International Journal of Advanced Technology and Social Sciences (IJATSS)
Vol.2,No.6,2024: 733-754

An Uncommon Approach Using R: Moderating Gender on Digital Financial Literacy and Behavior

Adam Nurkholik[1*], Mohammad Galih Saputra[2]
Universitas Nasional Jakarta
Corresponding Author: Adam Nurkholik adamn.educator@gmail.com

A R T I C L E I N F O

Keywords: Digital Financial Behavior, Digital Financial Literacy, Millennials, Gender, R Studio, Categorical Moderation

Received : 4 April
Revised : 22 May
Accepted: 23 June

A B S T R A C T

The digital financial behavior of the male and female millennial is still messy and unstable. The objective of this quantitative study is to analyze the influence of digital financial literacy on millennials' digital financial behavior, which is moderated by the gender variable. Data was collected by distributing an online self-administered questionnaire to four hundred and twenty millennials in Greater Jakarta as research samples. Data analysis utilized open-source software R Studio with descriptive statistics to compile respondent demographics and PLS-SEM calculations. Gender as a moderating variable uses nominal category data in the form of binary code with a two-way interaction effects method. The findings of this research show that digital financial literacy has a significant positive influence on digital financial behavior whether without paying attention to gender or by paying attention to gender. The gender variable is proven to be significant as a moderator, the moderating influence of males is proven to be stronger than that of females on improving digital financial behavior. Following up on these findings, millennials, both male and female, must improve their digital financial behavior as a solution to success through mastering digital financial literacy because they have relatively equal opportunities to help and support each other

INTRODUCTION

In an increasingly digital world, society is drifting away in the stream of utilized technology on their arms unwittingly. Besides, financial services enable Indonesian users to access its facilities easily through the Internet and various online applications (Dewi et al., 2020). The population most actively accessing the internet is the millennial generation (Badan Pusat Statistik, 2021). They often use financial technology services in their daily lives (Setiawan et al., 2022).

Unfortunately, millennial workers who often utilize this convenience are trapped in a modern lifestyle (Yong et al., 2018). Due to a lack of knowledge, millennials are fraught with financial behavior issues (Kim et al., 2019), without exception for Indonesian millennial workers, whether men or women. As proof, people aged between 19 and 34 years are the group most frequently caught in bad credit on online loans (Otoritas Jasa Keuangan, 2023). This condition shows that they are experiencing financial difficulties and are very vulnerable to financial threats (Brüggen et al., 2017). Therefore, those with unhealthy financial behavior and limited capability to reach relevant financial information are supposed to be financially literate before using financial technology, so improving financial literacy in digital finance is a truly important thing (Amonhaemanon & Isaramalai, 2020; V. Dewi et al., 2020; Kawamura et al., 2021; Nicolini & Haupt, 2019).

Empowering financial behavior amidst widespread technological advances is very important. Inevitably, almost all financial services have been digitally transformed (Kass-Hanna et al., 2022; Prasad et al., 2018). Millennials are required to be digitally financially literate to improve healthy financial behavior when managing financial resources (V. Dewi et al., 2020; Kim et al., 2019; Rey-Ares et al., 2021). One of the best ways is to increase financial literacy which is useful in processing economic information, behaving appropriately financially, and making the right financial decisions (Ameer & Khan, 2020; Lusardi & Mitchell, 2014; Muñoz-Murillo et al., 2020). Other research shows that effective financial behavior is significantly supported by strong financial literacy (Fazli Sabri et al., 2021; Thi et al., 2015).

Furthermore, individuals with a high level of financial literacy tend to exhibit greater self-confidence in their financial decision-making abilities (Mudzingiri et al., 2018; Noor et al., 2020). A greater comprehension of financial literacy and financial behavior is associated with more prudent financial decision-making (Balasubramanian & Sargent, 2020; Grohmann, 2018). In the digital context, our findings indicate that digital financial literacy plays a significant role in the formation of healthy digital financial behavior (Nurkholik, 2024b; Rahayu et al., 2022). Additionally, digital financial literacy contributes to controlling spending and saving as a form of financial behavior (P. J. Morgan & Long, 2020; Setiawan et al., 2022). It is evident that there is a robust correlation between digital financial literacy and digital financial behavior.

From a gender perspective, the influence of digital finance on men and women has become quite interesting to explore recently. Digital financial literacy training for women and men has a significant impact on their financial activities as demonstrated by financial behavior such as account ownership, saving, and financial assistance (Agnew et al., 2018; Koomson et al., 2020; Sholevar & Harris, 2020). However, Lind et al. (2020) and Robson & Peetz (2020) argued that there are fundamental differences between men and women, including income and financial knowledge, which can influence their behavior and objective financial behavior. Moreover, a noteworthy observation is that women are less prone to financial indebtedness, even after acquiring financial literacy, than men (Cupák et al., 2021; Meyll & Pauls, 2019). In contrast, studies conducted by Hapsoro et al. (2022) and Tinghög et al., (2021) indicate that women exhibit lower levels of financial literacy than men, necessitating the enhancement of women's financial behavior. Given what we have learned before, it makes sense to do more research to see how digital financial literacy affects digital financial behavior for millennials, especially when it comes to gender differences.

However, despite the many studies that have been done on this topic, none have looked at how financial literacy programs affect financial behavior among millennials in Indonesia, with a focus on gender differences in the digital context. So, this research will use a quantitative analysis to look at how digital financial literacy affects the digital financial behavior of millennials, both men and women living in Indonesia. This research also looks at whether there are any differences in the results of the study on how digital financial literacy affects digital financial behavior in Indonesia among men and women in their 20s.

This research is different from previous research which also paid attention to financial behavior. First, this research focuses on the digital context, especially the use of financial technology in terms of literacy and behavior. Second, this research is focused on examining the impact of gender on the relationship between digital financial literacy and financial behavior, with the millennial generation in Indonesia serving as the subject of investigation. Third, this research analyzes the effect of moderation variables using R Studio, which is still rarely and usually used by researchers. Fourth, the use of a unique data type in the moderation variable dataset, namely nominal categories in the form of binary code. Apart from that, limiting the research focus is very useful because technological transformation continues to be popular with millennials so it needs to be detailed between men and women whether it can also support Indonesia's financial inclusion program which is still experiencing a slowdown (Asyik et al., 2022; Koomson et al., 2020).

This research went through several stages of the process, including research background, literature review, research methodology, disclosure of research results, discussion of research results with previous research, and delivery of conclusions.

LITERATURE REVIEW

Human social behavior can be explained by one of the most influential theories called the Theory of Planned Behavior (TPB) (Ajzen, 2011). TPB was created by Ajzen (1991) and is a development of the Theory of Reasoned Action (TRA) promoted by Fishbein & Ajzen (1975). Joo & Grable (2004) believes that a person's attitudes and behavior in the financial sector are called financial behavior because the concept of behavior is connected to financial topics. To create effective fund management, a key concept in financial concepts is needed which is called financial management behavior (Thi et al., 2015). The advent of the digital age has compelled financial conduct to become digitally integrated, thereby necessitating the emergence of digital financial behavior.

Digital financial behavior has the potential to increase if it is driven by financial literacy, in a digital context, it is called digital financial literacy. Haliassos et al. (2020) and Rahayu et al. (2022) posit that digital financial literacy is a nascent idea, defined as a person's level of understanding of financial literacy matters pertaining to digital technology. Although there have been various studies that focus on financial literacy on various topics, including students as a subject (Inder et al., 2021; Kalwij et al., 2019; Oseifuah, 2018; Urban et al., 2020), financial education (Amagir et al., 2019; Carpena & Zia, 2020; De Beckker et al., 2019; Kaiser et al., 2022; Kaiser & Menkhoff, 2020), financial markets (Fujiki, 2020; Hernández-Mejía et al., 2021), capital markets (Bellofatto et al., 2018; Widagdo & Roz, 2022), psychological aspects (Balasubramnian & Sargent, 2020; Robson & Peetz, 2020; Skagerlund et al., 2018), family communication patterns (Feng et al., 2019; Hanson & Olson, 2018), systematic literature review on the Indonesian Millennial (Nurkholik, 2023), externalities (Haliassos et al., 2020), fraud detection (Engels et al., 2019), and population (Tavares & Santos, 2020).

This study aims to examine how digital financial literacy is related to digital financial behavior. Due to the limitations of previous research investigating digital financial behavior, on the other hand, a number of studies have examined the impact of financial literacy on financial behavior (Akben-Selcuk, 2015; Chong et al., 2021; V. I. Dewi et al., 2020; Grohmann, 2018; Kim et al., 2019; Nguyen & Doan, 2020; Strömbäck et al., 2020; Thi et al., 2015). However, several studies specifically use digital financial literacy as an explanation for financial behavior, namely the findings from Nurkholik (2024a); Rahayu et al. (2022); Setiawan et al. (2022) which reveal that the digital financial behavior of the younger generation can be directed by digital financial literacy to make decisions. In light of the aforementioned references, this research proposes the following hypothesis as a preliminary hypothesis:

H1: digital financial literacy has a significant influence on digital financial behavior

The subsequent phase of this research will investigate the influence of gender on the relationship between digital financial literacy and digital financial behavior. The study conducted by Nguyen & Doan (2020) demonstrated that financial literacy exerts an influence on financial behavior, which is moderated by gender. The study revealed a statistically significant difference between the sexes, with women exhibiting a higher probability of saving than men. According

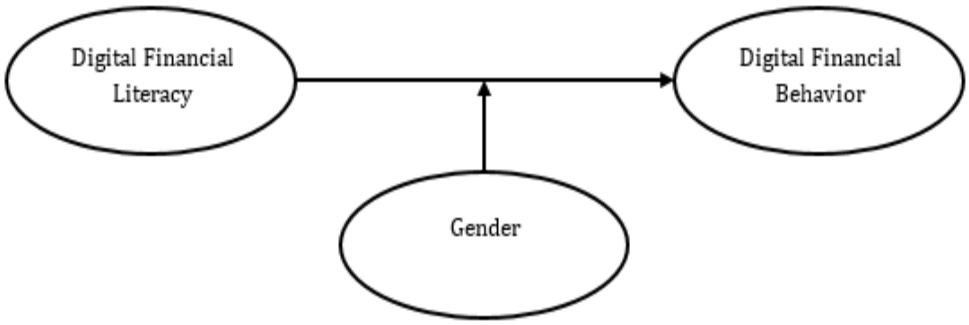
to Cupák et al. (2021), Grohmann et al. (2021), and Meyll & Pauls (2019) the gender moderation effect, shows that compared to men, women are less likely to be in debt even after understanding financial literacy. Conversely, the findings of Hapsoro et al. (2022) and Tinghög et al. (2021) indicate that gender moderation also reveals a need for improvement in women's financial behavior, given their comparatively lower levels of financial literacy compared to men. Chong et al. (2021) and Walczak & Pienkowska-Kamieniecka (2018) also found that men exhibited superior financial behavior compared to women, particularly in the context of the gender moderation effect. This was attributed to men's greater utilization of financial products and services, as well as their inclination towards risk-taking. In light of the conflicting results, this study developed three hypotheses as follows:

H2: digital financial literacy has a significant influence on digital financial behavior in the male group

H3: digital financial literacy has a significant influence on digital financial behavior in women's groups

H4: There is a significance of gender as a moderating variable in the effect of digital financial literacy on digital financial behavior.

H5: Male moderators are stronger than female moderators in the effect of digital financial literacy on digital financial behavior.



Picture 1. Conceptual Framework
Source: Developed by Author (2023)

METHODOLOGY

This research employs a quantitative methodology, utilizing the PLS-SEM method in R Studio, to assess the moderating effect (Hair et al., 2021). People who live in Greater Jakarta were chosen as research subjects, and the main focus was on the millennial generation as the research object. The millennial population in Greater Jakarta is around 11.5 million people, so 400 people were determined as research samples through Slovin's formula calculations using purposive sampling techniques.

The research instrument developed was a questionnaire containing 27 statement indicator items for all variables. The dependent variable, digital financial behavior, is measured via instruments developed by Alonso-García et al. (2017); Furnham (1999); Setiawan et al. (2022) and Watson (2003). These indicators consist of 16 items on a scale of 1-5 Likert (1932), with slight modifications to the digital context. Due to the relatively low prevalence of this

variable, two rounds of the Delphi method were conducted. The results indicated that all indicators were approved by all panelists, thus categorizing all indicator items as reliable.

In addition, the independent variable digital financial literacy employs indicators derived from P. Morgan et al. (2019); P. J. Morgan & Trinh (2019); Prasad et al. (2018), and Setiawan et al. (2022), comprising 11 indicator items that have been adapted to the digital context. All indicators are on a scale of 1-5 Likert (1932) and are equipped with a Cronbach's Alpha score of 0.822, indicating that all indicator items are categorized as having good reliability. Details of the indicator items in the questionnaire are shown in Table 1.

Table 1. Indicator of All Variables

Variable	Indicator
Digital financial behavior. (Alonso-García et al., 2017; Furnham, 1999; Setiawan et al., 2022; Watson, 2003)	Using e-commerce to make routine purchases. • A preference for digital shopping platforms (e.g., Shoppee, Tokopedia) over traditional shopping platforms (e.g., traditional markets, supermarkets, malls). • A greater proportion of expenditure is allocated to digital platforms (e.g., Shopee, Tokopedia) than to conventional platforms (e.g., traditional markets, supermarkets, shopping malls). • The decision to purchase domestic products through digital platforms. • The decision to purchase personal products through digital platforms. • Leisure and entertainment shopping via digital platforms. • When it comes to shopping, digital platforms offer a convenient alternative. • It is advisable to save in digital financial products for transactional reasons. • Saving for speculative motives in digital financial products. • It is advisable to set aside funds in digital financial products for future contingencies. • The objective is to encourage individuals to save in digital financial products for retirement. • The objective of this inquiry is to identify the factors influencing the decision to save in digital financial products. • Feeling empowered to manage finances using the digital financial savings platform. • Perception of security when saving with digital financial products. • I am pleased with the savings I have achieved through the use of digital financial products. • It is recommended that you save regularly using digital financial platforms.

Digital financial literacy. (P. Morgan et al., 2019; P. Morgan & Trinh, 2019; Prasad et al., 2018; Setiawan et al., 2022)	• Know the ins and outs of digital payment products, including electronic debit, electronic credit, electronic money, mobile/internet banking, and electronic wallets. • I am familiar with digital asset management products like Tanamduit, Finansialku, and Bareksa. • I have got some experience with digital credit products like Bibit and Kredivo. • I am familiar with digital insurance products like Asuransiku.id and Rajapremi. • I know my way around customer rights and protections, as well as digital financial service complaint procedures. • I have got plenty of experience using digital payment products like OVO, Gopay, and Link Aja. • I have got plenty of experience using Fintech products and services for lending and investing, including CoinWorks, Investree, Modalku, and Amarta. • I have got plenty of experience using fintech products and services for managing wealth, including Bareksa, Tanamduit, and Finansialku. • I know all about the legality of fintech providers, interest rates, transaction fees, and other potential financial risks of using fintech. • I am pretty good at managing my finances through digital platforms. For instance, I can keep an eye on the cost of digital financial transactions. • I can keep a close eye on my finances using the platform, which gives me a good handle on my spending.

Source: Compilation From Various Sources (2023)

The data presented in this study were collected through the administration of an online self-administered questionnaire, which was completed via Google Forms by the respondents (Anwar et al., 2023). The questionnaire containing 27 statement indicator items was distributed from April to June 2023. The response rate for the sample of respondents obtained was 95%, coming from 398 respondents who filled out the questionnaire from a total of 420 questionnaires distributed. Then, the recapitulation of respondent answer data is automatically saved in Google Drive and ready to be processed in the researcher's working paper for analysis.

Subsequently, data analysis will employ the open-source software R Studio, coupled with the SEMinR package. The demographic analysis of respondents will be presented at the beginning of the results section, then continued with the SEM-PLS analysis which explains the results of the outer model and inner model evaluation to see the results of hypothesis testing and the effect of moderating variables. This research employs gender as a moderating variable with nominal category data in the form of binary code. The code "1" represents male, while the code "0" represents female. Then, a two-stage approach is employed to analyze the moderating variable and to elucidate the significance of the moderating effect (Hair et al., 2022).

Apart from that, this research also adds a two-way interaction effects method for binary moderators from http://jeremydawson.co.uk/slopes.htm which will be reviewed using graphs to reconfirm the significance of the results. The results of the analysis will be discussed in the discussion section and linked to theories from previous research to answer the research objectives.

The impact of dependent variables on independent variables is indicated by the following notation:

$DFB_i = \alpha_i + \beta_1 DFL_i + e_i$ …….....(1)

The impact of dependent variables on independent variables for the male group (coded "1") is illustrated as follows:

$DFB1_i = \alpha_i + \beta_1 DFL1_i + e_i$ ……...(2)

The impact of dependent variables on independent variables for the female group (coded "0") is illustrated as follows:

$DFB0_i = \alpha_i + \beta_1 DFL0_i + e_i$ ……...…….…..(3)

The moderating effect using interaction terms is formulated as follows:

$DFB_i = \alpha_i + \beta_1 DFL_i + \beta_2 Gender_i + \beta_3 (DFL_i . Gender_i) + e_i$…….(4)

RESULTS

Respondent Demographics

The demographics of millennial respondents in Greater Jakarta are shown in Table 2 with several distribution categories, including gender, education, age, and monthly income (expressed in US dollars). Respondents were dominated by males at 57% with the highest educational background, namely 63% at the bachelor level. Respondents were distributed between the ages of 26 and 30 and between 31 and 35, respectively 40% and 34%. Besides that, most respondents had a monthly income of $310 to $620 with a proportion of 52%.

This part allows you to elaborate on your results findings academically. You must not put numbers related to your statistical tests here; instead, you have to explain that numbers here. You have to compile your discussion with academic supports to your study and a good explanation according to the specific area you are investigating.

Table 2. Respondent Demographics

Gender	Respondents	%	Age	Respondents	%
Male	226	57%	> 35	32	8%
Female	172	43%	18 – 25	73	18%
Total	398	100%	26 – 30	158	40%
			31 – 35	135	34%
			Total	398	100%

Education	Respondents	%	Monthly income	Respondents	%
High school seniors	44	11%	< $186	12	3%
Diploma 1/Diploma 2	18	5%	$186 to $310	56	14%
3-year diploma	43	11%	$310 to $620	205	52%
Bachelor	250	63%	> $620	125	31%
Masters	42	11%	Total	398	100%
Ph.D	1	0%			
Total	398	100%			

Source: Calculated by Author (2023)

Outer Model

First, the validity of all questionnaire indicator items was tested with convergent validity using loading factor data in Table 3. This research employed a methodology consistent with that of Hair, Black, et al. (2019) and Setiawan et al. (2022) retaining indicators with a loading factor value of greater than 0.4 and deleting indicators with a loading factor value of less than 0.4. So, as many as 10 indicators that explain the digital financial behavior (DFB) variable and 6 indicators that explain the digital financial literacy (DFL) variable were declared as valid and able to explain the latent variables.

Second, the validity of each latent variable is tested with discriminant validity using HTMT ratio criterion data on the direction of influence of the latent variable (Henseler et al., 2015). A latent variable can be said to be valid if it has an HTMT criteria ratio value of less than 0.90 (Hair et al., 2021). In Table 3, the HTMT criteria ratio value is 0.890, so the conclusion is that the measurement model created is valid and each indicator has good validity in forming the DFB and DFL latent variables.

Table 3. Result of Validity and Reliability Testing

Variable	Indicator	Loading Factor	HTMT	*Cronbach's alpha*	rho$_c$	rho$_a$	Results
Criteria		**>0.4**	**<0.9**	**>0.7**	**>0.6**	**>0.6**	
Digital Financial Behavior				0.751	0.751	0.763	Reliable
	DFB1	0.413					
	DFB2	0.466					Valid
	DFB3	0.447					Valid
	DFB4	0.449					Valid
	DFB5	0.526					Valid
	DFB6	0.422					Valid
	DFB9	0.691					Valid
	DFB10	0.462					Valid
	DFB11	0.449					Valid
	DFB16	0.473					Valid
Digital Financial Literacy			0.890	0.696	0.697	0.715	Reliable
	DFL1	0.440					Valid
	DFL3	0.576					Valid
	DFL5	0.605					Valid
	DFL6	0.454					Valid
	DFL9	0.665					Valid
	DFL11	0.407					Valid

Source: Calculated by Author Using R Studio (2023)

Third, test the reliability of the latent variable of a structural model using R Studio software calculations using composite reliability values which are proxied by Cronbach's alpha, rhoa value and rhoc value. A latent variable is considered to have good reliability if it has a rhoa value and rhoc value greater than 0.6 and is reinforced by a Cronbach's alpha value greater than 0.7 (Hair, Risher, et al., 2019; Sarstedt et al., 2011). Table 3 shows that the three composite reliability value proxies for the latent variables DFB and DFL are greater than 0.6 and greater than 0.7. Thus, this condition illustrates the consistency and stability of the results of the DFB and DFL latent variables which are explained by the indicators if used by other research at different times.

Inner Model

The outer model that has been declared valid and reliable will proceed to the structural model evaluation stage called the inner model, where the inner model connects each latent variable and displays the direction of influence between the latent variables (Hair et al., 2021). The latent variables in this research are the digital financial behavior (DFB) variable and the digital financial literacy (DFL) variable, plus one moderating variable, namely gender. Table 4 presents data from hypothesis testing results from all models.

Table 4. All Model Hypothesis Testing

Variable Relationships	Statistical Results	All Sample Categorical Moderation (Stage 2)	All Sample Categorical Moderation (Stage 1)	All Samples Non-Moderation	Male Group Non-Moderation	Female Group Non-Moderation
	Sample size	398	398	398	226	172
DFL →DFB	Path Coefficient	0.869	0.894	0.901	0.984	0.742
	T-Statistics	17,904	20,651	20,509	19,051	10,975
	2.5% CI	0.783	0.816	0.820	0.887	0.662
	97.5%CI	0.974	0.982	0.991	1,086	0.930
	R-Square (R^2)	0.834	0.819	0.812	0.968	0.550
Gender →DFB	Path Coefficient	-0.125	-0.121			
	T-Statistics	-2,551	-2,422			
	2.5% CI	-0.220	-0.218			
	97.5%CI	-0.030	-0.020			
DFL*Gender →DFB (Interaction Terms)	Path Coefficient	0.152				
	T-Statistics	2,217				
	2.5% CI	0.019				
	97.5%CI	0.289				
Hypothesis		H4		H1	H2	H3

Source: Calculated by Author Using R Studio (2023)

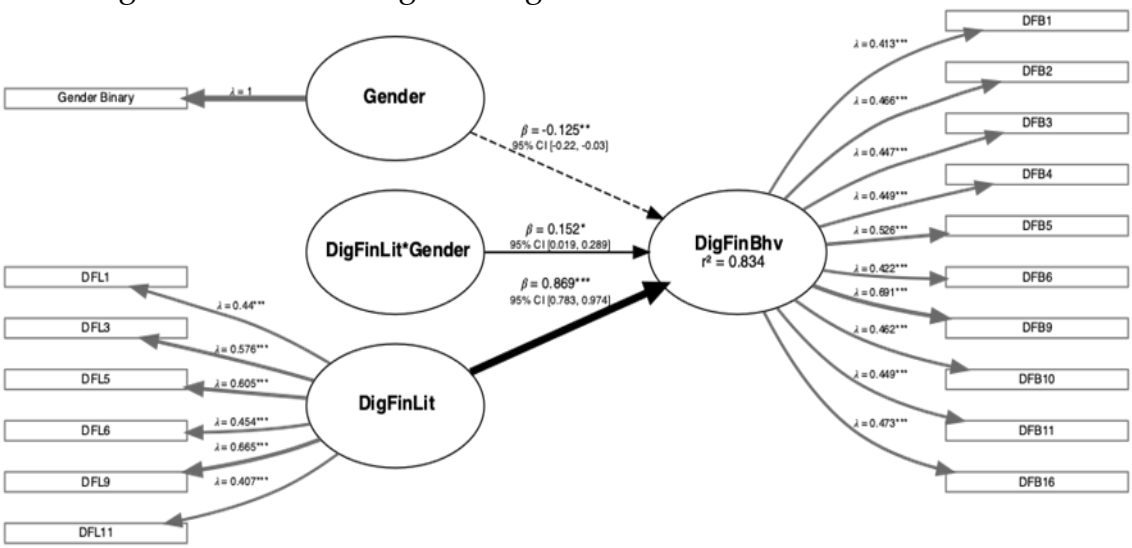
Based on the analysis data in Table 4, the results of all sample non-moderation calculations show a path coefficient of 0.901 with a T-Statistic value of 20.509 > 1.960 and there is no value of 0 between the percentile values of 2.5% CI (0.820) to 97.5% CI (0.991). According to the bootstrap process produces t-values in the form of T-Statistics from Hair et al. (2021) and the percentile method to obtain a bootstrap confidence interval from Aguirre-Urreta & Rönkkö (2018), this research found a positive and significant influence on the relationship between DFL and DFB. In other words, the first hypothesis (H1) can be accepted at a significance level of 5%.

Next, to test the effect of DFL on DFB in each gender group, this research divided the sample into two non-moderation groups, namely the male group and the female group. The male group calculation results in Table 4 with a significance level of 5%, show a path coefficient of 0.984 with a T-Statistic value of 19.051 > 1.960 and there is no value of 0 between the percentile values of 2.5% CI (0.887) to 97.5% CI (1.086). So, the second hypothesis (H2) can be accepted because it is statistically proven that there is a positive and significant influence on the relationship between DFL and DFB in the male group.

Besides that, the third hypothesis tests the effect of DFL on DFB in the non-moderation female group. The results of the female group calculations in Table 4 prove that there is a positive and significant influence on the relationship between DFL and DFB in the female group. The path coefficient is 0.742 with a T-Statistic value of 10.975 > 1.960 and there is no value of 0 between the percentile values of 2.5% CI (0.662) to 97.5% CI (0.930). So, the third hypothesis (H3) can be accepted.

Furthermore, the structural model must know how well the model is formed through model fit testing by measuring the coefficient of determination (R2) of all dependent latent variables studied (Shmueli & Koppius, 2010). In the realm of social sciences, R2 values of 0.75, 0.50, and 0.25 are classified as strong, moderate, and weak respectively (Hair et al., 2011). In Table 4, the R2 value with the combined data of all non-moderation samples has strong criteria (0.812), the male group has strong criteria (0.968) and the female group has moderate criteria (0.550). In other words, as much as 81.2%, 96.8%, and 55% of the variation in the DFB variable can be explained well by the DFL variable for both the entire sample and the male and female group in this study, while the remainder is explained by other factors not examined by this study.

In the context of moderation, the inner model in the form of modeling moderating effects is formed through one approach, namely the two-stage approach (Chin et al., 2003). Henseler & Chin (2010) recommend a two-stage approach to reveal the significance of the moderating effect on independent latent variables and reflective moderation. Stage 1 is the main effect model without interaction terms to obtain latent variable scores from the independent variables and moderation variables which will be analyzed in Stage 2. Then, Stage 2 is the stage of creating interaction terms from the results of multiplying the latent variable scores from the independent variables, and the moderation variables from Stage 1 will be used to estimate moderating effects (Becker et al., 2018; Rigdon et al., 2010). Picture 2 presents the results of moderating effects modeling calculations in Stage 2 using R Studio.



Picture 2. Modeling Moderating Effects (Stage 2)
Source: Calculated by R Studio (2023)

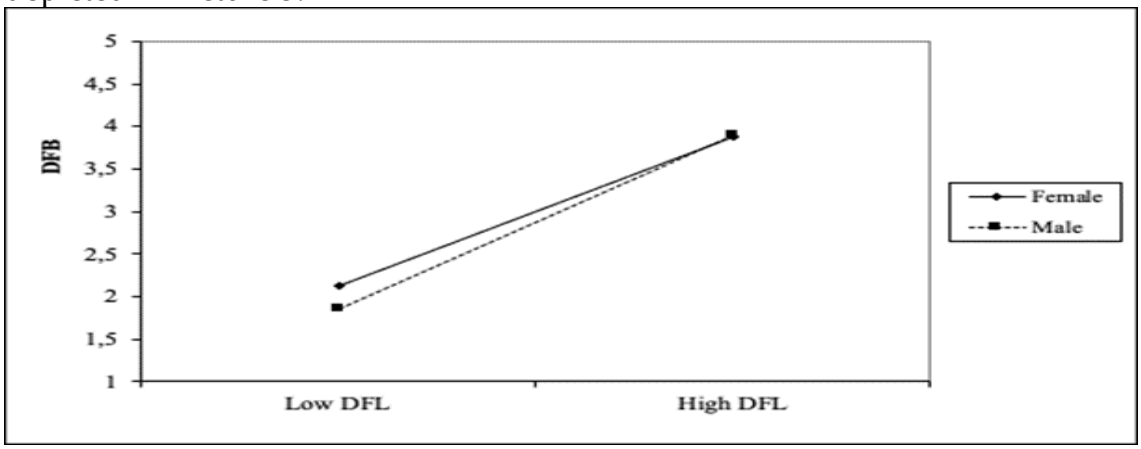
Moderating Effect

Moderating effect analysis through effect size and slope analysis. First, the inner model depicted in Picture 2 needs to be model evaluated using the f-square effect size of the interaction effect (Hair et al., 2022; Memon et al., 2019). How much the moderation contributes to explaining the endogenous construct is indicated by the F-squared effect size. The formula of f-square effect size is (R2 Included - R2 Excluded) / (1 - R2 Included). The effect size can be calculated by using data in Table 4, the value of R2 Included in Stage 2 is 0.834 and the value of R2 Excluded from Stage 1 is 0.819. Finally, the result of the f-square effect size is 0.090. Based on Kenny's (2018) proportion, 0.005, 0.01, and 0.025, respectively, constitute small, medium, and large effect sizes of moderation. There is a large effect size.

Furthermore, this study begins to conduct result interpretation. The significance of the interaction term is the primary focus when interpreting the results of a moderation analysis (Hair et al., 2021). In Table 4, the interaction term (DFL*Gender) has a positive effect on DFB of 0.152, a positive sign means that male has a stronger effect in the relationship between DFL and DFB.

Eventually, both male and female changes above are reflected in the interaction term. In Table 4, the value of the T-Statistic of 2.217 for the path linking the interaction term (DFL*Gender) and DFB. Similarly, the 2.5% CI of the interaction term's effect is 0.019 and the 97.5% CI is 0.289, there is no zero between the CIs. Therefore, this study concludes that the moderating effect is significant and the fourth hypothesis (H4) can be accepted.

Second, to better understand the results obtained using moderator analysis, we can use slope analysis. This study visualizes the two-way interaction effect, which uses an Excel file for the binary moderator into a 2-line graph by Jeremy Dawson at link http://jeremydawson.co.uk/slopes.htm. The graph is depicted in Picture 3.



Picture 3. Two-Way Interaction Effect
Source: Developed by Using Jeremy Dawson's Excel File for Binary Moderator (2023)

Picture 3 illustrates a positive moderating effect, as evidenced by the slope. At high levels of the male moderator, the effect of DFL on DFB is stronger, while at lower levels of the male moderator, the effect of DFL on DFB is weaker. Conversely, at elevated levels of the female moderator, the impact of DFL on DFB is diminished, whereas at lower levels of the female moderator, the effect of DFL on DFB is enhanced. In accordance with the principle of line comparison, it was observed that the slope of the male line exhibited a slight degree of steeper inclination than that of the female line. In males, an increase in DFL is associated with a greater change in DFB. Nevertheless, in contrast to the situation in females, an increase in DFL does not result in a comparable alteration in DFB, as observed in males. Consequently, the findings of this study indicate that the fifth hypothesis (H5) can be accepted.

DISCUSSION

This research reveals that DFL has a significant positive influence on DFB. This result is supported by Nurkholik's (2024) statement that a good understanding of digital financial products in the era of digitalization will create wise digital financial management behavior for the millennial generation. In addition, although it does not touch on financial behavior in a digital context, the study conducted by Grohmann (2018); Rahayu et al. (2022); and Setiawan et al. (2022) states that individuals who become aware of DFL can improve their financial behavior when facing uncertainty in the future. Therefore, millennials are strongly encouraged to increase their DFL so that they have digital financial behavior that is based on the principles of priority scale and prudence.

This study also investigated the effect of DFL on DFB in two different gender groups. The results obtained are that DFL has a significant positive influence on DFB in both the male group and female groups. This is in line with studies conducted by Cupák et al. (2021) and Meyll & Pauls (2019) that gender differences do not become a barrier to a person's self-confidence in their financial literacy in behaving wisely when managing finances. Therefore, the millennial generation, both male and female, has relatively the same potential to improve DFB to become wiser and not act carelessly after mastering DFL.

These significant results are also influenced by the demographics of the respondents. Millennials, both male and female, are predominantly aged 26 to 35 and have undergraduate educational qualifications with a monthly salary of $310 to $620. Because the age range, education level, and income are not much different, they quickly understand knowledge about digital finance and often use digital financial applications to manage their finances. So that they have a good DFB and use a priority scale in determining their living needs to maintain the health of their financial condition now and in the future.

In the context of moderation, the gender variable has been proven to be significant as a moderating variable in the effect of DFL on DFB. These findings align with those of previous research conducted by Nguyen & Doan (2020), which posits that gender plays a significant role in the relationship between financial literacy and financial behavior. This is because men and women tend to have similar long-term financial objectives. It can be reasonably assumed that

gender will influence the financial behavior of the millennial generation in the future, contingent upon their level of knowledge about digital financial products. Then, slope analysis helps moderation studies become more comprehensive. Although the slopes have a similar positive upward trend, they show a slightly steeper and positive gradient in high levels of DFL for male moderators as compared to female moderators. This explains that the effect of DFL in fostering DFB is stronger in moderating males as compared to moderating females when DFL is at high levels. Chong et al. (2021) and Walczak & Pienkowska-Kamieniecka (2018) also found the same thing males more often use risky financial products and services, so male financial behavior is better than females after the gender moderation effect.

Apart from that, Hapsoro et al. (2022) and Tinghög et al. (2021) the results of gender moderation also reveal that women are less concerned with financial knowledge than men, so women's financial behavior must be improved. Even though it is supported by the demographic that there are more millennial males than millennial females, they have relatively different perspectives and needs in the long term. Therefore, it may be a priority for the male millennial generation to master DFL to maintain the quality of their own DFB and help women from now on.

CONCLUSIONS AND RECOMMENDATIONS

The objective of this research is to elucidate the role of gender as a moderator on the influence of digital financial literacy (DFL) on the digital financial behavior (DFB) of the millennial generation in Indonesia. The results of testing all the hypotheses proposed in this research were all acceptable. DFL has a significant positive influence on DFB. When separated by gender, DFL also has a significant positive influence on DFB in both the male group and female groups. In addition, this study has investigated that the gender variable has proven to be significant as a moderating variable in the effect of DFL on DFB. In more detail, moderating males are proven to be stronger than moderating females in the effect of DFL on DFB when DFL is at high levels.

Based on the results, the Indonesian millennial generation, both male and female, has relatively equal opportunities to change their DFB to become wiser when utilizing digital financial products. DFB is the key to digital financial success and health. So, it is never too late for them to learn DFL from now on to minimize financial risks in the future. Moreover, one day they are expected to be able to help and support each other when facing even difficult financial situations.

FURTHER STUDY

This research limits the discussion to the millennial generation, the coverage area is small and the moderator variables have limited types of categories. Remember, the millennial generation still really needs advanced financial advice and guidance. Therefore, future research would be better if it expanded across generations, across regions, and used categorical moderators that have 3 or more categories with the latest methods so that it would get more comprehensive study findings.

ACKNOWLEDGMENT

This research was funded by the National University through Rector's Decree Number 239 of 2023.

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