Enjoy Now, Worry Later: The Rise of Buy Now Pay Later (BNPL) as a Financial Innovation or an Avenue to Debt? A Systematic and Bibliometric Analysis

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ABSTRACT

This study aims to investigate the dual role of Buy Now, Pay Later (BNPL) services, examining them as both a financial ally and a potential debt trap for users. The impact of BNPL on its users is comprehensively explored utilizing two methodological approaches, namely bibliometric analysis and systematic literature review (SLR). The bibliometric analysis, based on 108 papers extracted from Scopus, provides an overview of current trends and the state of research in this field. Meanwhile, the SLR, drawing on 19 documents from Scopus and ScienceDirect, delves deeper into the mechanisms and implications of BNPL tools. The study focuses on three major themes: BNPL as a financial ally, its potential to become a debt trap, and its predominant use among the younger generation. The findings are expected to inform financial service providers, policymakers, and regulators about the benefits and risks of BNPL users, highlighting the need for balanced approaches to maximize its advantages while mitigating its pitfalls.

Keywords: BNPL, Ally, Trap, Across-Countries, SLR, Bibliometric

1. INTRODUCTION

The usage of Buy Now, Pay Later (BNPL) as a modern e-commerce platform has grown tremendously in recent years, with a forecasted US$1 trillion global expenditure by 2025 [1]. In ASEAN, 58% of the daily expenditures of China's population are

facilitated through third-party payment platforms such as Alipay, which boasts over 900 million users, including those utilizing BNPL. In Malaysia, there were 77.3 million BNPL transactions totaling RM6.2 billion (US$1.38 billion) from 2023 to 2024, involving 3.7 million account holders. Most of these account holders were young working adults aged between 21 and 45 years, who accounted for approximately 91% of BNPL users. The statistics from TheEdge.com indicate that 25% of users hailed from the northern states of Kedah, Kelantan, Terengganu, and Perlis, and approximately 20% of new users were from East Malaysia.

BNPL, which offers convenient tools and flexibility for shopping [2], is a type of personal lending [3]. As a financial service, BNPL enables users to purchase goods for which payments can be delayed and made in instalments, thus providing a user-friendly alternative as compared to traditional banking and payment systems [4]. This new credit service platform enables payments to be made using mobile applications, whether online or at the retail outlet [5]. Some advocates also argue that BNPL is a proactive budgeting tool for consumers, enabling them to retain cash for unforeseen expenses. It helps to increase spending power temporarily [6], providing better outcomes than credit cards [7].

There are several pay-later services available in the market. In Malaysia, there are Atome, GrabPayLater, ShopeePayLater, Hoolah, Split, Pace, Billplz, and FavePay. In the United States (US) and Australia, there are Affirm and InAfter, respectively. China has Ant and Tencent. Sweden has Klarna. In Saudi Arabia, there are Tamara, Tabby, Spotti, Postpay, and Telr. In the United Kingdom (UK), there are Klarna, Clearpay, Laybuy, PayPal in 3, and Apple Pay Later. These services typically allow users to split payments into three or four instalments over a few weeks or months. Each service may be associated with different terms, such as interest rates, late fees, or specific partner merchants. BNPL services enable shoppers to spread their payments over several weeks or months, typically without interest if the balance is paid on time. This flexible payment option has seen rapid growth in markets worldwide, where an increasing number of consumers, especially the younger generations, are turning to BNPL to manage their spending, particularly during crises such as the COVID-19 pandemic [3]. BNPL is also described as a "lender of the last resort" [8]. For some users, BNPL has served as a crucial financial tool for managing sudden and unexpected expenses, such as car repairs or emergencies [9]. While BNPL services are deemed as a modern means for attaining financial flexibility, they also raise important concerns regarding potential risks, such as quickly becoming a debt trap, including the possibility of falling into a debt spiral due to the high borrowing costs [10], overconsumption [11], and compulsive spending, which may lead to unhealthy financial behavior [2]. Thus, the rapid rise of BNPL has prompted discussions about the balance between financial empowerment and the risk of debt accumulation.

This study comprehensively reviews the performance of BNPL services using two distinct analytical approaches, namely bibliometric and SLR, to evaluate both their benefits as financial allies and the risks that could turn them into a potential debt trap

for users. The findings are expected to provide insights to financial service providers, policymakers, and regulators regarding the benefits and risks associated with BNPL users. Furthermore, the study contributes to the broader discussion on responsible financial management and consumer protection in the digital economy. The paper is structured as follows. First, this paper describes the research methods used: 1) bibliometric analysis and 2) SLR. The outcomes are then discussed. Finally, the paper concludes with the potential avenues for further research.

2. METHODOLOGY

This study employed a bibliometric analysis and SLR to examine the dual role of BNPL services as a financial ally and a potential debt trap. First, the bibliometric analysis was conducted. This analysis outlines the current trends and the state of research on BNPL. The analysis entailed (1) data collection by extracting data from Scopus, a comprehensive academic database, resulting in a collection of 108 articles or publications related to BNPL; (2) data cleaning and harmonization, where duplicate records were identified and resolved to ensure data accuracy, and articles that fell outside the scope of the study were excluded to maintain relevance; and (3) analysis using the bibliometric analysis software, biblioMagika, developed by Aidi Ahmi [12]. This software facilitated the visualization of trends, citation networks, and thematic clusters, as illustrated in Figure 1. Next is the search strategy flow diagram, which describes the whole process of data exclusion and inclusion of the study being recorded, as shown in Figure 2.

The second methodology is the SLR, which provides an in-depth understanding of BNPL's benefits and risks by synthesizing evidence from existing studies. The process adhered to established SLR protocols, as defined by Muller et al. [13] and Lagorio et al. [14]. It followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework. The SLR was conducted in four steps. The first step, resource selection, entailed sourcing articles from two reputable academic databases, namely, Scopus and ScienceDirect. In the second step, specific eligibility and exclusion criteria were applied to ensure the relevancy of the chosen studies to the research questions; articles were screened based on their focus on BNPL's dual role as a financial tool and a potential debt trap. In the third step, a review process guided by the PRISMA framework was conducted. This step involved three key stages: (i) identification, encompassing initial search and retrieval of articles; (ii) screening, which involved filtering articles based on the titles, abstracts, and relevance; and (iii) eligibility, which entailed the final selection of articles that met the inclusion criteria. Finally, the fourth step was data abstraction and analysis, where key themes, patterns, and insights were identified through careful analysis of systematically extracted data from the selected articles. The review's process flow is outlined in Figure 2. Both methodologies focused on three major themes: (1) BNPL as a financial ally, (2) BNPL as a debt trap, and (3) BNPL and the younger generation, specifically the

disproportionate use of BNPL by younger users and its implications for financial behavior and literacy.

Figure 1. The biblioMagika® Software by Aidi Ahmi [12]
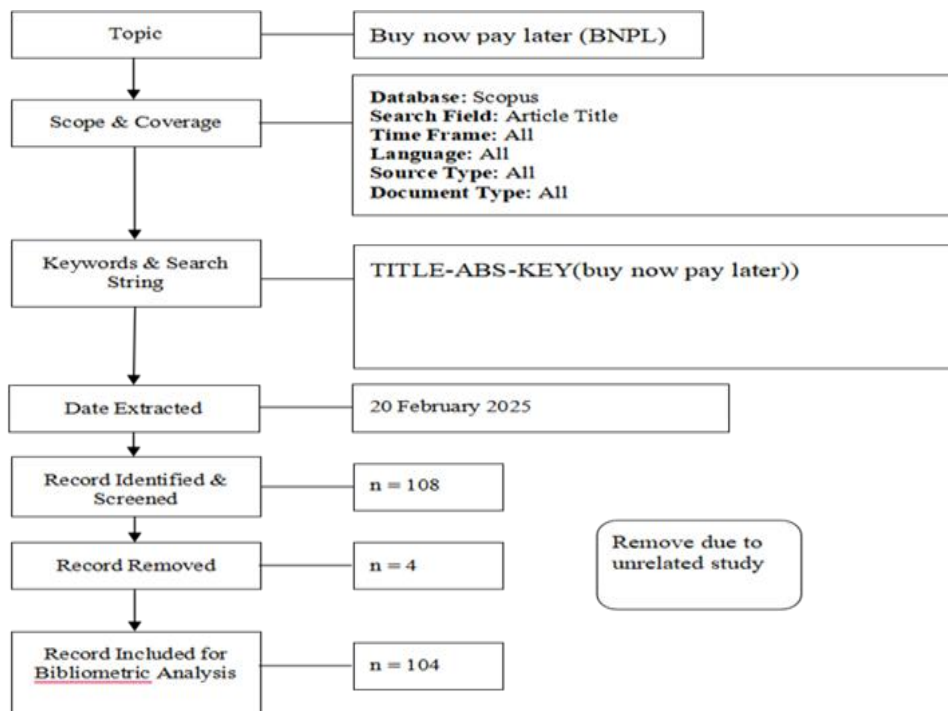
Figure 2. Search strategy flow diagram. Sources: Zakaria et al. [15] and Moher et al. [16]

2.1 Recent Developments in the Field of Study

The distribution of the documents by type is presented in Table 1. Journal articles constitute the majority (72.22%) of the documents, followed by conference papers (13.89%) and book chapters (5.56%). Other document types, such as reviews (3.70%), data papers (0.93%), and editorials (0.93%), contribute marginally to the overall dataset. The dominance of journal articles suggests a strong preference for peer-reviewed scholarly dissemination in this field of research.

Table 1. Types of documents

Document Type	TP	%
Article	78	72.22%
Conference Paper	15	13.89%
Book Chapter	6	5.56%
Review	4	3.70%
Data Paper	1	0.93%
Editorial	1	0.93%
Erratum	1	0.93%
Note	1	0.93%
Short Survey	1	0.93%

The distribution of the publications by source type is presented in Table 2. Journals constitute the predominant source (78.70%), indicating a strong preference for peer-reviewed journal articles in the field. Conference proceedings, which account for 13.89% of the total, highlight the role of academic conferences in disseminating research findings. Books (4.63%) and book series (0.93%) contribute a smaller share, suggesting that monographs and edited volumes are less frequently used. The presence of trade journals (1.85%) reflects some industry-oriented dissemination, though it remains minimal compared to academic journals. This distribution underscores journals as the predominant medium for academic communication.

Table 2. Types of sources

Source Type	TP	%
Journal	85	78.70%
Conference Proceeding	15	13.89%
Book	5	4.63%
Trade Journal	2	1.85%
Book Series	1	0.93%

Table 3 outlines the language distribution of the publications in the dataset, revealing a high concentration of English-language publications. The table shows that 98.15% of the total publications (106 out of 108) are written in English, while Hungarian and Polish each account for only 0.93% of the publications (1 out of 108).

Table 3. Language

Language	TP	%
English	106	98.15%
Hungarian	1	0.93%
Polish	1	0.93%

Table 4. Subject area

Subject Area	TP	%
Business, Management, and Accounting	43	39.81%
Social Sciences	35	32.41%
Economics, Econometrics, and Finance	30	27.78%
Computer Science	28	25.93%
Decision Sciences	14	12.96%
Engineering	12	11.11%
Arts and Humanities	8	7.41%
Energy	7	6.48%
Environmental Science	7	6.48%
Psychology	7	6.48%
Medicine	6	5.56%
Mathematics	5	4.63%
Earth and Planetary Sciences	2	1.85%
Agricultural and Biological Sciences	1	0.93%
Multidisciplinary	1	0.93%
Nursing	1	0.93%
Physics and Astronomy	1	0.93%

The data shows a notable increase in publication output over time. The dataset spans from 1957 to 2025, but active publication began in the 2000s, with a significant increase in recent years. The publication trend (TP) over the years shows a sharp increase in research output from 2019 onward, peaking in 2024 with 39 publications. Total citations (TC) over the years highlight substantial citation impacts in 2010 (145 citations), 2001 (54 citations), and 2020 (69 citations). As for citation per publication (C/P), it has a fluctuating impact, with the highest citation rates in 2001 and 2010 but lower rates in recent years (2024, 2025) due to the inclusion of newer works. The h-index and g-index are essential indicators of a sustained academic impact. The number of publications that attained the same number of citations as their rank at a minimum is reflected by the h-index. Meanwhile, the g-index emphasizes the citation performance of the most highly cited papers. The h-index (6 in 2023 and 2024) and g-index (54 overall) indicate a steady rise in scholarly influence. The high g-index suggests that the top 54 articles collectively received substantial citations, demonstrating the impact of key papers in shaping the field (Table 5).

Table 5. Publication trend

Year	TP	NCP	TC	C/P	C/CP	h-index	g-index
1957	1	0	0	0.00	0.00	0	0
1983	1	0	0	0.00	0.00	0	0
1988	1	0	0	0.00	0.00	0	0
1997	2	0	0	0.00	0.00	0	0
2001	1	1	54	54.00	54.00	1	1
2002	1	0	0	0.00	0.00	0	0
2003	1	0	0	0.00	0.00	0	0
2007	1	1	21	21.00	21.00	1	1
2010	3	3	145	48.33	48.33	3	3
2011	1	1	2	2.00	2.00	1	1
2012	1	1	5	5.00	5.00	1	1
2013	1	1	16	16.00	16.00	1	1
2014	1	1	28	28.00	28.00	1	1
2015	1	1	6	6.00	6.00	1	1
2016	1	1	2	2.00	2.00	1	1
2017	1	1	1	1.00	1.00	1	1
2018	2	2	8	4.00	4.00	2	2
2019	5	4	30	6.00	7.50	1	5
2020	4	4	69	17.25	17.25	3	4
2021	6	6	81	13.50	13.50	5	6
2022	5	4	44	8.80	11.00	2	5
2023	18	13	130	7.22	10.00	6	11
2024	39	21	95	2.44	4.52	6	8
2025	6	2	2	0.33	1.00	1	1
Grand Total	104	68	739	7.11	10.87	38	54

Figure 3 shows the publication trend from 1957 to 2025. The data show that the total number of publications increased sharply from 2019 to 2024, from 5 to 39 publications, with six new publications added in 2025.
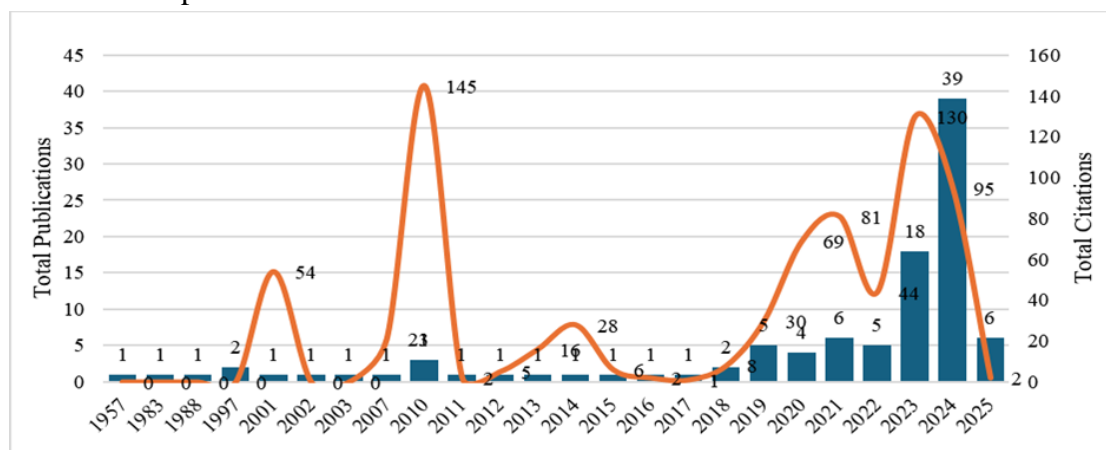

Figure 3. Publication Trend from 1957 to 2025

Table 6 shows that the most active journals in terms of publication volume are *Sustainability* (Switzerland) and *International Journal of Bank Marketing*, each contributing three papers to the dataset. Six journals (*Journal of Cultural Economy,*

Journal of Retailing, Quantitative Marketing and Economics, Journal of Financial Services Marketing, ACM International Conference Proceeding Series, and Cogent Business and Management) have published two papers each. In terms of CiteScore, *Sustainability* (Switzerland) has the highest total citations (59), suggesting a strong influence despite a moderate CiteScore (6.8). *International Journal of Bank Marketing* follows with 51 citations, aligning with its high CiteScore (10.7). *Journal of Financial Services Marketing* has eight citations, and the remaining journals have relatively few citations, indicating varied levels of scholarly impact. Regarding the SJR (SCImago Journal Rank) 2023, a prestige indicator that considers the impact and source of citations, *Journal of Retailing* has the highest SJR (3.915), indicating a strong academic influence. *Quantitative Marketing and Economics* also ranks highly (1.408). The lowest SJR is attributed to *ACM International Conference Proceedings Series* (0.253).

Table 6. Most active source titles

Source Title	TP	TC	Publisher	Cite Score	SJR 2023	SNIP 2023
Sustainability (Switzerland)	3	59	Multidisciplinary Digital Publishing Institute (MDPI)	6.8	0.672	1.086
International Journal of Bank Marketing	3	51	Emerald Publishing	10.7	1.328	2.014
Journal of Cultural Economy	2	2	Taylor & Francis	3.9	0.813	1.371
Journal of Retailing	2	0	Elsevier	15.9	3.915	2.934
Quantitative Marketing and Economics	2	1	Springer Nature	2.3	1.408	0.84
Journal of Financial Services Marketing	2	8	Springer Nature	5.6	0.501	1.219
ACM International Conference Proceeding Series	2	1	Association for Computing Machinery (ACM)	1.5	0.253	0.233
Cogent Business and Management	2	0	Cogent OA	4.4	0.567	1.153

Table 7 presents the 10 most cited articles on BNPL and consumer credit, highlighting their citation impact (total citations, or TC) and citation per year (C/Y). The most cited article is by Fook and McNeill [10], which examined the link between retail credit and overconsumption in the context of online shopping, with 42 citations and an annual citation rate of 7.00. The article by Gerrans et al. [7] on the responsibility of fintech in BNPL arrangements has been cited 28 times. Niu et al. [17], which explored instalment-based purchasing and its effects on demand and opportunity costs, has 25 citations. The article by Siemens [18] provides an early theoretical perspective on BNPL transactions, receiving 21 citations. Other notable studies include the competitive analyses of BNPL, depoliticization of debt, regulatory aspects, and the role of financial socialization in BNPL users. The most recent contributions in 2024 examined the effects of BNPL on

traditional financial services and consumer behavior, receiving fewer citations due to their recent publication.

Table 7. Top 10 most cited studies

No.	Author(s)	Title	Source Title	TC	C/Y
1	Fook and McNeill [10]	Click to buy: The impact of retail credit on over-consumption in the online environment	Sustainability (Switzerland)	42	7.00
2	Gerrans et al. [7]	Fintech and responsibility: Buy-now-pay-later arrangements	Australian Journal of Management	28	7.00
3	Niu et al. [17]	Firms' introduction of internet-based instalment: Incremental demand vs. cash opportunity cost	Transportation Research Part E: Logistics and Transportation Review	25	5.00
4	Siemens [18]	When consumption benefits precede costs: Towards an understanding of 'buy now, pay later' transactions	Journal of Behavioural Decision Making	21	1.11
5	Desai et al. [19]	Better with buy now, pay later? A competitive analysis	Quantitative Marketing and Economics	12	2.40
6	Cook et al. [20]	Buy now, pay later services to pay for credit consumption and the depoliticization of debt	Consumption Markets and Culture	8	2.67
7	Ji et al. [21]	Buy now, pay later as liquidity insurance: Evidence from an early experiment in China	China Economic Review	3	1.00
8	Soni [22]	Regulating buy now, pay later: consumer financial protection in the era of fintech	Columbia Law Review	5	1.67
9	Aisjah [2]	Intention to use buy-now-pay-later payment system among university students: a combination of financial parenting, financial self-efficacy, and social media intensity	Cogent Social Sciences	4	2.00
10	Kutbi et al. [4]	The effect of buy now, pay later fintech on traditional financial services and consumer behaviour in Saudi Arabia	Financial and Credit Activity: Problems of Theory and Practice	1	0.50

2.2 PRISMA

PRISMA, a widely recognized approach in social science research, was used to guide the second analysis. Developed by Petticrew and Roberts [23] and Dezi et al. [24], PRISMA offers three distinct benefits: 1) delineation of the research questions, allowing the research to be conducted systematically; 2) identification of the inclusion and exclusion criteria; and 3) exploration of massive scientific databases over a specific period [13], [25]-[29].

2.3 Research Questions

Two research questions guided the literature search, namely: 1) is BNPL a financial ally for users, and 2) is BNPL a debt trap for users? This research primarily aims to analyze past publications on BNPL, specifically those that demonstrate it as a financial ally for the younger generation or a debt trap for users. PRISMA was used to scope the past studies to address the research questions (refer to Figure 4).
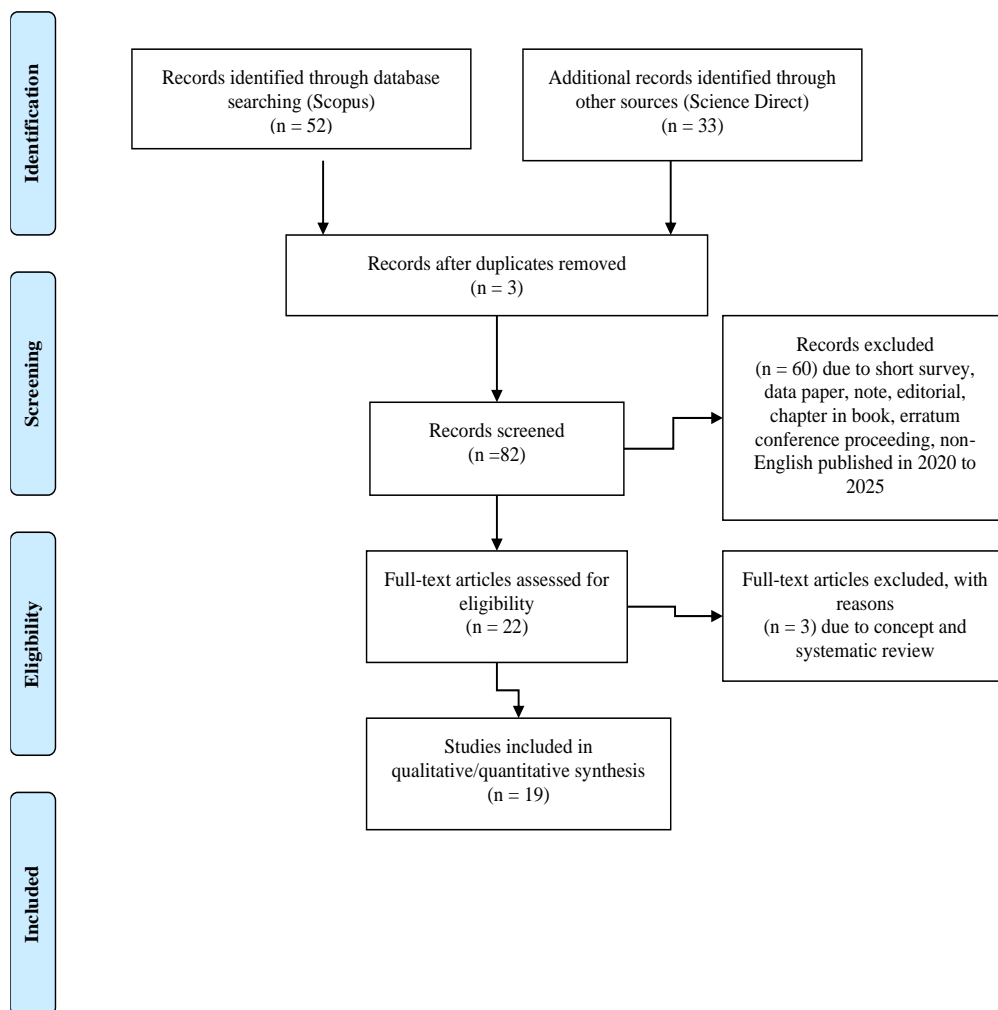
Figure 4. The PRISMA Group's adopted research flow [16]

2.4 Eligibility and Exclusion Criteria

Specific inclusion and exclusion criteria were established to facilitate the selection of articles. In terms of type of literature, only empirically supported journal articles were chosen. This means that the study excluded all review articles, short surveys, data papers, notes, editorials, erratum conference reviews, conference papers, book chapters, and books. Next, only articles written in English were selected to prevent complexities with translation and any potential miscomprehension. Finally, only the articles published between 2020 and 2025 were selected, which aligns with the growth of the BNPL platform worldwide (Table 8).

Table 8. Inclusion and exclusion criteria

Criterion	Eligibility	Exclusion
Literature type	Journal (research articles)	Journal (systematic review), conference paper, book chapter, review articles, short survey, data paper, note, editorial, erratum, conference review
Language	English	Non-English
Timeline	2020-2025	>2020

2.5 Data Sources

Scopus and ScienceDirect are the two primary databases used in this study. It is essential to recognize that none of the available databases is entirely faultless and comprehensive, including the two mentioned above. Researchers should conduct their search procedure by covering as many databases as possible to increase the likelihood of finding articles with actual significance [30]. Hence, this study performed a manual search on multiple renowned databases, including Wiley and Springer. The highly robust ScienceDirect features 3.3 million open-access articles spanning 20 fields, ranging from finance and economics to econometrics. The extensive Scopus database comprises 24.6 million journal articles, of which 5,500 are peer-reviewed articles spanning 330 disciplines and over 7,000 publishers worldwide.

2.6 Systematic Review Search Process

The systematic review search process, consisting of four phases, commenced in February 2025. It began with the keyword identification phase. Among the keywords used in the search are "buy now, pay later" and "instalment," as listed in Table 9. Three duplicates were removed. Next is the screening phase. A total of 60 out of the 82 identified articles were excluded: short surveys, data papers, notes, editorials, chapters in books, errata, conference proceedings, and non-English publications from 2020 to 2025. The remaining 22 articles then underwent a careful assessment in phase three, whereby three articles were removed as they were identified as systematic review articles. Finally, a total of 19 empirical articles, both qualitative and quantitative, were identified in the last phase for inclusion in the main analysis.

Table 9. Search strings utilized

Database	Keywords used
Scopus	TITLE-ABS-KEY (("buy now,, pay later*" OR "instalment payment*") AND (intention*))
ScienceDirect	(buy now, pay later or BNPL) AND (financial aid) OR (debt trapped)

A breakdown of the most commonly used research methods employed in the selected articles is presented in Table 10 below. Specifically, while 19 papers utilized empirical quantitative and qualitative methods, three additional papers were excluded, as mentioned in the previous paragraph, because they employed the systematic review approach.

Table 10. Research methods used

Research Design	No. of papers	(%)
Empirical qualitative/quantitative	19	86.36
Concept/systematic review	3	13.64
Total research design	22	100

3. RESULTS

The impact of BNPL on users is the theme chosen for this study, based on our thorough and systematic literature review and observation of the typical patterns documented in earlier works. The observation of BNPL varies in users' day-to-day life, ranging from being a financial ally in some circumstances to a debt trap if used excessively.

3.1 BNPL as Financial Ally

Table 11 summarizes the 19 articles examining the effect of BNPL applications on users, either as financial allies or as debt traps, particularly among the young generation and low-income individuals. Kumar et al. [31] investigated the impact of BNPL on the online purchasing behavior of 7,104 customers in Nordic countries, specifically Denmark, Norway, and Sweden. They found that a 6.42% increase in BNPL users resulted in a 6.42% increase in customers' online expenditure, underscoring the significant impact of BNPL on customer behavior. Based on the findings, fintech-enabled BNPL is deemed a powerful e-commerce facilitator that can potentially transform the online retail landscape by enabling zero-interest instalment payments for online purchases. The idea that the perceived value of spending money now is more alluring than the inconvenience of making payments later seems to have a significant psychological effect on consumers. Chen et al. [3] investigated the factors influencing the demand for BNPL in New Zealand and found that the demand for BNPL had increased since the COVID-19 lockdown. According to the authors, the easy accessibility to BNPL compared to personal loans, for instance, was alluring for consumers during the pandemic. Likewise, in Saudi Arabia, Kutbi et al. [4] found that BNPL gained popularity during the COVID-19 pandemic. Due to the financial

uncertainties brought on by unemployment during that time, consumers found the idea of deferred payment highly tempting.

Meanwhile, Jing et al. [32] found the utilization of BNPL in Malaysia to be driven by factors such as perceived usefulness (a practical alternative payment method that brings flexibility and affordability), perceived ease of use (easy to use, or user-friendly and straightforward to operate), societal pressures, and external environment. Abed and Alkadi [33] found that 380 Gen-Z youths in Saudi Arabia used BNPL apps due to their ease of use (54.6%), flexibility (40.6%), zero-interest offer (39.7%), and quick approval (31.2%). An individual's eligibility for BNPL is based on an algorithm rather than credit assessments. Guttman-Kenney et al. [11] investigated customer repayment of BNPL using credit cards in the US and the UK. They found that BNPL promoted welfare by allowing cash-strapped customers in impoverished areas with a high marginal propensity to consume (MPCs) to either boost their consumption or utilize BNPL rather than apply for higher-cost credit (such as payday loans or overdrafts). Maesen and Ang [34] conducted a study on the effect of BNPL on retail sales. They found that prominent retailers, such as Adidas, Sephora, Walmart, and ASOS, have already introduced instalment payments. Based on the results, there has been a statistically significant increase in BNPL instalments among small basket shoppers and those who previously used credit cards as their main payment method. By lowering perceived expenses and promoting budget control, BNPL instalments lessen perceived financial limits, particularly among cash-strapped consumers.

Ji et al. [21] investigated 50,000 Alipay account users in China. They found that most BNPL users primarily used the service for necessities, such as household items, rather than for education and entertainment. Thus, increasing spending on necessities could help mitigate excessive spending and credit misuse, especially among low-income users. Gallo Cordoba et al. [8] explored 505 respondents in Australia and found that BNPL was more prevalent among 75.2% of young Australians experiencing food shortages. According to the study, BNPL serves as a "lender of the last resort" due to the users' long-standing financial situation and the impact of the recent pandemic. This is supported by O'Brien et al. [9], who found that BNPL users in Sydney, especially those from low-income groups, often seized retail opportunities, such as special offers and sales. Additionally, BNPL could be a helpful resource in times of crisis or when money is desperately needed to pay unforeseen costs, such as auto repairs, while avoiding invasive financial and personal queries.

3.2 BNPL as a Debt Trap

In Malaysia, 53,000 Malaysians under the age of 30 are drowning in debt of nearly RM1.9 billion (US$423.51 million) due to credit cards and personal loans, including BNPL, as reported by the government-owned Credit Counselling and Debt Management Agency in year 2023 [35]. In New Zealand, customers incur zero interest when their credit card payment is settled on time. In contrast, BNPL service providers charge a fee of 5%–8% to merchants who use their products [3]. Guttman-Kenney et al.

[11] state that the usage of BNPL may potentially involve two outcomes, especially for young and new users. Firstly, it may lead to the accumulation of significant debts that could spiral out of control. Secondly, it may facilitate prudent spending by teaching users to use only low-cost credit, practice credit control, and avoid buying expensive goods.

Powell et al. [5] investigated 360 BNPL users in Australia. They found that those in the group aged above 25 (48%) were more likely to have at least one month of late payment, resulting in late-fee charges and negative repercussions on their credit score. Such a scenario may render long-run consequences, particularly if bad spending and payment habits have already formed. In New Zealand, Fook and McNeill [10] investigated 109 women aged 18–25, of whom 30.3% had used BNPL services and 78.8% had made purchases online. The study found overconsumption to be prevalent in nearly all retail categories, with consumers' lack of self-control indicated as a contributing factor. Overconsumption was further driven by purchase-provoking prompts like "low stock" and "one item left." Gerrans et al. [7] investigated the level of BNPL literacy among a sample of undergraduates at the University of Western Australia. They found that the higher the financial literacy risk score level, the more significant the extent of overspending and harm to financial health caused by BNPL usage. In contrast, the lower the financial literacy risk score, the lower the risk of overspending.

Aisjah [2] used a sample of 366 Indonesian students to investigate the role of social media intensity (SMI) in driving BNPL usage intention and found a significant and positive effect. Specifically, the greater the social media intensity, the higher the intention to use BNPL. This finding suggests that social media can encourage students to engage in impulsive buying, leading to credit overuse and, ultimately, future financial stress. Schomburgk and Hoffmann [36] conducted a study on 275 Australian consumers to investigate the effect of mindfulness on BNPL usage and subsequently consumer well-being. The findings revealed a link between higher BNPL usage and lower subjective assessment of general consumer well-being, whereby their stress levels regarding money management increased while their expectations for future financial stability decreased. Customers who were unable to pay for the goods in their (online) carts were more likely to pause and consider their repayment abilities if BNPL was offered as a payment option. Hoo et al. [37] investigated BNPL usage intention among 384 Malaysian users. The study discovered a significant impact of materialism on BNPL usage intention, suggesting that overly materialistic individuals tend to spend money rather than save it. In short, their decisions are guided by their sense of materialism, ultimately leading to financial issues, including excessive debts, poor savings habits, and overconsumption.

Ashby et al. [6] investigated 216 US participants who used BNPL. They found that participants had a higher purchase intention when using BNPL compared to credit cards, opting for a more expensive option, which could lead to unplanned purchases and indebtedness. Relja et al. [38] investigated 533 UK participants from a psychological perspective. They found that 62% of the participants perceived BNPL as a scam or were

involved in activities that could harm their financial well-being, such as incurring long-term debts, leading to anxiety and other problems related to mental health. Such conditions also resulted in poor consumer decisions, overconsumption, and unhealthy relationships. O'Brien et al. [9] found that 77% of their 1128 Sydney respondents used BNPL. They argue that BNPL users carry unacceptable risk, especially among low-income earners. Furthermore, the ease of access to BNPL services increases the likelihood of incurring excessive and unmanageable debts, ultimately leading to severe hardship. For example, BNPL users allocate a significant portion of their income to make BNPL repayments, thereby reducing their ability to pay for other necessities, such as food and rent.

3.3 The Young Generation as Dominant Users of BNPL Services

Younger individuals and those with lower credit scores seem to be more drawn to using BNPL [31]. Chen et al. [3] found that females, single individuals, younger people, and higher-educated individuals in New Zealand were more likely to adopt BNPL services. In the study by Guttman-Kenney et al. [11], BNPL usage was more prevalent among young people aged 18-49 (84%) and those residing in impoverished areas. Fook and McNeill [10] found that young adults, a group of consumers with transitioning identities and lifestyles, were drawn toward making impulsive purchases of non-essential goods, such as fashion and apparel products. Hoo et al. [37] found that out of 384 respondents in Malaysia, younger adults aged 26 to 35 years old (46.78%) and females (53.13%) used BNPL as an instalment payment tool.

In contrast, Arisandy et al. [39] found that males (62%) dominated the use of BNPL as compared to females (38%) in Malaysia. Moreover, Gen Z, aged 18 to 25 years, particularly those without a stable income and who were financially dependent on others, recorded the highest rate of BNPL-related defaults. Filotto et al. [40] found that 136 out of 610 Italian participants aged between 35 and 44 years old who used credit cards had a higher likelihood of using BNPL. They were also unaffected by excessive debt and had the "no fear" mentality. In the UK, the study involving 533 participants by Relja et al. [38] found that BNPL users comprised mainly females (67.4%), followed by males (31.7%), and that the majority were youths (mean age of 28.55). Gallo Cordoba et al. [8] found that almost a third (31%) of 505 Australian respondents aged between 15 and 21 used BNPL to purchase expensive goods that they could not afford.

3.4 BNPL Users Based on Income Level

Kumar et al. [31] found that in Nordic countries, BNPL user was more prevalent among low-income individuals with an annual income of US$20,000 to US$50,000, who tended to exhibit more online purchase behavior. They argue that the effectiveness of BNPL as a marketing strategy is particularly pronounced among online retailers catering to a predominantly young and low-income customer base. Chen et al. [3] found that BNPL usage was more prevalent among individuals earning less than NZ$30,000 per year. However, Fook and McNeill [10] found that BNPL users who earned an average weekly income of NZ$100 to NZ$299 did not exhibit a significant online

impulsive buying tendency. In contrast, Gallo Cordoba et al. [8] found that income level did not play a role in small-amount credit (e.g. $2000, which did not require collateral) in Australia. However, BNPL was more likely to be popular among the unemployed, sole parents, and those with a low education level. Hoo et al. [37] found that those with lower incomes (below RM1000 to RM4000), or 56.51% of 384 respondents, tended to use BNPL services. They argue that materialism is a significant contributor to impulsive buying behavior, as emotional responses rather than rational considerations often drive the purchasing decision-making process. A similar finding by Jing et al. [32] revealed that most BNPL users in Malaysia, specifically 126 out of 257 respondents, earned less than RM1000 per month. Filotto et al. [40] found that 60% of individuals who earned between €10,000 and €40,000 per year and were less financially literate had a higher likelihood of using BNPL. O'Brien et al. [9] found that 28% of BNPL users in Sydney had an annual income below the designated poverty line of $25,000 in Australia. Most low-income earners said that they were more likely to use BNPL to help manage their finances than other methods, such as credit cards. In Saudi Arabia, Kutbi et al. [4] found that 63% of BNPL users earned less than SAR3,000 per month.

3.5 Gender Differences Among BNPL Users

The predominance of females among BNPL users, as indicated by Chen et al. [3], suggests that females have a higher relative demand but not absolute demand. Their finding was positive, with a 16.3% significant difference at the 1% level of significance for relative demand. The authors defined relative BNPL as the ratio of BNPL enquiries to the total of BNPL, credit card, and personal loan enquiries. Meanwhile, absolute BNPL was measured as the natural log of BNPL inquiries. The study by Hoo et al. [37] suggests that females are more likely than males to use BNPL in Malaysia. Their results showed that more females (53.13%) than males (46.87%) out of 204 respondents used BNPL. They found materialism to be a significant factor influencing BNPL usage, aligning with the tendencies of highly materialistic individuals. Individuals, predominantly women, were influenced by this trait. Fook and McNeill [10] investigated 109 young adult females aged 18 to 25 in New Zealand. The study found a stronger relationship between impulse purchasing behavior and young women who were BNPL users than those who were not BNPL users. The BNPL platform was characterized by interest-free instalment options, ease of use, and the ability to make multiple purchases at once by splitting payments, which users found beneficial. Relja et al. [38] found that 67.4% of 533 participants, primarily female BNPL users in the UK, used BNPL to purchase essentials such as food and luxury goods. Gallo Cordoba et al. [8] found that neither female (53.7%) nor male (43.2%) participants, nor those with a higher income level, significantly affected the uptake of small-amount credit contracts ($2,000 monthly) for BNPL, used to address food insecurity. In the study by Powell et al. [5], 60% of the participants were female and 40% were male. The study argues that females tend to engage more in impulsive buying. The study by Kutbi et al. [4] involved 100 participants, of whom 85% were female and 15% were male. They found that consumers, predominantly females, adopted BNPL based on convenience,

ease of use, and social influences. In the study by Jing et al. [32], out of a total of 257 responses, 78.21% (201) were from females and only 21.79% (56) were from males. The study found social influence to be the stronger predictor. In this case, BNPL providers could leverage the power of social influence[1] and the informativeness of image-based social media. In the study by Abed and Alkadi [33], females constituted 59.8% of the Gen Z group aged between 21 and 27 years old, whereas males made up the remaining 40.2%. The study found that most users chose BNPL because of features such as simplicity in making payments, greater flexibility, zero interest, and ease of approval. In the study by Aisjah [2], female students accounted for 56.3% of the total respondents. The author showed that a high intensity of using social media led to a higher intention to use BNPL, which meant social media affected individuals' behavior. Moreover, female students had more debt than their male counterparts in Indonesia. In the study by Schomburgk and Hoffmann [36], out of 275 participants, females dominated with 146 (53.1%) respondents while males made up the remaining with 129 (46.9%) respondents. The study found that individuals with lower levels of financial literacy were particularly likely to use the BNPL payment scheme.

In contrast, research by Arisandy et al. [39] found that males (62%) used pay-later services more frequently than females (38%). One argument supporting that men favor pay-later services is their practicality, as online stores often offer high-quality products and are easy to use. The study by Maesen and Ang [34] was predominantly represented by males (50.6%) as compared to females (48.6%). The study found that most participants who relied more heavily on credit cards (as opposed to debit cards) were BNPL users. A similar study by Gerrans, et al. [7] found that males (45.9%) relied heavily on credit cards before using BNPL. Ashby et al. [6] found that male participants in their study perceived BNPL as a more convenient payment mode than card credits, leading to increased spending. Moreover, features such as instalment prices and deferred payment via instalments were deemed necessary to increase spending with BNPL compared to deferred payments by credit card. Ji et al. [21] found that men, particularly those younger than 35 years old, had a stronger propensity to use BNPL than women, as young consumers seemed more tech-savvy and more open to new borrowing facilities. Finally, the study by Filotto et al. [40] sampled 313 (51.3%) males and 292 (47.9%) females out of 610 respondents. The study found men to be far more likely than women to own credit cards, which could be attributed to their civil status and education level. The study also suggests that people from higher education backgrounds tend to have credit cards. Meanwhile, young people, those with limited access to traditional credit, and low-income people tend to use BNPL.

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[1] By collaborating with bloggers and satisfied users to create positive content about BNPL, the public can gain comprehensive knowledge, including user experiences, advantages, potential risks, and step-by-step usage guidance.

Table 11. Summary of BNPL-related research across different countries

Author (s)	Country	Financial Ally	Product Category	Debt Trap	Young Generation	BNPL user Based on Income level (annual/monthly/weekly average)	Gender Differences among BNPL users
Kumar et al. [31]	Nordic region (Denmark, Norway, Sweden)	**	Clothing, accessories, footwear, equipment (game camera, GPS tracking devices, gun), outdoor activities (hunting, sport, camping, and fishing)		**	$20,000 - $50,000	Nil
Chen et al. [3]	New Zealand	**	Various online transactions	**	**	NZ$<30,000>	Female
Kutbi et al. [4]	Saudi Arabia	**	Online shopping and retail transactions			SAR<3000> (Monthly)	Female
Jing et al. [32]	Malaysia	**	Goods and services			RM <1000> (monthly)	Female
Abed and Alkadi [33]	Saudi Arabia	**	Clothing, electronics, entertainment, books, furnishing, travel tickets, and groceries			Nil	Female
Guttman-Kenney et al. [11]	United States (US), United Kingdom (UK)	**	Goods and services	**	**	Nil	Nil
Maesen and Ang [34]	United States (US)	**	Party supplies, apparel, and flight tickets			Nil	Male

Author (s)	Country	Financial Ally	Product Category	Debt Trap	Young Generation	BNPL user Based on Income level (annual/monthly/weekly average)	Gender Differences among BNPL users
Ji et al. [21]	China	**	Household (groceries, electricity, furniture)			RMB 84-RMB 470 (monthly)	Male
Gallo Cordoba et al. [8]	Australia	**	Food security and food insecurity		**	$<2000> (monthly)	Female
Powell et al. [5]	Australia			**		Nil	Female
Fook and McNeill [10]	New Zealand			**	**	NZD100 -NZD 299 (weekly)	Female
Gerrans et al. [7]	Australia			**		Nil	Male
Aisjah [2]	Indonesia			**		Nil	Female
Schomburgk and Hoffmann [36]	Australia		Clothing, shoes, household appliances, personal care, entertainment, mobile phone, food & drink, medical & health, fuel & power	**		$37, 001-$90,000	Female
Hoo et al. [37]	Malaysia			**	**	RM1000-RM 4000 (monthly)	Female
Ashby et al. [6]	United States (US)			**		Nil	Male
Relja et al. [38]	United Kingdom (UK)		Buy essentials, such as food and necessities.	**	**	Nil	Female

Author (s)	Country	Financial Ally	Product Category	Debt Trap	Young Generation	BNPL user Based on Income level (annual/monthly/weekly average)	Gender Differences among BNPL users
Arisandy et al. [39]	Malaysia			**	**	Nil	Male
Filotto et al. [40]	Italy			**	**	€10,000-€40,000	Male
O'Brien et al. [9]	Australia	**	Essential (groceries, medication, and children's education expenses), car repairs, servicing, and fuel		**	$<25,000>	Nil

**Sign of a significant variable for BNPL-related research across different countries. BNPL users based on income level and Gender Differences among BNPL users' "Nil" indicates that the study does not provide income and gender data for these users.

4. DISCUSSION

The bibliometrics results show that the number of publications on BNPL has been increasing since 2019, with tremendous growth through 2025. Journals (78.70%) are the predominant source, and there is a high concentration of English-language publications (98.15%). The top four subject areas discussing BNPL are business, management, and accounting (39.81%); social sciences (32.41%); economics, econometrics, and finance (27.78%); and computer science (25.93%). Additionally, the most active journals in terms of publication volume are *Sustainability* (Switzerland) and *International Journal of Bank Marketing*, each contributing three papers to the dataset. Regarding the SCImago Journal Rank (SJR) 2023, which is a prestige indicator that considers the impact and source of citations, *Journal of Retailing* has the highest SJR (3.915), indicating a strong academic influence. The most highly cited article for BNPL is by Fook and McNeill [10], which examined the effect of retail credit on overconsumption in online shopping, with 42 citations and an annual citation rate of 7.00. Gerrans et al. [7], which discussed the responsibility of fintech in BNPL arrangements, received 28 citations. This bibliometric data serves as a powerful tool for identifying the importance and urgency of exploring BNPL. By analyzing publication trends, interdisciplinary connections, and citation rates for the existing BNPL, the study could indicate that this scope of study is foundational or highly influential. Thus, the rapid growth suggests that BNPL is an emerging area of interest warranting further investigation.

Regarding the SLR analysis, a total of nine studies mentioned that BNPL could have a positive impact on daily life necessities (household items), provide financial flexibility for immediate needs, and offer access to higher-quality, durable goods. BNPL allows households to address urgent purchases, such as replacing a broken refrigerator or buying essential furniture, without the burden of paying significant upfront costs, thus ensuring daily life remains uninterrupted. It is also regarded as a last resort lender for those experiencing unforeseen expenditures like vehicle repairs, or those facing crises such as COVID-19 [3]-[4], [8], [21]. From a corporate standpoint, Shopee has reported "healthy and steady" growth in the user of ShopeePay and PayLater program, its BNPL service. This upward trend is attributed to consumers' increasing familiarity with integrating e-payment solutions and other digital financial services into their daily routines in the aftermath of the COVID-19 pandemic [41].

By spreading payments into manageable instalments, BNPL also enables families to invest in higher-quality, energy-efficient appliances or durable items that might otherwise be unaffordable, thus reducing their long-term expenses and improving their overall living standards. This combination of immediate financial relief and access to better products makes BNPL a valuable tool for managing household necessities responsibly and sustainably.

While BNPL services offer significant benefits, they also come with risks and potential downsides for users. One primary concern is the temptation to overspend, as the ease of splitting payments into smaller instalments can lead to impulsive purchases, especially for non-essential items, resulting in accumulated debt. Additionally, users may incur late fees and penalties if they miss repayment deadlines, which can quickly accumulate and strain their finances. Another risk is the lack of regulatory oversight compared to traditional credit products, which may leave users vulnerable to unclear terms or predatory practices. Over-reliance on BNPL can also lead to debt cycles, particularly for those with limited financial literacy or unstable incomes, making it harder to manage one's overall financial health [2], [5], [9], [37].

Younger generations (Millennials and Gen Z) and low-income users are the predominant users of BNPL, a trend that may be both favorable and unfavorable. In favorable terms, BNPL provides these groups with greater access to essential goods and services, such as household items, electronics, and clothing, without requiring upfront payment or a strong credit history. This can be particularly beneficial for younger users who may have limited savings or credit histories, as well as low-income individuals who require flexibility in managing their budgets. However, the risks are amplified for these groups. Younger users, who may lack financial literacy or experience with debt management, are more susceptible to overspending and accumulating debt due to the ease of BNPL. Similarly, low-income users, who often face financial instability, may struggle with repayment deadlines, resulting in late fees, penalties, and potentially creating debt cycles. Without careful budgeting and discipline, BNPL can exacerbate financial stress for these vulnerable groups, highlighting the need for greater education and awareness about responsible usage. In addition, most shopaholics have shifting lifestyles and personalities, and they tend to lean toward impulsive, non-essential purchases. Nevertheless, most low-income earners said that they were likely to use BNPL to help them manage their money as opposed to using credit cards, for instance (see research by Fook and McNeill [10], Kumar et al. [31], O'Brien et al. [9]).

Regarding the comparative gaps in BNPL-related research across different countries, Table 3.1 highlights divergent findings. The studies conducted by Kutbi et al. [4] and Abed and Alkadi [33] indicate that BNPL users in Saudi Arabia perceive BNPL services as financial allies that facilitate expense management without leading to excessive indebtedness. In contrast, most studies focusing on the Australian context reveal a more adverse pattern, where BNPL users are more likely to become entrapped in debt rather than experiencing financial empowerment [5], [7], [36]. Similarly, research by Arisandy et al. [39] and Hoo et al. [37] suggests that the use of BNPL among Malaysian youth contributes to the deterioration of their financial management, thereby exacerbating rather than alleviating their daily financial burdens. Studies from the US, the UK, and New Zealand present a more nuanced picture, with findings indicating both beneficial outcomes in terms of financial inclusion and detrimental effects such as over-indebtedness [3], [6], [10]-[11], [34]. Overall, BNPL usage in developed economies such as Australia, China, the US, the UK, the Nordic region, Saudi Arabia, and New Zealand

tends to yield more favorable outcomes. Conversely, in developing countries such as Malaysia and Indonesia, the user of BNPL services is more frequently associated with negative financial consequences, including increased credit risk and poor financial ratings.

In terms of the income level of BNPL users, there are variations across countries. For instance, the average annual incomes of BNPL users from the Nordic region, Australia, and Italy are $20,000 to $50,000, $37,001 to $90,000, and €10,000 to €40,000, respectively. Meanwhile, BNPL users from China, Malaysia, and Saudi Arabia earn monthly incomes of RMB84–RMB470, RM1000, and SAR3000, respectively. In New Zealand, the average weekly income of BNPL users is in the range of NZD100 to NZD299. In terms of gender of BNPL users, the findings show mixed results between females and males. Several studies (see Chen et al. [3], Hoo et al. [37], Relja et al. [38], Jing et al. [32]) show that BNPL users are predominantly females. The reasons for their prevalence in using BNPL are materialistic behavior, lower financial literacy, and social influences, as well as the features of BNPL such as interest-free instalments and ease of use. However, the studies by Arisandy et al. [39] and Maesen and Ang [34] show that males are the predominant users of BNPL. Among the reasons highlighted for this phenomenon are that men are tech-savvy users, men relied heavily on credit cards before using BNPL, are BNPL's practicality and ease of use.

5. CONCLUSION AND LIMITATION

This study employed two analyses involving bibliometric and SLR methods. The bibliometric analysis reveals the overall recent milestones and contributors in the field. Meanwhile, the SLR provides detailed explanations, aligning with the objectives of the study. This study contributes to the existing literature on the adoption of financial technology and consumer credit behavior, particularly in the context of young consumers worldwide. The findings may serve as a foundation for future studies exploring BNPL users in other emerging markets, as well as its potential integration with cryptocurrency and crowdfunding platforms. The study may also pave the way for further investigations into the long-term financial behavior of BNPL users and the psychological factors influencing their spending decisions.

The findings have several implications for policymakers, financial institutions, and academics. The study provides empirical evidence for regulators, such as government bodies, to refine consumer protection policies related to BNPL services. The research suggests the need for stricter regulations on BNPL providers, such as mandatory credit assessments, spending limits, and enhanced financial literacy programs, especially for young consumers. Furthermore, the study highlights the importance of financial education initiatives at universities, helping users make informed decisions regarding BNPL and other credit options.

Future studies on the users of BNPL services in the contexts of Bitcoin, cryptocurrency, and crowdfunding should explore several key areas to deepen the understanding of their

implications and adoption dynamics. One crucial avenue for investigation is the role of financial literacy in developing consumer engagement with BNPL services. Given the complexity of cryptocurrency transactions and the relatively nascent regulatory frameworks governing them, it is crucial to evaluate the impact of financial literacy on decision-making in these domains. Future studies could examine whether financially literate individuals tend to utilize BNPL responsibly in cryptocurrency transactions or if lower financial literacy correlates with higher financial risk-taking behaviors. Comparative studies across different demographic and socioeconomic groups could provide insights into how financial literacy influences BNPL user patterns and associated financial outcomes.

Additionally, further research should focus on the intricate relationships within the BNPL system, particularly the dynamics between service providers and consumers, as well as between service providers and retailers. A holistic examination of these relationships can provide further insight into the BNPL phenomenon, particularly in decentralized financial ecosystems. Research on customer-provider interactions could explore trust, perceived security, and transparency in BNPL agreements within cryptocurrency markets. Furthermore, research could assess how BNPL providers collaborate with cryptocurrency exchanges, digital wallets, or crowdfunding platforms to facilitate transactions. Similarly, examining retailer-BNPL provider relationships could shed light on how merchants navigate the integration of BNPL services in digital assets and crowdfunding campaigns. This includes investigating the economic incentives, potential regulatory challenges, and strategic motivations driving retailers' decisions to partner with BNPL providers in these emerging financial spaces.

This study has several limitations. First, it is conceptual and relies solely on the data extracted from selected platforms and journals, without incorporating empirical data from respondents. Consequently, the study primarily summarizes, and highlights findings based on thematic analysis rather than empirical validation. Second, the journal articles included in this review are limited to a five-year time frame spanning from 2020 to 2025, thus restricting the scope of issues addressed to this specific period. Third, the data extraction is confined to only two databases, namely Scopus and ScienceDirect, thereby limiting the comprehensiveness of the findings to the coverage and indexing practices of these platforms. These constraints should be considered when interpreting the results and generalizing the conclusions of this study. Fourth, the theme of this research is more focused on BNPL users. While the terms were carefully selected to capture the most relevant articles, it is possible that important studies using alternative terminology or focusing on adjacent concepts such as "point-of-sale financing" or "deferred payment systems" might have been inadvertently excluded. This could result in a partial representation of the existing body of knowledge on BNPL user behavior and comprehensive analyses.

5.1 Practical Implications

This study is the first scholarly investigation to explore the role of e-money through BNPL services—a financial innovation that is experiencing rapid global expansion. By addressing two central research questions and utilizing data extracted from reputable and widely recognized academic platforms, namely Scopus and ScienceDirect, this study lays the groundwork for subsequent empirical research on BNPL, particularly for academics and researchers worldwide. The study employs a hybrid methodological approach by integrating bibliometric analysis with SLR, thereby encompassing both raw and processed data to examine trends and developments within the BNPL landscape. This combined dataset provides a robust framework for scholars to reference and build upon in future empirical studies. Thus, this study adds value, such as developing a framework for future investigations.

From a legal standpoint, this study offers valuable insights that may inform early monitoring and policy development related to BNPL practices. For instance, it provides evidence supporting both the beneficial and the adverse outcomes of BNPL usage across various countries. In some contexts, BNPL assists in managing finances, particularly related to household expenses, thus mitigating consumers' short-term financial burdens. Conversely, there are risks associated with overconsumption and unsustainable lifestyle choices facilitated by unchecked BNPL usage. These findings may encourage legal authorities to revise the existing regulatory frameworks, transforming loosely defined policies into more comprehensive and practical instruments. Specific policy recommendations may include limiting the use of BNPL to essential categories, such as household and retail (necessities like rice and bread), education (fees and textbooks), and healthcare (clinical medications and medical supplies).

Moreover, this study has implications for banking and financial institutions, particularly in user profiling and risk assessment. Institutions should gain a more nuanced understanding of BNPL users by considering variables such as income levels, credit risk scores, and geographical locations (i.e., urban versus rural residence). This is particularly relevant as e-money and BNPL solutions are increasingly viewed as alternatives to traditional credit cards. Despite the benefits associated with credit cards, the appeal of BNPL lies in its ease of access and minimal bureaucratic barriers—attributes that often attract users who might otherwise be excluded from conventional financial systems due to stringent eligibility requirements.

In terms of governance and public policy, this study could serve as an essential reference for the development of national financial literacy frameworks aimed at promoting long-term financial sustainability. Such efforts can be aligned with the United Nations' Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty) and SDG 2 (Zero Hunger). For example, BNPL services experienced a significant increase in usage during the COVID-19 lockdown [3], suggesting the potential of such tools in serving as last-resort financial mechanisms during global crises. The accessibility of BNPL during periods of economic lockdown suggests its potential to temporarily alleviate poverty and

food insecurity, particularly for vulnerable populations. This highlights the crucial role of e-money and BNPL services in promoting social welfare, particularly during unforeseen events such as black swan crises.

6. ACKNOWLEDGMENT

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