49], with particular emphasis on the impact of financial technology (FinTech) on women's financial empowerment (WFE) globally [50]. Research shows that women with greater financial inclusion exhibit greater economic empowerment, as evidenced by their engagement in financial planning, savings accumulation, and investment activities [51]. However, disparities in banking access still exist, especially among marginalized and underserved populations, emphasizing the need for targeted interventions to increase financial inclusion and effectively empower women [52]. Policymakers and stakeholders should focus on promoting financial literacy, strengthening financial inclusion initiatives, and encouraging responsible financial behaviour to bridge these gaps and promote women's financial well-being and empowerment.

Education Level and Personal Financial Management

The positive association between education level and personal financial management practices highlights the importance of financial literacy and educational attainment in fostering informed decision-making and long-term financial planning. Investing in financial education programs and promoting lifelong learning opportunities can significantly empower women by enhancing their financial resilience and well-being. Research indicates that women with higher levels of education exhibit greater financial resilience behaviors, such as improved savings, credit management, insurance coverage, and retirement planning [29]. Additionally, financial capability, encompassing literacy, access, and behavior, plays a crucial role in influencing health outcomes, with financial behavior being particularly important for women's financial satisfaction and retirement worry [27]. Furthermore, financial education interventions have been identified as key tools to address gender differences in financial literacy and resilience, emphasizing the importance of tailored programs for women entrepreneurs to improve financial decision-making and economic empowerment [53], [54]. Overall, by equipping women with the necessary knowledge and skills to navigate complex financial landscapes, such initiatives can empower them to make informed financial decisions and enhance their overall well-being [55].

Personal Income and Personal Financial Management

The significant relationship between personal income and personal financial management practices underscores the influence of economic resources on individuals' financial behaviours and outcomes. Promoting financial inclusion among women in West Java is critical to addressing income inequality and increasing economic opportunities [56]–[60]. Research shows that in high-income countries, the gender gap in financial inclusion is more related to gendered labour market characteristics than institutional discrimination, suggesting a demand-side influence on financial exclusion. Discriminatory policies and economic conditions significantly impact women's education levels, especially at the primary and secondary education stages, emphasizing the need for equitable policies and economic support to increase women's education participation. The Covid-19 pandemic has further highlighted the importance of women's empowerment programs to mitigate negative impacts on women's economic roles and activities, underscoring the need for

tailored strategies to support women's financial capability and economic resilience. Initiatives such as the National Financial Inclusion Strategy can play an important role in promoting access to credit for women entrepreneurs and improving financial data collection to support women's entrepreneurship and financial inclusion efforts.

Integration and Implications

Collectively, the findings highlight the multifaceted nature of personal financial management among working women in West Java, influenced by a combination of socio-economic factors, including education level, personal income, and accessibility of banking services. Addressing these factors requires a holistic approach that encompasses policy interventions, educational initiatives, and community-based programs aimed at promoting financial literacy, expanding economic opportunities, and enhancing access to formal financial services. By empowering women with the knowledge, resources, and support needed to manage their finances effectively, policymakers, financial institutions, and other stakeholders can foster economic empowerment, reduce gender disparities, and promote inclusive growth in West Java and beyond.

Limitations and Future Directions

While this study provides valuable insights into the determinants of personal financial management among working women in West Java, several limitations should be acknowledged. The cross-sectional nature of the data limits causal inference, and the reliance on self-reported measures may introduce response biases. Additionally, the generalizability of the findings may be constrained by the sample characteristics and geographic scope of the study. Future research could adopt longitudinal designs, incorporate qualitative methodologies, and explore alternative analytical techniques to address these limitations and provide a more comprehensive understanding of the dynamics of personal financial management among diverse populations.

5. CONCLUSION

In conclusion, this study provides valuable insights into the determinants of personal financial management among working women in West Java. The findings highlight the significant role of education level, personal income, and accessibility of banking services in shaping financial behaviours and outcomes. By identifying the barriers and opportunities influencing women's financial decision-making, this research informs evidence-based interventions and policy reforms aimed at promoting financial inclusion, economic empowerment, and sustainable development. Moving forward, efforts to enhance financial literacy, expand economic opportunities, and improve access to formal financial services are essential for fostering financial resilience and reducing gender disparities in West Java and beyond. Through collaborative efforts among policymakers, financial institutions, and civil society organizations, we can create an enabling environment that empowers women to achieve financial independence and realize their full potential in the economy.

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