Bibliometric Analysis of the Relationship between Attitude and Behavior in Financial Technology among Generation Z

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Abstract: -The objective of this research is to conduct a comprehensive analysis of scientific articles pertaining to financial technology, financial attitude, and financial behavior research on an international scale. The analysis encompasses various aspects, including thematic focus, geographical distribution, and the subjects of study. To achieve this, a bibliometric analysis was conducted, examining 109 articles sourced from the Google Scholars database covering the period from 2018 to 2023. The VOS viewer software version 1.6.19 was utilized for this purpose.

The findings of this study reveal that the number of publications related to financial literacy, as indexed by Google Scholars, has exhibited fluctuating trends over the past six years. Notably, there has been a consistent increase in the number of publications each year. The highest level of publication activity was observed in 2021, with a total of 93 articles, while the lowest level was recorded in 2023, with only 19 articles. These findings indicate a sustained interest in the topics of financial technology, financial attitude, and financial behavior among researchers worldwide.

Based on the results, it is recommended that future research in this domain consider utilizing keywords such as financial knowledge, e-wallet, money attitude, and financial literacy. These keywords can serve as a valuable foundation for further exploration and investigation in the field.

Keywords:- Financial Technology, Financial Attitude, Financial Behavior, Bibliometric.

I. INTRODUCTION

In the current era, characterized by the industrial revolution 4.0 and the social revolution at level 5.0, technological advancements have significantly impacted various sectors including education, administration, bureaucracy, and the economy. The pervasive influence of technology necessitates individuals to fully embrace digital and information technology. One notable technological development in the financial domain is financial technology, commonly known as fintech, which facilitates financial transactions through digitization. Fintech refers to the application of technology in financial aspects (Jalal et al., 2023). It encompasses a range of financial services that utilize technology to facilitate customers in achieving their financial objectives (Abu Daqar et al., 2020).

The consumptive mindset contributes to the advancement of technology in Indonesia, as evident in the growing sophistication of financial technology. Referred to as fintech, this innovative approach enhances the convenience of buying, selling, and payment transactions. According to Ardhana and Linda's research (2023), e-commerce transactions in Indonesia have already reached Rp42.2 trillion by October 2023. This figure is projected to rise continuously in tandem with the increasing number of gadget users who have internet access. The internet has become an indispensable aspect of the lives of Indonesians of all age groups, including millennials and generation Z(Ardhana & Linda, 2023).

Some examples of cutting-edge financial technology products include digital wallets like Flip, Link Aja, OVO, Shopeepay, m-banking, Gopay, Dana, e-toll, and credivo. According to Ardhana and Linda's study (2023), the generational classifications are as follows: Generation Z refers to individuals born between 1997 and 2012, millennials encompass those born between 1980 and 2000, generation X covers the period from 1960 to 1980, and baby boomers were born between 1946 and 1960. Each generation exhibits distinct financial behaviors. For instance, generation Z adheres to the unique principles of "you only live once" (YOLO) and "fear of missing out" (FOMO). These principles serve as motivation for engaging in meaningful experiences, recognizing the transient nature of life.

Moreover, the financial behavior of individuals is greatly influenced by their financial mindset. Financial mindset, being a crucial factor alongside financial knowledge, determines how individuals make financial decisions based on their beliefs, evaluations, and overall perception of money matters. Frequently, individuals struggle to differentiate between their wants and needs. To cultivate responsible financial management practices, it is imperative to foster a positive financial mindset (Utami & Isbanah, 2023). Additionally, adopting a favorable financial mindset involves prioritizing savings over unnecessary expenditures or indulging in purchases that are not essential. (Kadoya, 2020).

II. LITERATURE REVIEW

A. Financial Technology

Article 1, paragraph 1 of Bank Indonesia Regulation Number 19/12/PBI/2017 concerning financial technology (fintech) emphasizes the utilization of technology within the financial industry to generate novel products, services,

technology, and business models. Furthermore, it highlights the potential influence of fintech on monetary stability, financial system stability, efficiency, security, accuracy, and payment system management. Consequently, it is widely anticipated by both the public and the government that the fintech sector will expand, leading to an increased accessibility and utilization of these services (Sari et al., 2022).

B. Financial Attitude

Financial attitude refers to an individual's disposition towards handling financial matters, encompassing their thoughts, emotions, and beliefs in relation to financial problems. It serves as a determinant of one's inclination towards effectively managing their finances. Additionally, financial attitude encompasses an individual's mindset, perspectives, and evaluations regarding monetary matters(Renaldo et al., 2020). A positive correlation is observed between financial behavior and a higher level of financial attitude, indicating an increased awareness and responsibility towards financial management(Hafni et al., 2020). Consequently, individuals with a more favorable financial attitude are inclined to make better-informed decisions.

C. Financial Behavior

Financial behavior refers to the way individuals handle their finances, encompassing aspects such as financial planning, decision-making, and management. It can be categorized into two forms: positive and negative. Positive financial behavior entails effective cash management, setting aside savings for unforeseen circumstances, practicing responsible credit management, and strategizing for long-term financial goals. On the other hand, negative financial behaviors include wasteful spending habits, over-reliance on employer retirement plans, and avoiding discussions about financial matters(Pranata et al., 2020). To enhance financial management and achieve better control, indicators such as budget management, skillful handling of cash inflows, investment strategies, long-term savings, and making purchases based on genuine needs should be taken into consideration (Elicia & Widjaja, 2021).

III. METHODS

This study is part of a quantitative descriptive research approach, aiming to elucidate the progression of research publications sourced from the Google Scholars database. The analysis was conducted using the Publish or Perish software, employing bibliometric techniques. To ensure comprehensive article collection, a combination of keywords such as "financial technology," "financial attitude," and "financial behavior" was utilized. The search was limited to publications between 2018 and 2023, considering a temporal constraint. It is worth noting that the Google Scholars database encompasses a vast majority of global journal publications (Hafidh et al., 2023).

Following the retrieval of a substantial number of articles, a systematic filtering process was implemented to identify the most pertinent ones. The primary criterion for filtering was the direct relevance of each study to the central theme. The process of identifying, analyzing, and selecting articles from Google Scholar is visually represented in the graphic visualization presented below. In the selection phase, the author meticulously identified 109 articles deemed suitable as research reference sources.
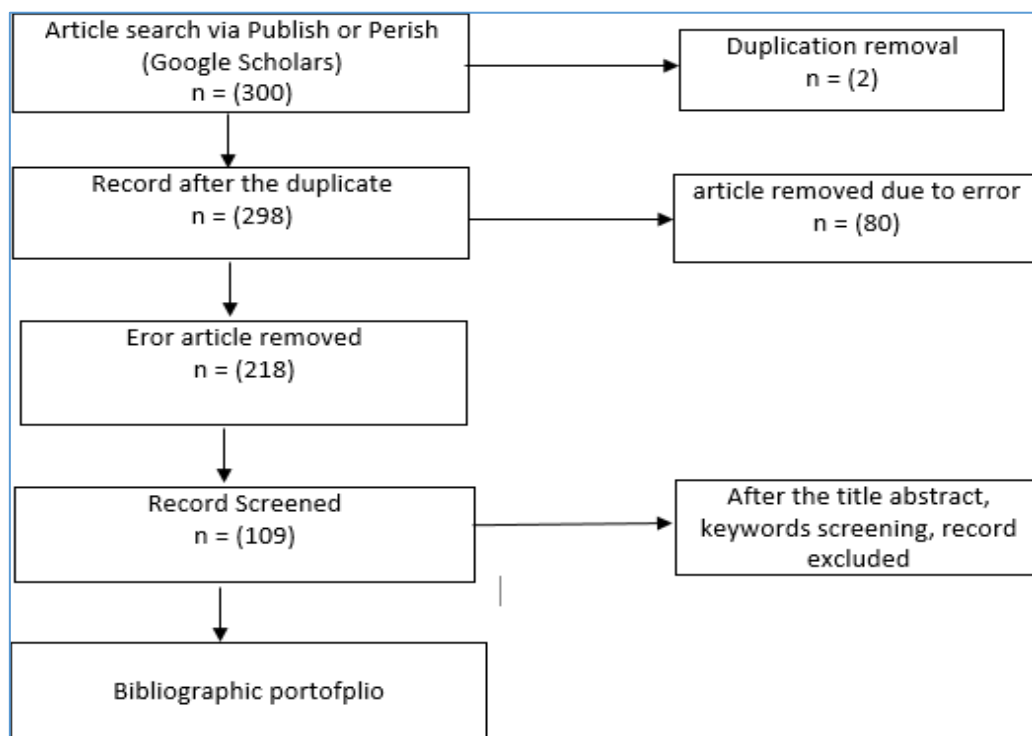

Fig. 1: Data Selection Process

Moreover, the information is stored in the form of RIS (Research Information Systems Citation File) in order to visualize the correlation of scientific article analysis using bibliometric methods through the useful application Vosviewer(Zakiyyah et al., 2022). There are three approaches to illustrate the relationship between bibliometrics: network visualization, overlay visualization, and density visualization. Network visualization portrays the association between research terms, while overlay visualization depicts the historical progression based on publication years. Density visualization, on the other hand, focuses on groups. Interpreting map visualization relies on three key features: circle size, distance, and color. A smaller distance between two authors signifies a closer bond, while a larger circle size suggests a higher frequency of authorship. Furthermore, authors with the same color indicate a connection (Maulana et al., 2021). Lastly, the author will ensure that the downloaded data from the database consists of scientific articles or publications that can be processed and analyzed without requiring special permission, and are publicly available.

IV. RESULTS AND DISCUSSION

A. Development of Research Publications

The findings from scholarly research articles indexed in Google Scholar using the Publish or Perish (PoP) application yielded a total of 300 articles.
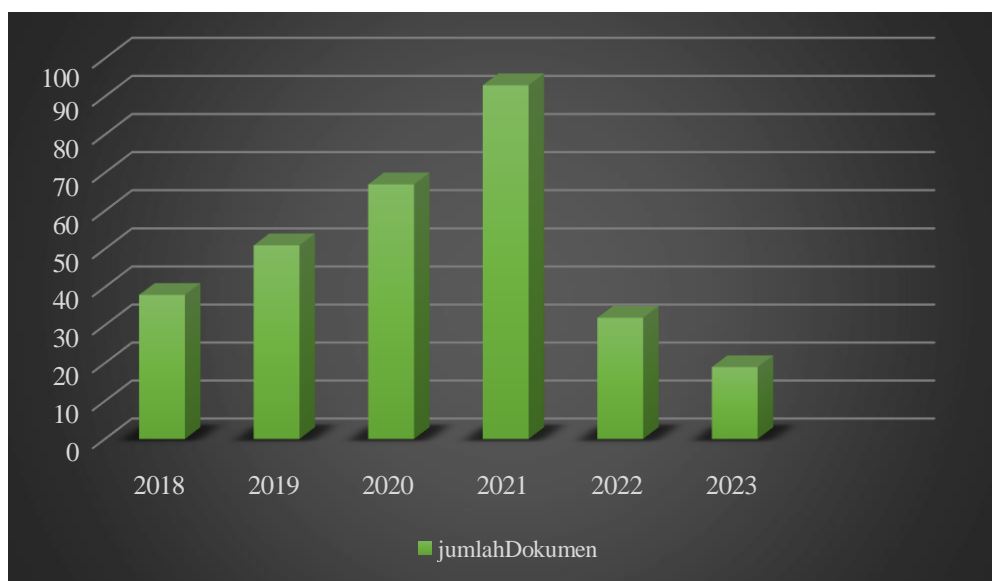

Fig. 2: Number of documents in 2018-2023

Table 1 reveals that over a six-year period from 2018 to 2023, research in the domains of financial technology, financial attitude, and financial behavior exhibited fluctuations and growth. The highest number of articles was recorded in 2021, totaling 93 articles, whereas the lowest number was observed in 2023, amounting to 19 articles. Despite the annual fluctuations, the consistent development of research in financial technology, financial attitude, and financial behavior substantiates the enduring interest and relevance of these topics among researchers.

B. Top Articles

Table 1 showcases select research studies conducted by Abu Daqar et al. (2020) that explored the perceptions of Millennials and Gen Z regarding Fintech services, their intentions to use such services, and their financial behaviors. The findings of this study bear relevance to Generation Z's financial behavior in relation to the adoption of financial technology. Additionally, (Widiastuti, 2021) conducted an in-depth examination of the millennial generation, highlighting the inseparable role of technology, including in the realm of finance. The advent of innovative technology-driven financial services, such as Fintech, has provided individuals, including students, with the flexibility to fulfill their needs. For instance, the utilization of e-wallets has made financial transactions significantly easier and more convenient for Generation Z.

The bibliometric analysis reveals a discernible trend indicating a correlation between financial technology, financial attitude, and the financial behavior of Generation Z. This correlation is supported by (Setiawan et al., 2021), who found that user innovation influences the adoption of Fintech in Indonesia, with financial attitude emerging as the most pivotal factor in its utilization. Moreover, Renaldo et al. (2020) assert that Generation Z must cultivate independence and self-confidence to accomplish their aspirations, including the development of financial attitudes, investment behaviors, and financial knowledge. Accordingly, it is imperative for Generation Z to receive character education, foster a more mature thought process, and nurture their independence when addressing economic challenges.

Table 1: Most Cited Articles

Citation	Author	Title	Year
488	Daniel Belanche, Luis V. Casaló, Carlos Flavián	Artificial Intelligence in FinTech: understanding robo-advisors adoption among customers	2019
468	Zhongqing Hu, Shuai Ding, Shizheng Li, Luting Chen, Shanlin Yang	Adoption Intention of Fintech Services for Bank Users: An Empirical Examination with an Extended Technology Acceptance Mode	2019
311	Kamini Rai, Shikha Dua, Miklesh Yadav	Association of Financial Attitude, Financial Behavior and Financial Knowledge Towards Financial Literacy: A Structural Equation Modeling Approach	2019
265	Karina Gabrielova, Aaron A. Buchko	Here comes Generation Z: Millennials as managers	2021
235	Cătălin Mihail Barbu, Dorian Laurenţiu Florea, Cristian Dabija, Mihai Constantin Razvan Barbu.	Customer Experience in Fintech	2021
234	T. Manish, T. Shalini, K. Puneet, T. Naliniprava, D. Amandeep	Has financial attitude impacted the trading activity of retail investors during the COVID-19 pandemic?	2021
215	B. Susanne, D. Menno, J. Marianne, H. Pieter, C. Janina	Putting the privacy paradox to the test: Online privacy and security behaviors among users with technical knowledge, privacy awareness, and financial resources	2019
211	S. Shubhangi, M. Marshal, K. Raj	What drives FinTech adoption? A multi-method evaluation using an adapted technology acceptance model	2020
196	R.S. Ryan, B. Indra, P. Betty	Challenges and Trends of Financial Technology (Fintech): A Systematic Literature Review	2020
100	D. Vera, F. Erie, E. Nury, A. Mokhamad	Financial Literacy among the Millennial Generation: Relationships between Knowledge, Skills, Attitude, and Behavior	2020
74	Abu Daqar et al.	Fintech in the eyes of Millennials and Generation Z (the financial behavior and Fintech perception)	2020
65	R. Nicholas et al.	The Improvement Of Generation Z Financial Well-Being In Pekanbaru	2010

C. Research Topic Areas Using VOS viewer

The data obtained from Publish and Perish was subsequently examined using a visualization tool known as VOSviewer, employing a co-occurrence approach that relies on textual information. The information is presented visually to illustrate the frequency of words that appear together in research papers. The visual representation generated by VOSviewer includes dots that represent specific keywords derived from the literature. These dots are connected by lines or displayed in varying colors to indicate particular relationships or meanings. The visualization outcomes produced by VOSviewer encompass three distinct types of displays, namely network visualization, overlay visualization, and density visualization.

Subsequently, the data was analyzed by utilizing the "create a map based on text data" option to establish a network or relationship based on textual information. The minimum occurrence threshold for a term was set at four documents, yielding a total of 74 documents with corresponding occurrences.

Fig. 3: Network visualization on co-occurrence

Figure 7 presents an analysis of research innovation through the examination of keywords used within a specific timeframe. Notable research topics that emerged from this analysis include "Financial Technology," "Financial Attitude," and "Financial Behavior." The author employed these keywords a total of 186 times. The analysis further categorized these keywords into 5 distinct clusters. In Cluster 1, the keywords encompassed "Financial Technology," "UTAUT," "E-Wallet," "Behavior Intention," "Technology Acceptance Model," and "Subjective Norm."

Moving on to Cluster 2, the keywords consisted of "Financial Literacy," "Millennial Generation Financial Education," "Behavior," and "Relationship." Cluster 3 encompassed keywords like "Millennial," "Generation X," "Gen Z," "Customer," "Financial Service," "Money Attitude," and "Financial Advice." Finally, Cluster 4 comprised keywords such as "Financial Behavior," "Financial Risk Attitude," "Financial Decision," and "Knowledge."
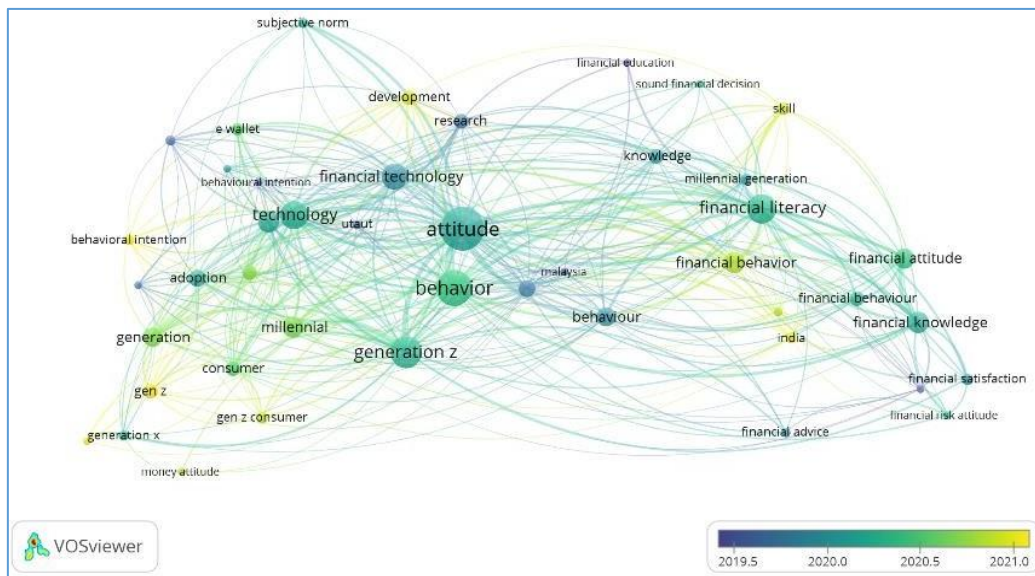
Fig. 4: Overlay network on co-occurrence

Figure 4 provides a visual representation that highlights the advancements in research by analyzing the keywords utilized within a specific time frame. Noteworthy research topics, such as "Financial Technology," "Financial Attitude," and "Financial Behavior," are observed. "Financial Technology" refers to the utilization of technology-based financial services that offer quick and convenient solutions. "Financial Attitude" pertains to an individual's mindset, thoughts, and judgments regarding money. On the other hand, "Financial Behavior" encompasses the actions and strategies employed by individuals when managing their finances.

Within the visualization, the yellowish hue indicates keywords that have recently garnered interest. This suggests that education and technology are domains that continue to attract attention and foster innovation. The presence of this color implies the ongoing evolution of research in these areas, presenting significant opportunities for further exploration.
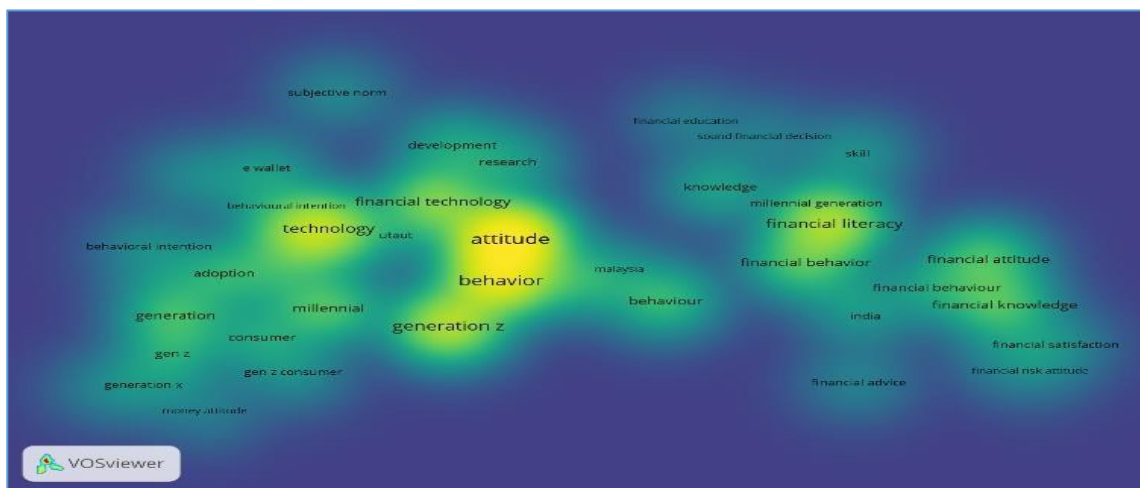

Fig. 5: Density network on co-occurrence

Within Figure 5, the density visualization showcases the presence of a yellow color, representing extensively researched topics that have been indexed by Google Scholar. These topics include behavior, technology, and attitude. Conversely, the faded green nodes, characterized by their smaller size, indicate areas that have yet to receive substantial research attention. This indicates an opportunity for further investigation in these specific topics, such as financial knowledge, e-wallet, money attitude, and financial literacy.

V. CONCLUSIONS AND SUGGESTIONS

The utilization of bibliometrics through the Vosviewer application, employing network visualization, overlay, and density techniques, reveals a fluctuating pattern in the development of research publications from 2018 to 2023. A total of 109 articles, filtered and indexed by Google Scholar, were identified. The highest number of publications was recorded in 2021, totaling 93 articles, while the lowest occurred in 2023 with only 19 articles. Further investigations in this field could explore keywords such as financial knowledge, e-wallet, money attitude, and financial literacy. It is important to note that the findings of this study are limited to the available data, and future research endeavors should aim to expand and advance the understanding of this topic. Additionally, the inclusion of other databases such as Web of Science, Scopus, Crossref, Pubmed, Dimensions API, among others, can yield more comprehensive results. Furthermore, the utilization of other bibliometric tools like Gephi and Bib Excel can enhance the quality of visualizations, thus contributing to a more thorough analysis.

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