

# **A Thematic Review on Digital Financial Literacy: An Emerging Concept Post Covid-19**

Nurhazrina Mat Rahim<sup>1\*</sup>, Norli Ali<sup>2</sup>, Mohd Fairuz Adnan<sup>3</sup>, Heri Yanto<sup>4</sup> & Kiswanto<sup>5</sup>

<sup>1,2,3</sup>Faculty of Accountancy, Universiti Teknologi MARA, Cawangan Selangor, Kampus Puncak Alam, Selangor, Malaysia.

<sup>4,5</sup>Faculty of Economics, Universitas Negeri Semarang, Semarang, Indonesia.  
hazrina@uitm.edu.my  
\*Corresponding Author

<https://doi.org/10.24191/gading.v27i2.455>

*Received:* 05 February 2024

*Accepted:* 08 August 2024

*Date Published Online:* 31 October 2024

**Abstract:** Since the outbreak of Coronavirus Disease in 2019 (COVID-19), financial issues have become increasingly challenging due to the growth of digital financial products and services (DFS). Consequently, digital financial literacy (DFL), financially literate from a digital standpoint, is critical for consumers. Despite the increasing number of publications on DFL, the research that comprehensively discusses DFL and the way forward is still insufficient. Therefore, this article will review the recent literature on digital financial literacy. The thematic review has been selected as the method of study. A keyword (digital financial literacy) related to the scope of this research has been identified. In the second step, the keywords for studies in Scopus, WoS, and Science Direct were searched, and a total of 26 papers were reviewed. In carrying out a thematic review, five final themes were identified: measurement of DFL, level of DFL, determinants of DFL, DFL and financial behaviour or inclusion as well as DFL and business performance or development. This study provides an overall view of the recent study related to DFL. More importantly, even though DFL integrates financial literacy and digital literacy, this study highlights a significant disparity between the findings of DFL and traditional financial literacy. Future studies should investigate the detrimental effects of DFL on financial behaviour and find additional advantages of DFL besides enhancing business performance.

**Keywords:** COVID-19, Digital Financial Literacy (DFL), Digital Financial Products and Services (DFS), financial literacy

## **Introduction**

The COVID-19 outbreak has impacted our lives in many ways. Despite the difficulties faced such as movement control orders and slower economic growth, COVID-19 has accelerated the shift not only in teaching and learning (Yacob et al., 2023) but also in financial aspect, from traditional brick and mortar financial services to the provision of online and digital financial services. Additionally, various digital financial products and services (DFS) has been introduced to ease the financial transaction while maintaining physical distance. Hence, the massive use of digital financial products and services (DFS) necessitates the co-existence of both financial literacy and digital literacy, and this concept is known as digital financial literacy (DFL). Among the most frequently used DFS is digital payment or banking through a mobile phone and a digital wallet, also known as an e-wallet. Apart from the mushrooming of DFS, the rise of the Internet of Things (Hasan et al., 2022) and Industry 4.0 (Andreou & Anyfantaki, 2021) have also required individuals to be both digitally savvy and

financially literate. Traditional financial literacy is insufficient to navigate the complexities of today's digital world (Kumar et al., 2023; Lyons & Kass-Hanna, 2021a).

DFL is simply a concept that combines both financial and digital literacy, where the possession of these two skills enables an individual to use DFS (Zhu et al., 2022). There are a few common elements used by the previous researchers to define DFL. First, in relation to the usage of DFS, DFL refers to the knowledge, skills, and abilities needed not only to access, but also to use DFS (Kumar et al., 2023; Luo et al., 2021). Among the examples given by Lyons and Kass-Hanna (2021b) are using digital devices like smartphones, tablets, and mobile phones to carry out financial transactions online. The second element is being aware of the risk related to DFS and knowing how to safeguard oneself against that risk (Azeez & Akhtar, 2021; Kumar et al., 2023; Luo et al., 2021; Lyons & Kass-Hanna, 2021b). Additionally, Luo et al. (2021) add that DFL also encompasses knowing the rights and responsibilities of using DFS.

The importance of DFL is irrefutable. DFL is not only vital to accessing DFS, but is also a prerequisite for financial inclusion (Azeez & Akhtar, 2021). Furthermore, as claimed by George (2020), digital financial literacy can serve as a significant leapfrog to bridge the national gap between the wealthy and the poor, gender bias, and generation gap. In fact, digital financial illiteracy is considered a barrier to using and reaping the benefits of DFS (Azeez & Akhtar, 2021; Zhu et al., 2022). Hence, the aim of this paper is to do a thematic review on DFL by investigating the findings to make suggestion for future research in DFL. The following research question was formulated to serve as the basis for this paper's investigation into the topics that have been debated in the realm of digital financial literacy from the years 2020 to 2023:

1. *What is the current discussion on digital financial literacy found in the literature from 2020 to 2023?*

## Materials and Methods

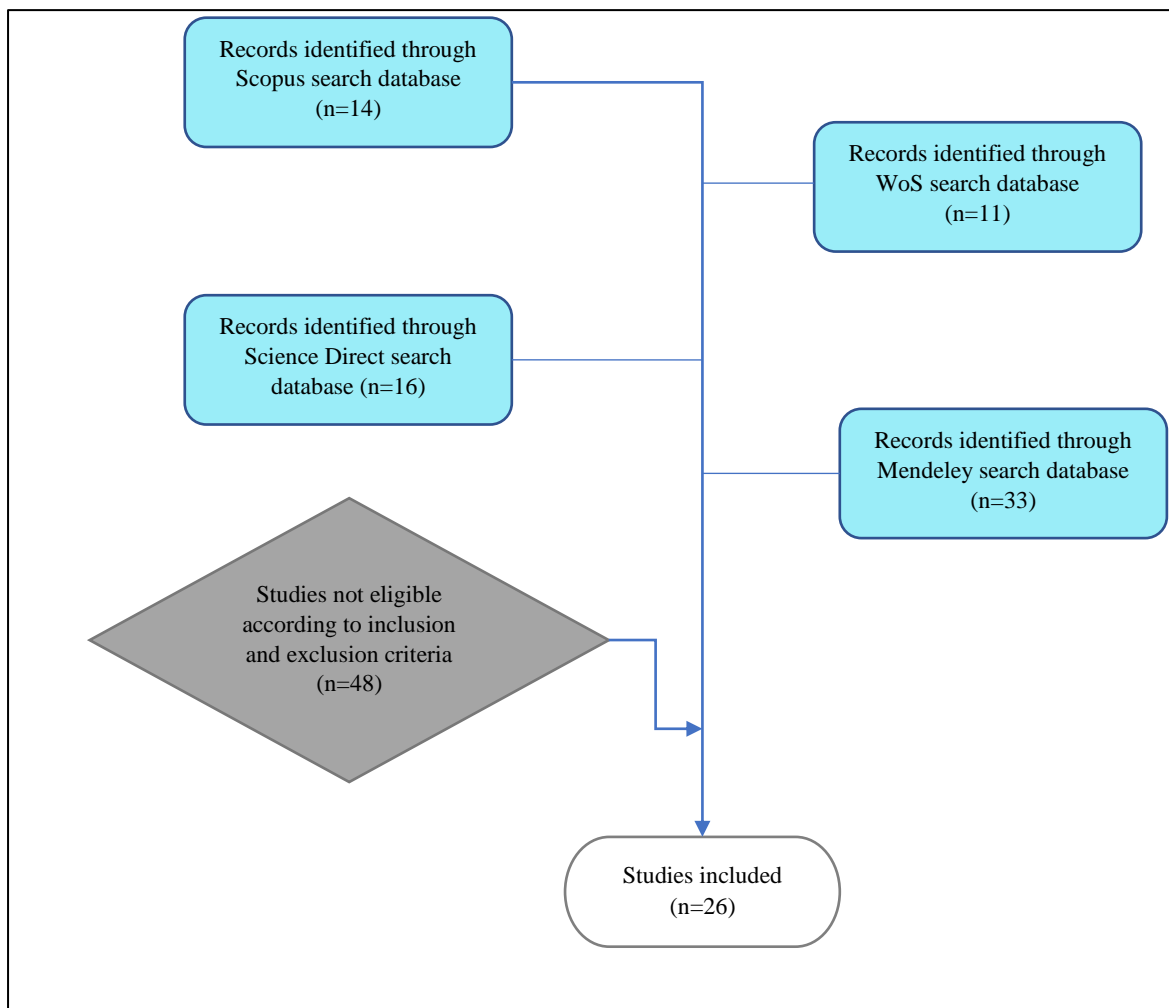
This study employs a thematic review using Atlas.ti 23, which was introduced by Zairul (2020). This method involves reviewing literature using a thematic analysis procedure. According to Clarke and Braun (2013), thematic analysis is the process of identifying patterns and constructing themes through extensive reading on the topic. The next step is to find patterns and topics related to digital financial literacy. Past studies on digital financial literacy that use thematic review are Zairul (2020), Zairul (2021) and Ahmad Shiyuti et al. (2021). The research objectives are to analyse and interpret the findings in order to make suggestions for future research in DFL. The selection of literature was performed according to several selection criteria: 1) publication from year 2020 to 2023, 2) have at least "digital financial literacy," as a keyword and 3) sources should be from a journal article or proceeding paper (see Table 1). The year 2020 was selected because the majority of DFL articles began to be published in the year 2020.

**Table 1.** Search strings from Scopus, WoS, Science Direct and Mendeley

Database	Search Strings	Results
SCOPUS	(TITLE-ABS-KEY ( "Digital Financial Literacy" ) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp")) Year: 2020 to 2023	14 results
WoS	Results for "digital financial literacy" (All Fields) and Article or Proceeding Paper (Document Types) Timespan: 2020–2023	11 results
Science Direct	Results for "digital financial literacy" Timespan: 2020–2023	16 results
Mendeley	"digital financial literacy" and Journal (Document Types) year:[2020 TO 2023]	33 results

The literature search was performed in the Scopus, WoS, Science Direct, and Mendeley databases. The initial search came up with 14 articles from SCOPUS, 11 articles from WoS, 16 articles from Science Direct, and 33 articles from Mendeley. However, some of the articles were found to be incomplete, or the full articles are not accessible, have broken links, or overlap with other articles. Therefore, the final number of articles to be reviewed was reduced to 26 articles (see Figure 1).

The articles were uploaded to Mendeley for data analysis purposes. Data processing involves removing duplicate articles, updating author's name, and verifying accurate metadata. All 26 articles were then exported from Mendeley to ATLAS.ti 23 for analysis of current trends in the literature (see Figure 2). Several bibliometric data were extracted from the list of documents, including the title of the articles, year, author, authors' country, periodical, used keyword, and subject area. The results were separated into quantitative and qualitative sections. The quantitative section reports the data derived from numerical perspectives, while the qualitative section establishes the themes derived from the selected articles.



**Fig. 1** Inclusion and exclusion criteria in the thematic review

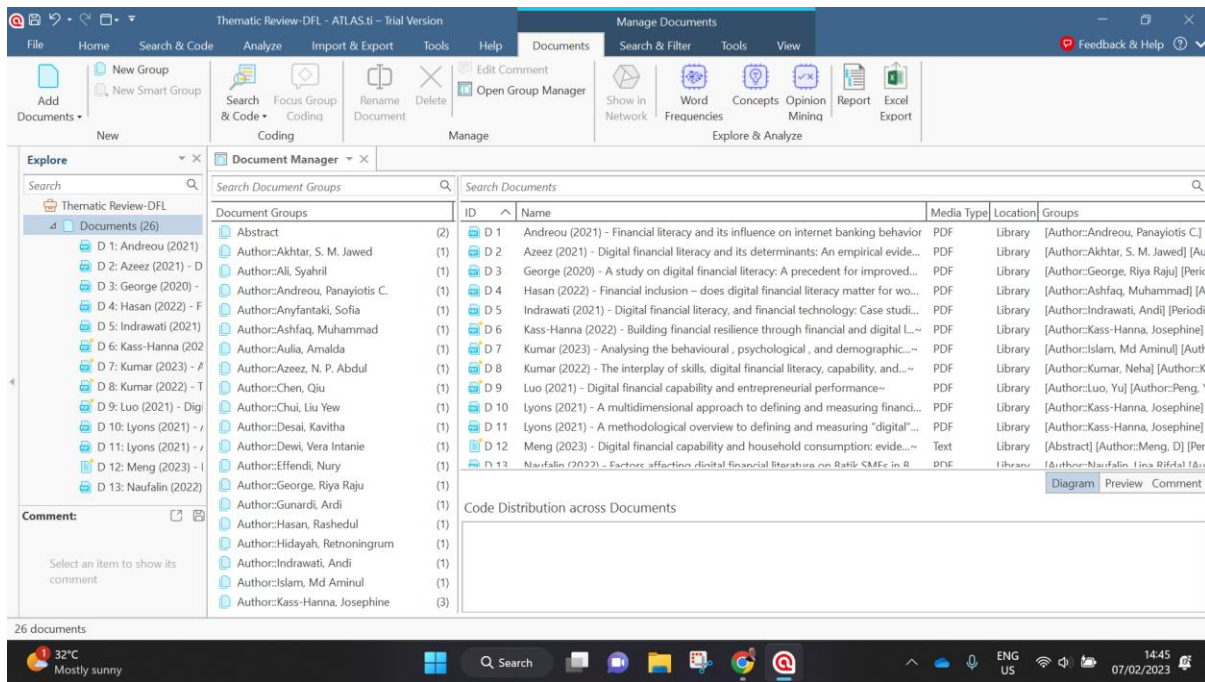


Fig. 2 Metadata generated in Atlas.ti 23.

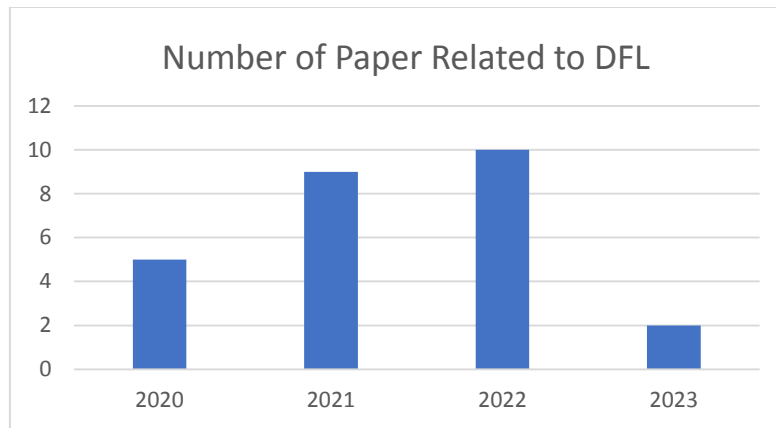
## Results and Discussion

The results are divided into two parts: (i) quantitative and (ii) qualitative. The results in the quantitative part generated the word cloud below based on the analysis of the 26 documents. The biggest three words that appear in the word cloud signify high frequency in the articles, which are 'financial', 'digital', and 'literacy'.



Fig. 3 Word cloud generated from 26 articles.

The word 'financial' was mentioned 5005 times in the word cloud analysis, followed by 'digital' at 2745 times and 'literacy' at 1012 times. In recent years, there has been an increase in the number of publications. From only five articles in 2020, the number increased annually to nine in 2021 and ten in 2022 respectively. As this article is being written in 2023, two articles have already been published.



**Fig. 4** Breakdown of papers by year of publication

*Quantitative Result*

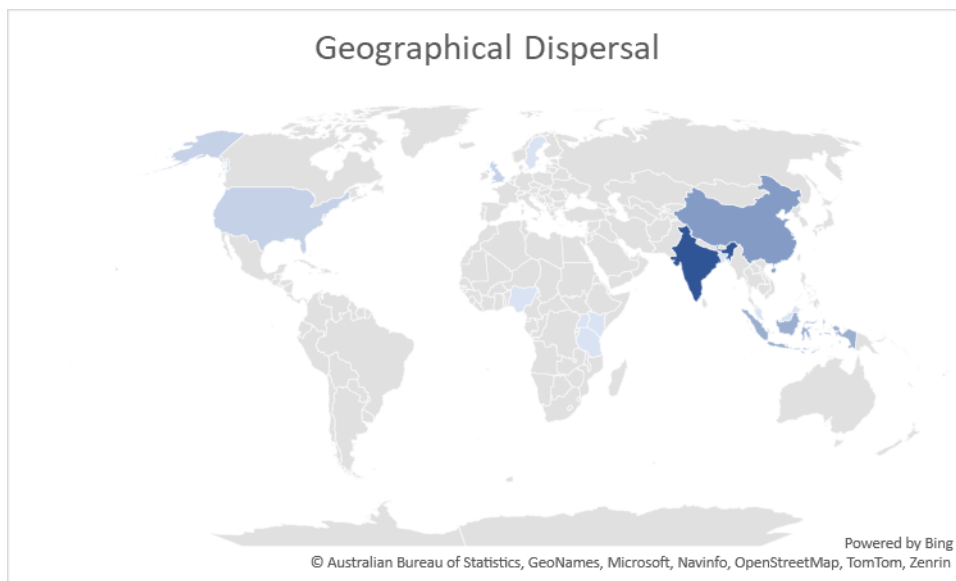
From our analysis below, there are several varieties of journals chosen by digital financial literacy researchers. As shown in Table 2, the articles related to DFL have been published in various journals, including finance journals (Finance Research Letters and International Review of Economics and Finance), economic journals (Applied Economics Letters and Economics of Innovation and New Technology), education journals (Economic Education Analysis Journal and International Journal of Education and Pedagogy), and sustainability journals (Sustainability).

**Table 2.** Articles according to periodical

	2020	2021	2022	2023
Applied Economics Letters				/
Borsa Istanbul Review			/	
Cogent Economics & Finance			/	
Economic Education Analysis Journal			/	
Economics of Innovation and New Technology	/			
Emerging Markets Review			/	
European Management Journal		/		
Finance Research Letters			/	
Financial Planning Review		/		
Heliyon				/
International Journal of Education and Pedagogy	/			
International Journal of Scientific & Technology Research	/			
International Journal of Social Economics			/	
International Review of Economics and Finance		/		
Journal of Accounting and Investment			/	
Journal of Emerging Technologies and Innovative Research	/			
Journal of Theoretical and Applied Electronic Commerce Research		/		
Jurnal Ilmu Ekonomi dan Manajemen		/		
Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial		/		

	2020	2021	2022	2023
Intelligence and Lecture Notes in Bioinformatics)				
Library Philosophy and Practice			/	
Pacific Business Review International	/			
Proceedings of the International Conference on Electronic Business (ICEB)			/	
Revista Estrategia Organizacional		/		
South Asian Journal of Social Studies and Economics		/		
Sustainability			/	
The Routledge Handbook of Financial Literacy		/		
	5	9	10	2

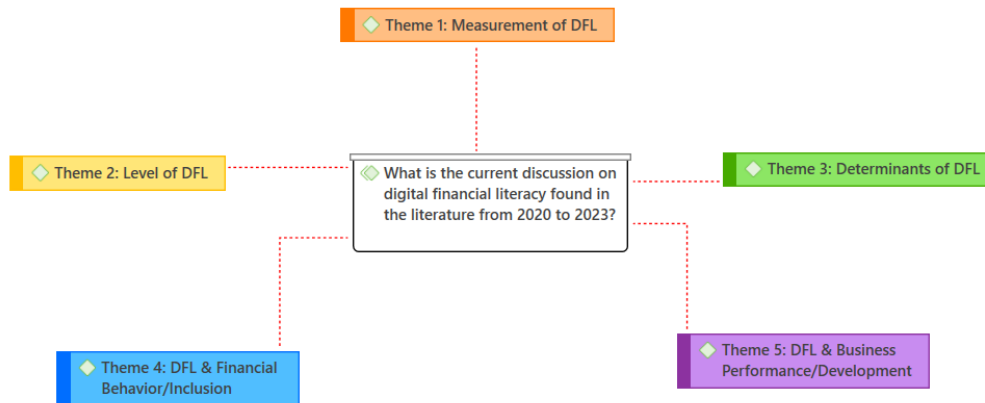
Next, in terms of geographical dispersal, DFL-related studies have become popular and are trending in India (see Figure 5). 35% (9 out of 26) of the papers conducted studies in India with different foci and respondents. There are studies that focus on examining the rate of DFL (George, 2020; Stephen, 2022), the determinants of DFL (Azeez & Akhtar, 2021; Rajdev et al., 2020; Ravikumar et al., 2022), and the implications of DFL on financial inclusion (George, 2020; Kumar et al., 2022; Tony & Desai, 2020). While Rajdev et al. (2020) focused on students, Ravikumar et al. (2022) surveyed Indian adults, and Stephen (2022) tapped on library and information science professionals. China and Indonesia have also been popular study subjects in DFL, with five and four papers, respectively.



**Fig. 5** Geographical Dispersal of DFL- related publication

### *Qualitative Results*

This paper discusses in detail the themes that were derived to answer the research question in the qualitative section. Based on the directions and subject matter of the articles, five themes were developed. The following are the themes that emerged from the chosen publications: DFL measurement (2), DFL level (5), DFL determinants (6), DFL and financial behaviour and inclusion (15), and DFL and business performance and development (2) (see Figure 6). The main themes do not exist in isolation but rather overlap between the articles presented in this review. Some articles frequently adopt multiple themes, and vice versa. The themes will be discussed separately and in greater depth in the following section to answer the research question.



**Fig. 6** Five selected themes on DFL studies

**Table 3.** Type of issues discussed in the literature

	Measurement of DFL	Level of DFL	Determinants of DFL	DFL & Financial Behavior/ Inclusion	DFL & Business Performance/ Development
Andreou & Anyfantaki (2021)				√	
Azeez & Akhtar (2021)			√		
George (2020)		√	√	√	
Hasan et al. (2022)				√	
Indrawati (2021)				√	
Kass-Hanna et al. (2022)				√	
Kumar et al. (2023)				√	
Kumar et al. (2022)				√	
Luo et al. (2021)					√
Lyons & Kass-Hanna (2021a)	√				
Lyons & Kass-Hanna (2021b)	√				
Meng (2023)				√	
Naufalin & Tohir (2022)			√		
Piaw et al. (2020)		√			
Rahayu et al. (2022)		√	√	√	
Rajdev et al. (2020)		√	√	√	
Ravikumar et al. (2022)			√		
Răzvan (2021)		√			
Setiawan et al. (2020)			√	√	
Stephen (2022)		√			
Su et al. (2021)				√	
Tian (2022)				√	
Tony & Desai (2020)				√	
Yue et al. (2022)				√	
Zhang (2021)			√		
Zhu et al. (2022)					√

Theme 1: Measurement of DFL

The first theme is the measurement of DFL. The studies by Lyons and Kass-Hanna (2021b) as well as Lyons and Kass-Hanna (2021a) present an approach to measuring DFL and capture the important elements of DFL. Referring to the definition of DFL discussed in the introduction section, DFL is a hybrid of financial literacy and digital literacy. Therefore, Lyons and Kass-Hanna (2021b) introduced five (5) core dimensions that have to be captured to measure DFL. They are: 1) basic knowledge and skills; 2) awareness (the knowing about); 3) practical know-how (the knowing how); 4) decision-making attitudes and behaviors; and 5) self-protection. More interestingly, Lyons and Kass-Hanna (2021b) combined both concepts of financial and digital literacy to come out with specific definitions of each core dimension that suit DFL concepts together with the indicators.

First, basic knowledge and skills are defined as basic financial and digital knowledge awareness, where the indicators are numeracy skills, inflation, and basic knowledge of hardware and software. Secondly, awareness means knowing about available DFS as well as positive financial attitudes and behaviours. The indicators related to this second dimension are recognising the DFS providers that are currently available, as well as the DFS's intended uses, and knowing about various positive financial behaviours such as saving and budgeting. The third dimension is defined as the ability of an individual to carry out online financial transactions, such as using online banking. Among the indicators proposed by Lyons and Kass-Hanna (2021b) are the ability to navigate the menu related to DFS, complete certain transactions, and also cancel a particular transaction.

The fourth dimension is the capacity to make sound financial decisions using DFS, reflecting attitudes and behaviours. Choosing to set money aside, saving and planning for emergencies and retirement are among the proposed indicators. The last dimension is defined as the ability to recognise and prevent DFS-related online fraud and scams. This dimension is critical in light of the recent rash of scams. Among the suggested indicators is the capability to detect and avoid DFS-related scams and frauds in order to safeguard data and financial resources. In addition, Lyons and Kass-Hanna (2021a) further examined methods for testing the validity and reliability of the indicators, such as factor analysis and the application of Cronbach's alpha. A variety of weighting strategies and their effects on determining the significance and relevance of dimensions within an overall index are also presented. The measurement proposed by Lyons and Kass-Hanna (2021b) as well as Lyons and Kass-Hanna (2021a) is comprehensive because it captures both traditional financial literacy and digital literacy.

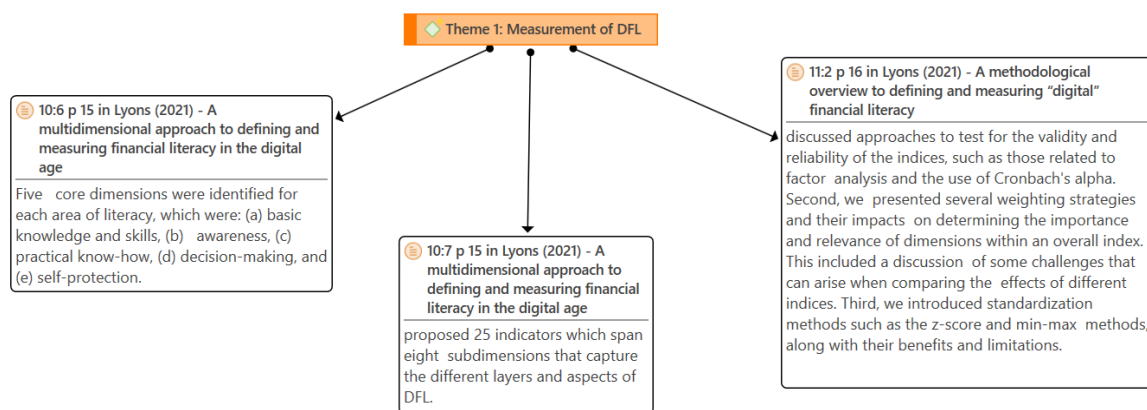


Fig. 7 A network view on measurement of DFL

Theme 2: Level of DFL

Since DFL is a new concept, various studies have attempted to examine the level or current state of DFL in different countries and continents. Among the early studies include Piaw et al. (2020) and George (2020). Piaw et al. (2020) focused on Malaysian farmers in Sarawak and found low to medium DFL scores. Meanwhile, George (2020) who focused on Indian households, reported that respondents have an understanding of immediate, basic financial concepts but are less knowledgeable

in more advanced banking, economic, and digital topics. Another study conducted in India was by Rajdev et al. (2020). However, this study surveyed the DFL level of students and reported an average DFL score among students with a median score of 57. The result is consistent with a study by Rahayu et al. (2022), who surveyed Indonesian millennials. The score is nearly identical, 3.33 out of 5, or 66% when converted to percentage. Rahayu et al. (2022) claimed that the DFL level of millennials in Indonesia was still low.

Another study conducted in India by Stephen (2022) focused on the DFL level of library and information science professionals in northeast India. The level of DFL reported is quite good, and even 33% of the respondents organised programmes to spread awareness about DFL. While previous reported studies focused on certain countries, the study by Răzvan (2021) uncovered the DFL of countries in the European Union (EU). It was reported that there are significant disparities between individual European Union member countries. For instance, the Netherlands scores above average in digital skills (79%) while Bulgaria has a low score (29%). In relation to DFS usage, 94% of Danes have experience using Internet banking, but in Bulgaria, only 12% do. Therefore, overall, the level of DFL is still at an average level in most countries in the world. Hence, there is a need for more awareness about DFL, and social media is a suitable platform, (Adnan et al., 2023).

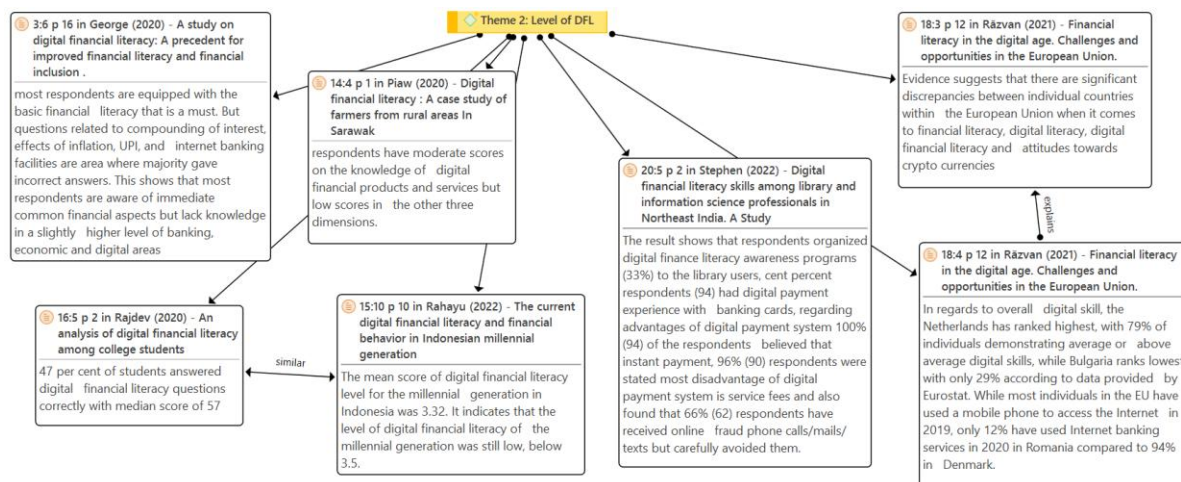


Fig. 8 A network view on level of DFL

### Theme 3: Determinants of DFL

The papers related to DFL also discuss the factors that could influence an individual's DFL level. There are various factors examined, such as age, income level, and education. An early study by George (2020) highlighted that younger people have a better DFL level due to the complexities of technology and mobile applications. This is supported by Azeez and Akhtar (2021), who also reported a negative relationship between age and DFL level. However, the study by Rajdev et al. (2020) showed contradictory results, indicating that the older a person is, the higher their DFL level.

George (2020) also asserted that in the digital world, men are typically more technically savvy, hence possess a higher DFL level. The result is consistent with the findings by Azeez and Akhtar (2021). They indicated that most women in the Aligarh District of India were illiterate. As illiteracy prevented them from participating in all aspects of life, they lacked the necessary financial experience. This includes the utilization of digital products and services. Meanwhile, Rajdev et al. (2020) did not find any significant differences between DFL in males and females.

Apart from age and gender, Setiawan et al. (2020) claimed that income and educational level are essential to having a good grasp of DFL. A higher income and educational level resulted in a higher level of DFL. This is supported by later studies by Ravikumar et al. (2022), Rahayu et al. (2022) as well as Azeez and Akhtar (2021). Azeez and Akhtar (2021) asserted that raising the standard of education in India can improve DFL. Other factors examined are occupation, landholding,

and type of ration card (Azeez & Akhtar, 2021). Nevertheless, a recent study by Naufalin and Tohir (2022) indicated that individually, none of the factors (age, education level, and income level) could influence DFL, but with a combination of these factors, they could.

Basically, in relation to the factors that determine DFL, the results are consistent with the determinants of traditional financial literacy. The only difference is related to the age factor. In traditional financial literacy, there is conclusive evidence that age has a significant positive impact on financial literacy (Ansong & Gyensare, 2012; Chen & Volpe, 1998; Hayei & Khalid, 2019; Karaa & Kuğu, 2016). This is because age is considered a proxy for financial experience. The more years a person has lived, the more financial knowledge they have acquired. Meanwhile, digital skills among the younger generation seem to be an important determinant of DFL. Elderly people frequently lack access to digital education and are left behind, making it challenging for them to improve their DFL.

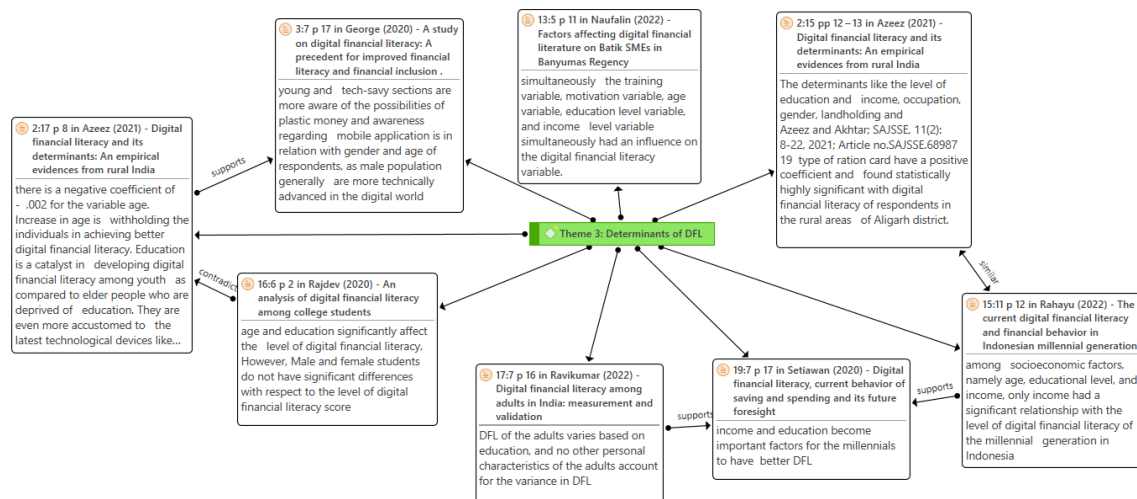


Fig. 9 A network view on determinants of DFL

#### Theme 4: DFL and Financial Behaviour/ Inclusion

Another theme related to the studies of DFL is the implications of DFL on financial behaviour or financial inclusion. A study by Setiawan et al. (2020) discovered that a higher DFL level could positively influence spending and saving behaviour. They argued that DFL is crucial for mitigating both current and future financial difficulties among millennials. This finding is supported by a later study by Rahayu et al. (2022), which also focused on Indonesian millennials. Their results indicate that DFL not only improves spending and saving behavior but also enhances investment behavior. Similarly, Andreou and Anyfantaki (2021) reported that a high DFL level is essential for better assessing the risks and benefits of financial technology-enabled products and services. Meanwhile, Kumar et al. (2022) and Su et al. (2021) explored the role of DFL as a mediator in financial decision-making and participation in the digital financial market, respectively, and both studies found significant results.

Apart from the mediating effect of DFL on financial inclusion, many researchers have also studied the direct effect of DFL on financial inclusion. Hasan et al. (2022), who focused on women entrepreneurs, argued that a high DFL would enhance financial inclusion by encouraging the entrepreneur to engage in formal banking channels. Moreover, Tony and Desai (2020) also reported a significant effect of DFL on financial inclusion (65.8%). Similar results were also reported in recent studies by Kass-Hanna et al. (2022) and Meng (2023), who further claimed that DFL could result in financial resilience and improve financial well-being. In contrast, Rajdev et al. (2020) indicated that students with high DFL are less likely to use DFS. Furthermore, there are studies that found that DFL could negatively affect financial well-being. Yue et al. (2022) asserted that a high usage of DFS results in the increased credit market participation. Hence, the risk of households getting trapped in debt also rose with easier access to credit markets. The findings were similar to those of Tian (2022), who further added that digital finance will lead to a higher household ratio. From the above

discussion, the impact of DFL on financial behaviour or financial inclusion was mixed unlike traditional financial literacy. There is conclusive evidence that traditional financial literacy could result in better financial behaviour. This might be due to the digital element of DFL, which exposed individuals to the risk of overconsumption.

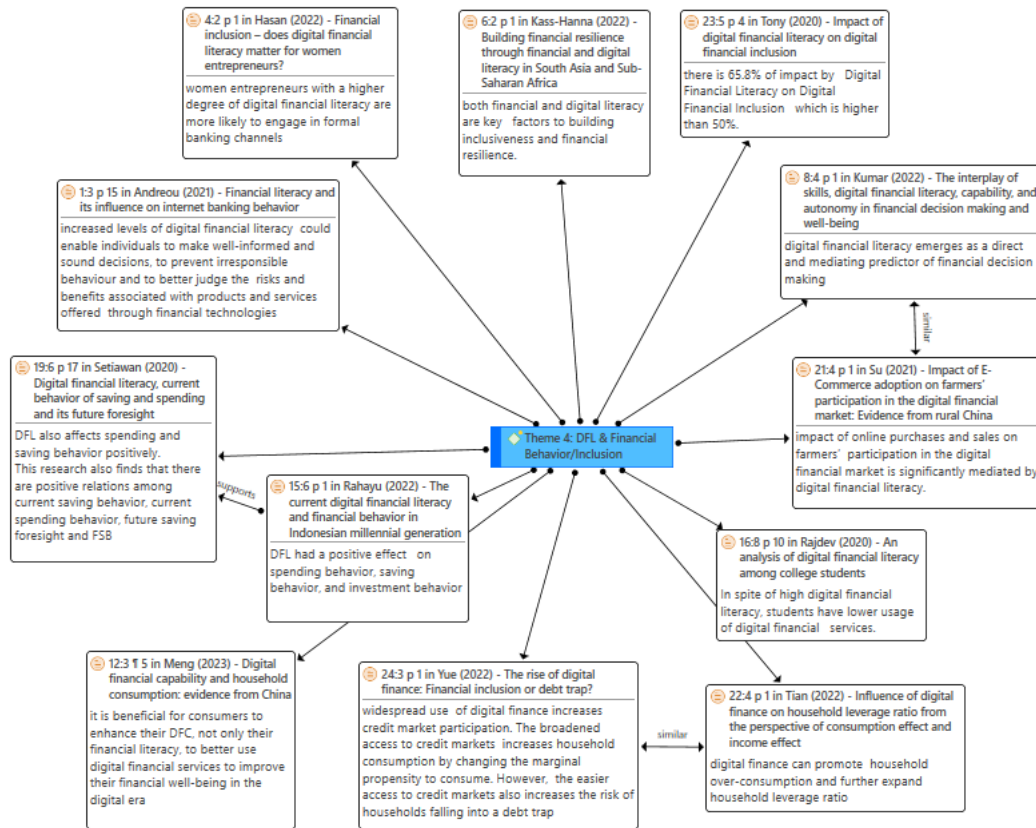
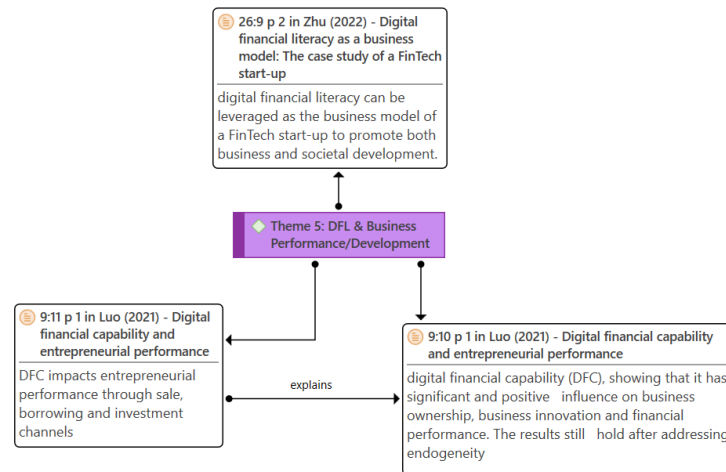


Fig. 10 A network view on DFL and financial behavior or inclusion

#### Theme 5: DFL and Business Performance/ Development

The last theme discussed in DFL literature is how DFL could have implications for business performance or development. There have been two studies (Luo et al., 2021; Zhu et al., 2022) that discussed the theme. Luo et al. (2021), focused on Chinese households and used the term “digital financial capability (DFC)”, where the definition is exactly the same as DFL. According to Luo et al. (2021), a higher DFC results in better business performance in areas such as sales, borrowing, and investment channels. Meanwhile, a later study by Zhu et al. (2022) asserted that the promotion of both business and societal development can be accomplished through the use of DFL as the basis for the business model of a FinTech start-up. As compared to traditional financial literacy, DFL has more potential to be uncovered. The possession of both financial and digital literacy has led to better business management, resulting in cost reduction and higher profit.



**Fig. 11** A network view on DFL and business performance or development

## Conclusion

Since the COVID-19 pandemic, an increasing number of people have been using digital financial products and services (DFS), which require skills beyond traditional financial literacy. These services must be supported by digital skills that enable users to conduct financial transactions online more efficiently. As a result, a new concept called "digital financial literacy" (DFL) has emerged, which combines both traditional financial literacy and digital literacy. Given that DFL is a relatively new concept, it is valuable to examine the studies and discussions related to it in recent years. This research aims to investigate the most recent studies associated with DFL. A thematic review methodology was employed, which involved applying specific selection criteria. A total of twenty-six papers were analyzed using Atlas.ti 23, and five key themes were identified

The first theme concerns the measurement of DFL, with studies proposing five dimensions that integrate financial literacy and digital literacy to assess DFL. The second theme relates to the level of DFL across various countries, and the findings indicate that the global DFL level remains at an average level. The third theme examines the determinants of DFL, revealing that age, one of the factors influencing DFL, presents an interesting contrast to traditional financial literacy, as younger individuals tend to be more digitally savvy and possess higher DFL skills. The fourth theme explores the impact of DFL on financial behavior and inclusion, with findings consistent with those from previous studies on traditional financial literacy. However, it was also discovered that DFL may have negative impacts, such as leading to higher borrowing and debt. Finally, the fifth theme highlights the potential of DFL to enhance business performance and development.

In summary, although DFL is a concept that integrates financial literacy and digital literacy, there are notable differences between traditional financial literacy and DFL. Future research should particularly focus on investigating the negative implications of DFL on financial behaviour and uncovering other potential benefits of DFL beyond its positive impact on business performance.

## Co Author Contribution

The authors confirmed that there is no conflict of interest in this article. Author 1 completed the fieldwork, analysed, interpreted the results statistically and discussed the findings. Author 2 wrote the introduction and the research methodology. Author 3 wrote the conclusion and recommendations for future research. Author 4 and 5 organized the framework and reviewed the paper.

## References

- Adnan, M. F., Rahim, N. M., & Ali, N. (2023). Determinants of Digital Financial Literacy from Students' Perspective. *Corporate Governance and Organizational Behavior Review, In Press*.
- Ahmad Shiyuti, H., Fakhrol Anwar Zainol, & Muhammad Shahrul Ifwat Ishak. (2021). Why Business Fail? A Thematic Review Analysis on SMEs. *The Journal of Management Theory and Practice (JMTP)*, June, 1–11. <https://doi.org/10.37231/jmtp.2021.2.2.98>
- Andreou, P. C., & Anyfantaki, S. (2021). Financial literacy and its influence on internet banking behavior. *European Management Journal*, 39(5), 658–674. <https://doi.org/10.1016/j.emj.2020.12.001>
- Ansong, A., & Gyensare, M. A. (2012). Determinants of University Working-Students' Financial Literacy at the University of Cape Coast, Ghana. *International Journal of Business and Management*, 7(9), 126–133. <https://doi.org/10.5539/ijbm.v7n9p126>
- Azeez, N. P. A., & Akhtar, S. M. J. (2021). Digital financial literacy and its determinants: An empirical evidences from rural India. *South Asian Journal of Social Studies and Economics*, 11(2), 8–22. <https://doi.org/10.9734/sajsse/2021/v11i230279>
- Chen, H., & Volpe, R. P. (1998). An Analysis of Personal Financial Literacy Among College Students. *Financial Service Review*, 7(2), 107–128. <https://doi.org/10.3788/CJL201643.0811001>
- Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, 26, 120–123. <https://doi.org/10.4135/9781412963909.n451>
- George, R. R. (2020). A study on digital financial literacy: A precedent for improved financial literacy and financial inclusion . *Journal of Emerging Technologies and Innovative Research*, 7(6), 1531–1547.
- Hasan, R., Ashfaq, M., Parveen, T., & Gunardi, A. (2022). Financial inclusion – does digital financial literacy matter for women entrepreneurs? *International Journal of Social Economics*. <https://doi.org/10.1108/IJSE-04-2022-0277>
- Hayei, A. A., & Khalid, H. (2019). Inculcating Financial Literacy Among Young Adults Through Trust and Experience. *International Journal of Accounting, Finance and Business (IJAFB)*, 4(18), 78–91.
- Indrawati, A. (2021). Digital financial literacy, and financial technology: Case studies of Faculty of Economics University 17 August 1945 Samarinda. *Jurnal Ilmu Ekonomi Dan Manajemen*, 12(1), 1–10.
- Karaa, I. E., & Kuğu, T. D. (2016). Determining Advanced and Basic Financial Literacy Relations and Overconfidence, and Informative Social Media Association of University Students in Turkey. *Educational Sciences: Theory & Practice*, 16(6), 1865–1891. <https://doi.org/10.12738/estp.2016.6.0415>
- Kass-Hanna, J., Lyons, A. C., & Liu, F. (2022). Building financial resilience through financial and digital literacy in South Asia and Sub-Saharan Africa. *Emerging Markets Review*, 51(PA), 100846. <https://doi.org/10.1016/j.ememar.2021.100846>
- Kumar, P., Islam, M. A., Pillai, R., & Sharif, T. (2023). Analysing the behavioural , psychological , and demographic determinants of financial decision making of household investors. *Heliyon*, 9(2), e13085. <https://doi.org/10.1016/j.heliyon.2023.e13085>
- Kumar, P., Pillai, R., Kumar, N., & Tabash, M. I. (2022). The interplay of skills, digital financial literacy, capability, and autonomy in financial decision making and well-being. *Borsa Istanbul Review, In Press*. <https://doi.org/10.1016/j.bir.2022.09.012>
- Luo, Y., Peng, Y., & Zeng, L. (2021). Digital financial capability and entrepreneurial performance. *International Review of Economics and Finance*, 76(July 2020), 55–74. <https://doi.org/10.1016/j.iref.2021.05.010>
- Lyons, A. C., & Kass-Hanna, J. (2021a). A methodological overview to defining and measuring “digital” financial literacy. *Financial Planning Review*, 4(April), 1–19. <https://doi.org/10.1002/cfp2.1113>
- Lyons, A. C., & Kass-Hanna, J. (2021b). A multidimensional approach to defining and measuring financial literacy in the digital age. *The Routledge Handbook of Financial Literacy*, 61–76. <https://doi.org/10.4324/9781003025221-7>

- Meng, D. (2023). Digital financial capability and household consumption: evidence from China. *Applied Economics Letters*. <https://doi.org/10.1080/13504851.2023.2167915>
- Naufalin, L. R., & Tohir. (2022). Factors affecting digital financial literature on Batik SMEs in Banyumas Regency. *Economic Education Analysis Journal*, 11(1), 65–76. <https://doi.org/10.15294/eeaj.v11i1.53325>
- Piaw, L. L. T., Wen, D. L. P., & Chui, L. Y. (2020). Digital financial literacy: A case study of farmers from rural areas In Sarawak. *International Journal of Education and Pedagogy*, 2(4), 245–251. <http://myjms.mohe.gov.my/index.php/ijeap>
- Rahayu, R., Ali, S., Aulia, A., & Hidayah, R. (2022). The current digital financial literacy and financial behavior in Indonesian millennial generation. *Journal of Accounting and Investment*, 23(1), 78–94. <https://doi.org/10.18196/jai.v23i1.13205>
- Rajdev, A. A., Modhvadiya, T., & Sudra, P. (2020). An analysis of digital financial literacy among college students. *Pacific Business Review International*, 13(5), 32–40. [https://doi.org/10.1016/s1057-0810\(99\)80006-7](https://doi.org/10.1016/s1057-0810(99)80006-7)
- Ravikumar, T., Suresha, B., Prakash, N., Vazirani, K., & Krishna, T. A. (2022). Digital financial literacy among adults in India: measurement and validation. *Cogent Economics & Finance*, 10(1). <https://doi.org/10.1080/23322039.2022.2132631>
- Răzvan, I. (2021). Financial literacy in the digital age. Challenges and opportunities in the European Union. *Revista Estrategia Organizacional*, 10(2), 1–16. <https://doi.org/10.22490/25392786.4958>
- Setiawan, M., Effendi, N., Santoso, T., Dewi, V. I., & Sapulette, M. S. (2020). Digital financial literacy, current behavior of saving and spending and its future foresight. *Economics of Innovation and New Technology*, 0(0), 1–19. <https://doi.org/10.1080/10438599.2020.1799142>
- Stephen, G. (2022). Digital financial literacy skills among library and information science professionals in Northeast India. A Study. *Library Philosophy and Practice*, January, 1–12. [http://ezproxy.usp.ac.fj/login?url=https://www.proquest.com/scholarly-journals/digital-financial-literacy-skills-among-library/docview/2622816918/se-2%0Ahttps://media.proquest.com/media/hms/PFT/1/JGY6M?\\_a=ChgyMDIyMDYyODA4NTk0NDU4Njo4NjY4ODgSBTg1MjE3GgpPTk](http://ezproxy.usp.ac.fj/login?url=https://www.proquest.com/scholarly-journals/digital-financial-literacy-skills-among-library/docview/2622816918/se-2%0Ahttps://media.proquest.com/media/hms/PFT/1/JGY6M?_a=ChgyMDIyMDYyODA4NTk0NDU4Njo4NjY4ODgSBTg1MjE3GgpPTk)
- Su, L., Peng, Y., Kong, R., & Chen, Q. (2021). Impact of E-Commerce adoption on farmers' participation in the digital financial market: Evidence from rural China. *Journal of Theoretical and Applied Electronic Commerce Research*, 16, 1434–1457. <https://doi.org/10.3390/land10121351>
- Tian, G. (2022). Influence of digital finance on household leverage ratio from the perspective of consumption effect and income effect. *Sustainability*, 14(23). <https://doi.org/10.3390/su142316271>
- Tony, N., & Desai, K. (2020). Impact of digital financial literacy on digital financial inclusion. *International Journal of Scientific & Technology Research*, 9(01), 1911–1915.
- Yacob, N. H. M., Fadzillah, N. S. M., Rahman, N. H. W. A., Mustafa, L. M., Jamaluddin, S., & Bahari, A. B. M. (2023). Student Perceptions in Learning Accounting through Open Distance Learning (ODL): A Case Study of UiTM Pahang Students. *GADING Journal of Social Science*, 26(Number 1, 2023), 81–88.
- Yue, P., Korkmaz, A. G., Yin, Z., & Zhou, H. (2022). The rise of digital finance: Financial inclusion or debt trap? *Finance Research Letters*, 47(April 2020), 1–8. <https://doi.org/10.1016/j.frl.2021.102604>
- Zairul, M. (2020). A Thematic Review on Student-centred Learning in the Studio Education. *Journal of Critical Reviews*, 7(2), 504–511. <https://doi.org/10.31838/jcr.07.02.95>
- Zairul, M. (2021). The recent trends on prefabricated buildings with circular economy (CE) approach. *Cleaner Engineering and Technology*, 4. <https://doi.org/10.1016/j.clet.2021.100239>
- Zhang, Y. (2021). The design of a mobile App to promote young people's digital financial literacy. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 12781 LNCS, 118–136. [https://doi.org/10.1007/978-3-030-78227-6\\_10](https://doi.org/10.1007/978-3-030-78227-6_10)
- Zhu, R., Paul, S., & Muck, I. (2022). Digital financial literacy as a business model: The case study of a FinTech start-up. *Proceedings of the International Conference on Electronic Business (ICEB)*, 22, 633–636.