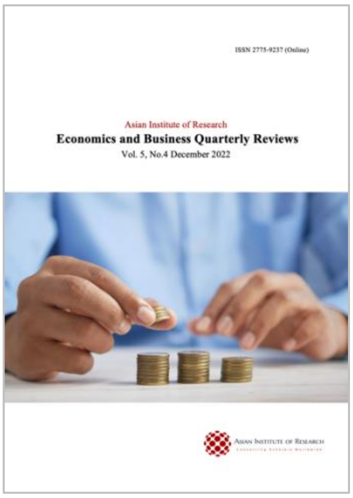

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Determinants of Non-Performing Loans Between Islamic And Conventional Banks: A Systematic Literature Review

Muhannad A Almuraikhi[1]

[1] College of Islamic Studies, Hamad Bin Khalifa University, Qatar Foundation, Doha 34110, Qatar

Correspondence: Muhannad A Almuraikhi, email: mualmuraikhi@hbku.edu.qa

Abstract
This article conducts a systematic literature review of 52 papers on the determinants of non-performing loans (NPL) published for 2006-2022 in peer-reviewed journals. This paper adds to the development of this emerging field of systematic review in non-medical field settings by mapping existing research to inform future research exploits. This study synthesizes NPL studies by applying the systematic review methodology. The data synthesis is done through first and second-level codes. The first level codes group studies according to bank-specific, borrower-specific and comparative (Islamic vs conventional bank types). The literature is conscientiously analyzed through 13 subcategories using an open coding process. The literature synthesis shows that borrower-specific factors that may determine NPL include borrower profile, internal factors, external factors, and social issues. Also, the bank-specific factors that may influence NPL growth include economic conditions, management competence, profit maximization, and information economics. The findings highlight that the way borrower profiles, banks-specific factors and macroeconomic factors interact to influence NPL still needs more understanding. Further, Islamic banks and conventional banks seem to behave similarly regarding many bank-specific and macroeconomic factors even though the profit and loss sharing contract used in Islamic banks was deemed to moderate NPL positively. But the borrower-specific factors' interaction with bank-specific and macroeconomic factors of Islamic banks clients remains unclear. This highlights an important research gap in understanding the behavior of Islamic bank borrowers towards NPL prediction.

Keywords: Non-Performing Loans, Islamic Banks, Conventional Banks, Literature Review

1. Introduction

Economic crisis allows researchers to assess some theories underpinning economic phenomena to engender more understanding and propose new ways of doing things. Some of the economic crises can manifest through instability, bank and thrift failure, and the nature of the economic cycle attracts significant interest from scholars, policymakers, and practitioners. One area within this economic puzzle is non-performing loans (NPL) which has attracted much interest from scholars and practitioners (Berger & Humphrey, 1997; Podpiera & Weill, 2008). NPL, commonly known as loans in arrears for at least 90 days, lead to a fast impairment of banks' loan books (Labbé-Pinlon et al., 2016). Many studies conclude that banks always accumulate a lot of NPL as a precursor to their collapse (Berger & Humphrey, 1997). NPL implies that they always stand as an obstacle between banks and the real economy (Makri et al., 2014).

Islamic banks perform financial intermediation similarly to conventional banks. In theory, Islamic banking is a banking system that operates strictly per the Shariah law, specifically the *muamalaat* branch of Shariah that provides laws governing business transactions and contracts. Islamic Banks mobilize funds from surplus economic units and transform these through size packaging and maturity matching to financial assets using sale, lease and sharing contracts. Sale contract modes of financing used by Islamic banks include *Murabahah* (deferred payment sale or cost-plus), Salam (forward sale) and *Istithn'a* (forward sale in manufactured goods). *Murabahah* financing mode allows Islamic banks to finance clients through a deferred sale basis where the price of the commodity or item is deferred to a future date, and the client pays this price in instalments. The asset-backed financing coupled with the deferred price allow the Islamic bank to charge a profit on the original price in the form of a mark-up (Karimu et al., 2022). Religion plays a vital role in moderating behavior and influences the level of loan default, as concluded by (Baele et al., 2014). Islamic finance borrowers are less likely to default financing advanced to them (Baele et al., 2014). Customer orientation toward loan default may differ depending on the banking model.

This study is motivated by two developments. Firstly, the understanding of the determinants of NPL is still not settled, and policymakers and practitioners continue to look for more understanding to address these issues with appropriate measures. Secondly, Islamic banks and conventional banks may both be affected my same factors as financial intermediaries, but it is still unclear whether the business orientation of the two bank types provide any differentiator when it comes to NPL. This study undertakes a synthesis of NPL studies by applying the systematic review methodology. The data synthesis is done through first and second-level codes. The aim of the study is to answer the following research questions.

a. What are the determinants of non-performing loans from the supply and demand sides of financial intermediation?
b. Are there differences in NPL between Islamic and conventional banks?

The rest of the paper is organized as follows. Section two discussed the materials and methodology. Section three presents the findings and discussions, concluding the paper in section four.

2. Materials and Methodology

NPL is a well-researched area. The theorization of the determinants of NPL has sparked a lot of research interest undertaken by researchers such as (Berger & Humphrey, 1997). These researchers hypothesized about the phenomenon of NPL determinants within commercial banks. According to literature, financial losses coming from banks have been attributed to NPLs (Kingu et al., 2017). Theoretically, this study analyses the link between NPL factors from their central angles: agency theory, asymmetric information theory, and credit default theory.

Agency theory explains the link between the agent-principal relationship proxied by the owner and the management of the organisation (Wilson et al., 2012). The relationship between the parties is usually theorised as agency conflict as the agent may not faithfully represent the interest of the principal. The organisation's management is typically viewed as an agent contracted by the shareholders to work towards improving the stockholder value and via effective financial performance. The stakeholder employs various strategies to assure that management responds in the company's best interest (Muluwork, 2016).

Similarly, Credit default theory (CDF) asserted that existing ideas of credit default do not associate causes to the effect or default. As a result, it failed to assess credit risk in an increasingly changing market environment, which is affected by the credit market and mortgage crisis. This theory is significant in elucidating the lending risk and dynamically managing and measuring credit risk for the stability of the financial system (Idris & Nayan, 2016).

Information asymmetric theory (IAT) is implemented in financial markets, for instance, lending and borrowing (Morris et al., 2016). It demonstrates the information gap between borrowers and lenders in these markets (Baele et al., 2014), and this theory is significant in imperfect knowledge. Asymmetry information is studied by (Dignah et al., 2017) to examine information among people in economic decision-making. The participants showed that information sharing lowers adverse selection by enhancing bank-related information on credit claimants.

Some studies have also looked at bank-specific factors that may determine the occurrence of NPL. These studies are usually empirical and use bank-level data by controlling for bank-specific indicators deemed to cause NPL. Some indicators include return on equity, cost-to-income ratio, bank size, net interest margin, credit growth, and portfolio composition, among others. Bank-specific variables behave similarly to macroeconomic indicators in their explanatory powers of NPLs. Within this domain (Klein, 2013) finds that the equity-to-assets ratio is indirectly correlated with NPLs, confirming the "moral hazard" hypothesis, whereby thin capitalized banks respond to moral hazard incentives by exposing their portfolio to risky financial assets, which may lead to higher NPLs in the future. Also, better managed banks may achieve lower NPL and its impact on increased profitability as a result of the quality of the financial assets (Beaton et al., 2016). Conversely, predatory lending behavior of banks as proxied by loans-to-assets ratio has links with higher NPLs (Klein, 2013).

NPL definition has not been universally standardized because the term usually connotes varying qualitative and quantitative characteristics(Barseghyan, 2010). According to the literature, a non-NPL is a loan that is in arrears for at least 90 days, which may have already defaulted or at the brink of default (Mayock & Tzioumis, 2021). Subject to respective loan contract terms, the bank is likely to be entitled to terminate or has already terminated the loan contract (Scharpf, 2009). In this study we follow the proposal of (Berger & Humphrey, 1997) to focus on NPL in the narrow sense, as these serve as most commonly agreed-upon definition of problem loans in the literature, because they are subject to less managerial discretion than other measures of credit quality.

For a study of NPL, it is important to consider both the demand and supply sides of the financial intermediation market. The demand side consist of borrowers who are looking to satisfy their utilities through financing of their bankable projects and personal consumption. The supply side is driven by the providers of funds, in this case the banks.

The method use to undertake this review of the determinants of NPL is the traditional method of a systematic review (Egger et al., 2022a) (Egger et al., 2022b). The systematic review process involves planning review, conducting the review, and reporting of review (Pullin et al., 2016) . A systematic review is a creation of the medical sciences and is mainly undertaken using the requirements of "the Preferred Reporting Items for Systematic Reviews and Meta-Analyses" (PRISMA) Statement(Moher et al., 2009). The PRISMA Statement details a checklist of 27 points and an informational flow template for conducting a review (Moher et al., 2009).

Peer review published studies were selected based on the determinant of non-performing loans by focusing on loans demands, loan supply and comparison between Islamic and Conventional banks. We searched for published English papers on the identified topics based on the research protocol spanning 2006-2022. The topic of interest included the determinants of NPL, bank-specific determinants of NPL, borrower-specific determinants of NPL, macroeconomic determinants of NPL, institutional determinants of NPL and a comparison between Islamic and Conventional banks NPL. The literature search was performed using the ScienceDirect database, Emeral and Google Scholar (Ghisellini et al., 2016) and (Manz et al., 2019). The keywords used included "determinants of non-performing loans or default*"; "economic performance and non-performing loans or default*"; "customer behavior and non-performing loan*"; "demographic factors and non-performing loans or default*" gender and non-performing loans or default*"; "impact of non-performing loans or default* on banks' performance"; "efficiency and financial stability due to non-performing loans or default*" “Islamic banks and non-performing loans or default*”; comparison of Islamic banks and Conventional banks non-performing loans or default*”, “loan default in Islamic and Conventional banks”; “differences in loan default between Islamic and conventional banks” The search results were exported to Rayyan software for screening[1]. Rayyan is a cloud-based platform for screening articles citation to organize them into meaningful data (Ouzzani et al., 2016). The search results key word analysis showed that non-performing loans, credit risk, loan default, Islamic bank and loan loss provisions

[1] Home - Rayyan for Systematic Reviews - Guides at McGill Library

are the dominants (see figure 1) The number of papers extracted initially was 755. Some 227 articles were identified as duplicates from the initial search results and these were excluded. The research inclusion/exclusion criteria were then applied based on a study of abstracts by one reviewer and a blind review by another. The research inclusion criteria are based on selected articles that address the identified thematic areas of the systematic review, including borrower-specific determinants of NPL, bank-specific determinants of NPL, macroeconomic determinants of NPL, institutional determinants of NPL and comparison between Islamic and Conventional banks NPL. Exclusion criteria were applied to the papers based on the topic's relevance to the research interest and non-primary papers such as literature review studies. Further, non-English papers and papers that did not have a transparent methodology for arriving at findings were excluded. Figure provides a summary of the systematic review methodology. The title and abstract review of the articles led to the exclusion of 382 papers. The remaining 145 papers were subjected to full paper review, and 93 were excluded. The exclusion criteria on the papers regarding the full paper review included removing papers that were literature review type, book chapters, conference papers, unclear methodology, lack of clear findings, and papers that could not be classified under any of the thematic areas of the review (Khalifa et al, 2022). A final fifty-two (52) papers were then synthesized, and results were reported. The publication trend summarized in figure 3 indicates that most of the papers were published in the year 2022, followed by 2020 and the least number papers in the sample were published in the years 2008-2015. The Journal of Banking and Finance (one of the top tier banks in finance) featured 15% of the total papers in the sample (see figure 4). Table 1 provides a summary of all the papers reviewed under this study by highlighting the methodology and the major findings.

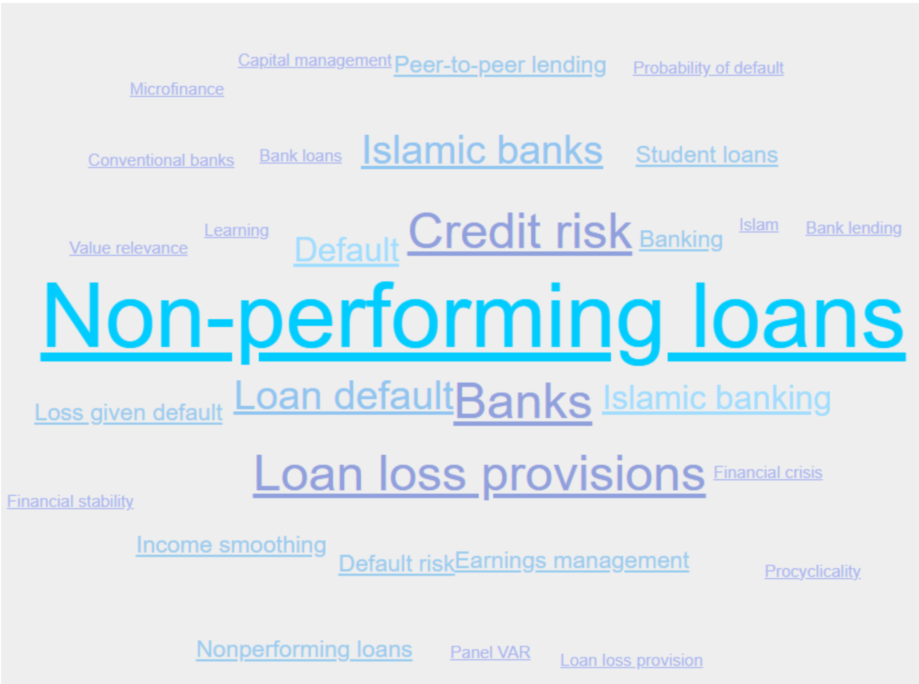

Figure 1: Keywords in the literature search

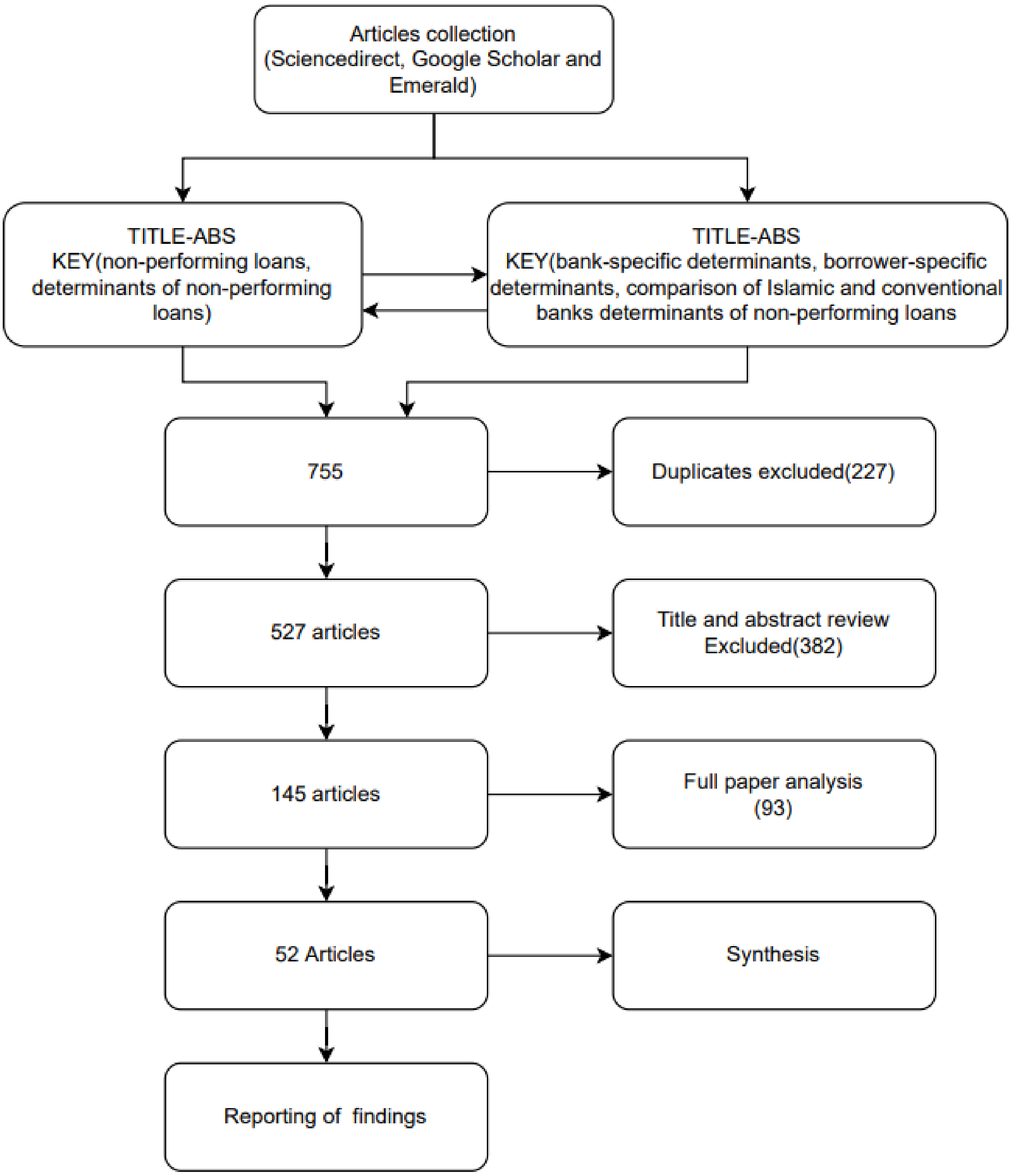

Figure 2: Systematic Review Process Flow

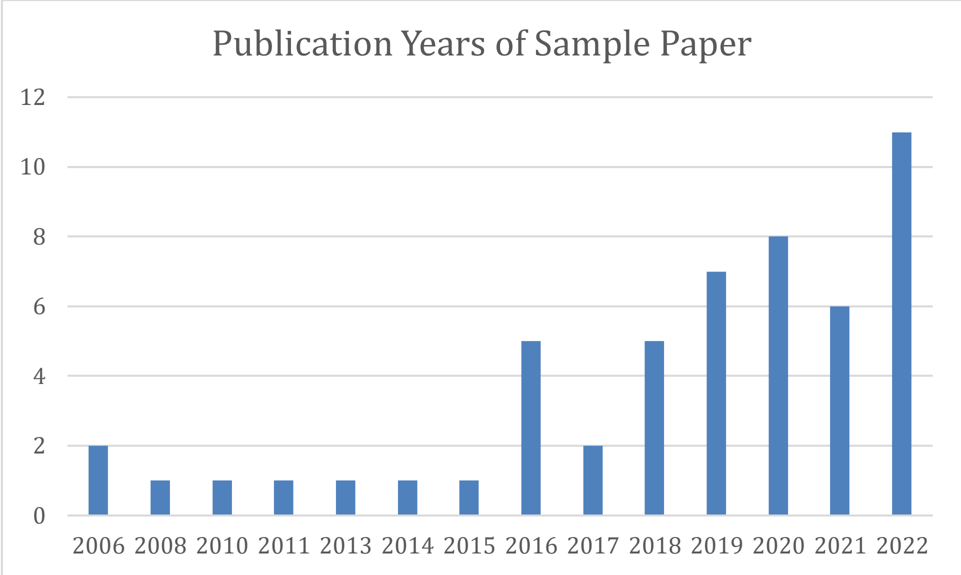

Figure 3: Publication trend

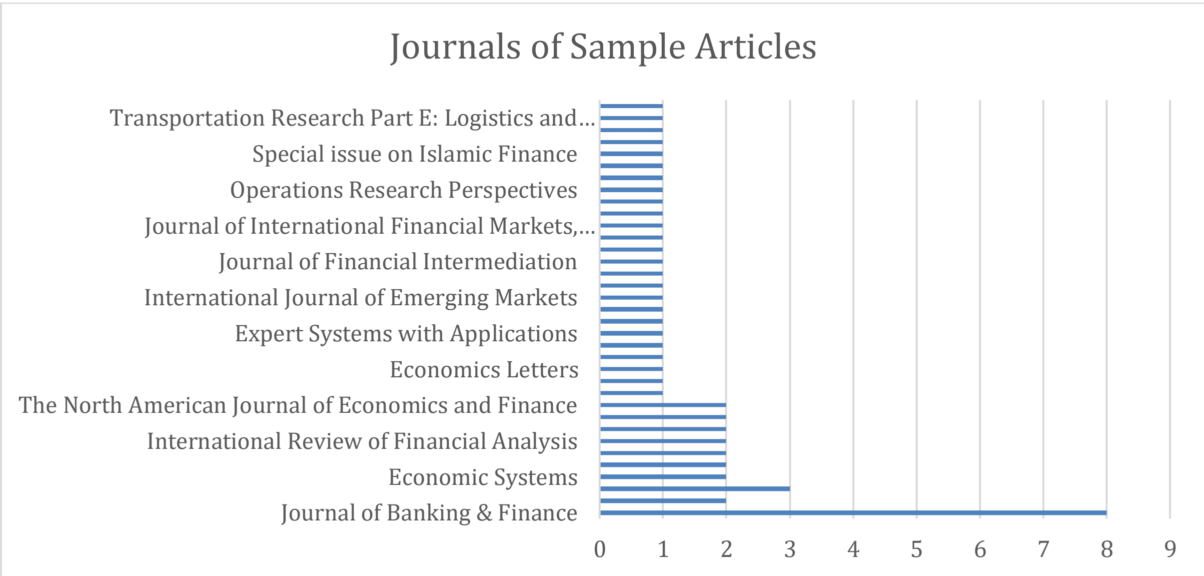

Figure 4: Journals sampled

Table 1: Summary of sampled articles

Author	Year	Journal	Methodology	Major Findings
Borrower-Specific Determinants				
Alaoui Mdaghri, Anas	2022	International Journal of Emerging Markets	GMM	The results demonstrated a significant negative effect of bank liquidity creation on NPLs in the short and long term, implying that liquidity creation through both on- and off-balance sheet activities decreases NPLs
Karadima, Maria and Louri, Helen	2020	International Review of Financial Analysis	quantile dynamic panel regression	The results suggest that post-crisis consolidation facilitates the faster reduction of NPLs, especially in the euro area periphery countries, while competition discourages the growth of new NPLs.
Saengchote, Kanis and Samphantharak, Krislert	2022	Emerging Markets Review	logistic regression	We find that same-bank borrowers are less likely to default on mortgage loans first, and borrowers with longer banking relationship and lower switching cost are more likely to default on mortgage loans first (which is welfare-improving).
Fianto, Bayu Arie and Maulida, Hayu	2019	Heliyon	logistic regression	The results show that age, gender, occupation, and type of contract influence the non-performance of clients of Islamic MFIs in Indonesia. Probit regression confirmed the results.

and Laila, Nisful				
Trautmann, Stefan T. and Vlahu, Razvan	2013	Journal of Banking & Finance	experimental	We show that changes in expectations about bank and borrower fundamentals change the risk dominance properties of the borrower's coordination problem, and that these changes subsequently explain strategic defaults. For the individual borrower, loss aversion and negative past experiences reduce repayment, suggesting that bank failure can be contagious in times of distress.
Kavussanos, Manolis G. and Tsouknidis, Dimitris A.	2016	Transportation Research Part E: Logistics and Transportation Review	logistic regression	Industry specific variables, captured through current and expected conditions in the extremely volatile global shipping freight markets, the risk appetite of borrowers "the shipowners "expressed through the chartering policy they follow "and a pricing variable, are shown for the first time to be the important factors explaining default probabilities of bank loans.
M, Jayadev and N, Padma	2020	IIMB Management Review	OLS	We argue that borrowers turn into wilful defaulters by taking undue advantage of weak governance structures such as ineffective functioning of the economic, legal and political institutions of the country.
Nigmonov, Asror and Shams, Syed and Alam, Khorshed	2022	Research in International Business and Finance	logistic regression	Our results show that a higher interest rate and inflation increase the probability of default in the P2P lending market. We also find that the impact of interest rate on the probability of default is significantly higher for loans with lower ratings.
Gao, Weihe and Liu, Yong and Yin, Hua and Zhang, Yiwei	2022	Decision Support Systems	OLS	Our analysis shows that the more incoming calls a borrower usually receives, the less likely he or she is to default on a loan. However, the more outgoing calls a borrower makes, the more likely default will occur. We further find that calling activities associated with stronger social ties have greater predictive power for loan defaults than those associated with weaker ties.
Armona, Luis and Chakrabarti, Rajashri and Lovenheim, Michael F.	2022	Journal of Financial Economics	FE	We present evidence that these debt and default outcomes are driven by higher for-profit tuition and a negative effect of for-profit enrolment on labor market outcomes.
Legendre, Nicolas and Nitani, Miwako and Riding, Allan	2021	Journal of Business Research	OLS	Findings suggest that the benefits of the franchising model, such as new firms acquiring the franchisors€™ brand name, do not necessarily lead to lower default rates for franchisees.
RadivojeviÄ‡, Nikola and CvijanoviÄ‡, Drago and Sekulic, Dejan and Pavlovic, Dejana and Jovic, Srdjan and MaksimoviÄ‡, Goran	2019	Physica A: Statistical Mechanics and its Applications	GMM	No evidence was found in support of the significance of the impact of the inflation rate and the microeconomic variables that were the subject of research in this paper.
Boumparis, Periklis and Milas, Costas and Panagiotidis, Theodore	2019	International Review of Financial Analysis	VAR	At the same time, sovereign rating decisions impact on NPLs and all other variables.
SÃ¡nchez Serrano, Antonio	2021	The North American Journal of Economics and Finance	FE	general, higher rates of non-performing loans, together with other variables, are associated with lower growth rates of performing loans.

Fidrmuc, Jarko and Hainz, Christa	2010	Economic Systems	DE	how that liquidity and profitability factors are important determinants of SME defaults. Moreover, we find that indebtedness significantly increases the probability of default.
Goedecke, Jann	2018	Economics Letters	Cox's proportional hazards regression model.	Potential underlying mechanisms include contagious defaulting behavior, which bears the risk of proliferating into a repayment crisis in the event of an economic or political shock, as experiences from similar markets suggest.
Carvalho, Jaimilton and Orrillo, Jaime and da Silva, Fern and a Rocha Gomes	2020	The North American Journal of Economics and Finance	Cox's proportional hazards regression model.	We find that the probability of default is negatively correlated with the level of collateral,
Zhang, Xuan and Ouyang, Ruolan and Liu, Ding and Xu, Liao	2020	Economic Modelling	FE	We demonstrate that leverage, liquidity, firm size are the key firm-specific factors in determining default risk in China, along with macroeconomic factors like interest rate and stock return.
Hartarska, Valentina and Gonzalez-Vega, Claudio	2006	Journal of Housing Economics	VAR	We find some evidence that counselled borrowers defaulted less often than non-counselled borrowers and that counselling affects optimal exercise of the default option.
Mayock, Tom and Tzioumis, Konstantinos	2021	Journal of Banking & Finance	FE	we find that loans for new homes were roughly 1.7 percentage points more likely to default, while our instrumental variables analysis suggests that new-home loans are 4.5 percentage points more likely to default.
Castillo, JosÃ© A. and Mora-Valencia, AndrÃ©s and Perote, Javier	2018	Finance Research Letters	FE	We find that low effort and underinvestment variables have a significant impact on default risk and thus moral hazard has an effect on the failure of SMEs with collateralized obligations.
Odeh, Oluwarotimi and Koduru, Praveen and Featherstone, Allen and Das, Sanjoy and Welch, Stephen M.	2011	Expert Systems with Applications	internal factors	Empirical results show that the best indicators of default status are observed when repayment capacity and owners' equity are low, and the working capital is either low or high. Also, the two worst rule indicators are low repayment capacity, high ownersâ€™ equity and medium working capital or medium repayment capacity, low ownersâ€™ equity and high working capital.
Cowling, Marc and Ughetto, Elisa and Lee, Neil	2018	Technological Forecasting and Social Change	OLS	New technology financing is directly related to NPL
Mangrum, Daniel	2022	Journal of Financial Economics	FE	Students with higher-income parents respond by adjusting borrowing, reducing median balances by 7%. By contrast, first-generation and low-income borrowers bound by mandates did not significantly adjust borrowing but were nonetheless more likely to pay down balances.
Bank-Specific Determinants of NPL				
Choudhary, M. Ali and Jain, Anil K.	2021	Journal of Banking & Finance	cross sectional regression	we show that banks with low leverage ratios are both significantly slower and less likely to recognize a loan as non-performing than other banks that lend to the same firm.
Wasiaturrahma and Ajija, Shochrul Rohmatul and Sukmana, Raditya and Sari, Tita Novita and Hudaifah, Ahmad	2020	Heliyon	Tobit regression	The results showed that size, non-performing financing (NPF), number of branches, grants, financial leverage, and age have a significant impact on Islamic cooperatives' outreach. An interesting finding is that size has a negative effect.

Aysan, Ahmet F. and Disli, Mustafa and Ng, Adam and Ozturk, Huseyin	2016	Economic Modelling	Pooled OLS and FE	We also find that the quality of Islamic banks' SME loan portfolio is comparable to that of conventional banks.
Wengerek, Sascha Tobias and Hippert, Benjamin and Uhde, AndrÃ©	2022	The Quarterly Review of Economics and Finance	FE	we provide evidence for a negative impact of securitization on NPL exposures suggesting that banks predominantly used securitization as an instrument of credit risk transfer and diversification. In addition, the analysis at hand reveals a time-sensitive relationship between securitization and NPL exposures.
Palvia, Ajay and VÃ¤hÃ¤maa, Emilia and VÃ¤hÃ¤maa, Sami	2020	Journal of Business Research	OLS	we document that female-led banks with high real estate exposure are associated with lower loan charge-offs and lower non-accrual loans relative to similar male-led banks. Furthermore, our empirical findings indicate that female-led banks with high real estate exposure have lower default risk and are less likely to fail in the aftermath of real estate price shocks
Parrado-MartÃ-nez, PurificaciÃ³n and GÃ³mez-FernÃ¡ndez-Aguado, Pilar and Partal-UreÃ±a, Antonio	2019	Journal of International Financial Markets, Institutions and Money	dynamic panel	We conclude that capital adequacy, liquidity, asset quality and profitability indicators influence the European banksâ€™ PD. The macroeconomic scenario, the industry concentration and the size of banks also appear to have an impact on their risk.
Lee, Pei-Ling and Lye, Chun-Teck and Lee, Chin	2022	Central Bank Review	GMM	his study confirms the â€˜risk-mitigation viewâ€™, in which banks with higher ESG scores are more prudent in lending and have better relationship management, reducing the probability of bank default. Underperforming banks tend to have a higher portion of risky loans in their credit portfolio and therefore demonstrating a higher default propensity. Bank risk appetite, ESG, asset quality, economic growth, and currency depreciation appear to be material drivers for bank risk.
VonnÃ¡k, Dzsamila	2018	Journal of International Money and Finance	OLS	Foreign currency denomination can worsen loan performance considerably, while selection also contributes significantly to the default differences. On the one hand, per se less creditworthy firms borrowed in foreign currency and during the crisis the foreign currency shocks further weakened their loan performances.
Soenen, Nicolas and V and er Vennet, Rudi	2022	Finance Research Letters	OLS and GMM	We find that Basel 3 regulation improves the banksâ€™ risk profile since higher capital ratios and more stable deposit funding contribute significantly to lower CDS spreads. We confirm the persistence of the bank-sovereign interconnectedness and find that sovereign default risk is transmitted to bank risk with an amplification factor
Puri, Manju and Rocholl, Jairg and Steffen, Sascha	2017	Journal of Financial Intermediation	logistic regression	Our results show that banks with relationship-specific information act differently compared with banks that do not have this information both in screening and subsequent monitoring borrowers which helps reduce loan defaults.
Widodo, Erwin and Rochmadhan, Oryza Akbar and Lukm and ono and Januardi	2022	Operations Research Perspectives	Bayesian-Nash equilibrium analysis	The identified factors causing NPLs include customers' utility and disutility, inspection error in the form of false alarm and non-detection, operational costs to conduct an inspection, and bank utility related to inspection
Mueller, Holger M. and Yannelis, Constantine	2019	Journal of Financial Economics	FE	Falling home prices affect student loan defaults by impairing individualsâ€™ labor earnings, especially for low income jobs. By contrast, when comparing the default sensitivities of homeowners and renters, we find no evidence that falling home prices affect student loan defaults through a home equity-based liquidity channel.

Ari, Anil and Chen, Sophia and Ratnovski, Lev	2021	Journal of Banking & Finance	OLS, Logistic and Tobit	These predictorsâ€"a set of weak macroeconomic, institutional, corporate, and banking sector conditions€ "help shed light on post-COVID-19 NPL vulnerabilities.
Lafuente, Esteban and Vaillant, Yancy and Vendrell-Herrero, Ferran	2019	European Management Journal	OLS	The results indicate that the negative effect of non-performing loans on ROA is significantly greater in banks with non-performing directorship associated with high rates of unexpected changes in the board. The findings of the study highlight that the competence of boards matters
Comparison of Islamic and Conventional banks determinants of NPL				
Lee, Yok Yong and Dato Haji Yahya, Mohd Hisham and Habibullah, Muzafar Shah and Mohd Ashhari, Zariyawati	2020	Journal of Financial Economic Policy	GMM	The empirical results reveal that NPL is primarily driven positively by lagged-one NPL and risk profile
Riahi, Youssef Mohamed	2019	Managerial Finance	OLS	The results indicate that NPLs affect liquidity risk differently across the banks â€"specifically, there is a significant difference in the funding and managing of liquidity between the two bank types.
Saif-Alyousfi, Abdulazeez Y.H. and Saha, Asish and Md-Rus, Rohani	2018	International Journal of Bank Marketing	GMM	he results indicate that oil price shocks and gas price shocks do not have directly affect NPLs of Qatari banks at the aggregate level, while they have indirect effects that are channelled through the country-specific macroeconomic and institutional factors. The authors find that oil and gas prices shocks affect NPLs of Qatari Islamic banks directly through extended oil and gas-related cash flows, while their impact on the NPLs of Qatari commercial banks is indirect.
Bekele, Genanew and Chowdhury, Reza H. and Rao, Ananth	2016	Review of Behavioral Finance	Box-Cox double hurdle model	The paper demonstrates that the probability of default and the quantum of default appear to be influenced by different set of client-specific factors. The results suggest that the probability of default does not vary significantly between Islamic and conventional banking borrowers. The evidence also shows that Islamic banking defaulters, compared to those in conventional banking, repay a large quantum of overdue when their financial leverage improves.
Baele, Lieven and Farooq, Moazzam and Ongena, Steven	2014	Journal of Banking & Finance	Fixed effects	We find robust evidence that the default rate of Islamic loans is less than half the default rate of conventional loans. Islamic loans are less likely to default during Ramadan and in big cities if the share of votes to religious-political parties increases, suggesting that religion â€" either through individual piousness or network effects â€" may play a role in determining loan default.
Al and ejani, Maha and Asutay, Mehmet	2017	Research in International Business and Finance	GMM	Our findings indicate that the sectoral distribution of Islamic financing has an adverse impact on NPL, which suggest that the sectoral financing growth of Islamic banks increases the credit risk exposure more than conventional banks. The findings of the Islamic finance methods growth show that the impact of fixed-income debt contracts could increase NPL more than profit-and-loss-sharing contracts.
Saeed, Momna and Izzeldin, Marwan	2016	Special issue on Islamic Finance	VAR	Our analysis shows that the relationship between profit efficiency and default risk banks across the sample, for CBs and for the GCC is such that a decrease in default risk is associated with lower efficiency levels. With the single exception of IBs, the causality from profit efficiency to default risk is inversely related for all categories. For CBs, the trade-off between efficiency and risk is evident.
Croux, Christophe and Jagtiani, Julapa and Korivi, Tarunsai and Vulanovic, Milos	2020	Journal of Economic Behavior & Organization	logistic regression	Identified a robust set of contractual loan characteristics, borrower characteristics, and macroeconomic variables that are important in determining the likelihood of default, such as loan maturity, homeownership, loan purposes, occupation, etc. We also find an important role of alternative data in determining the default, even after controlling for the obvious risk characteristics of the

				borrowers, loan characteristics, and the local economic factors. The results are robust to different empirical approaches. Results imply that it would be important for regulators to provide greater transparency in terms of guidance and regulatory clarity on which alternative data can be used legally without violating fair lending rules.
Ghosh, Amit	2015	Journal of Financial Stability	GMM	find greater capitalization, liquidity risks, poor credit quality, greater cost inefficiency and banking industry size to significantly increase NPLs, while greater bank profitability lowers NPLs. Moreover, higher state real GDP and real personal income growth rates, and changes in state housing price index reduce NPLs, while inflation, state unemployment rates, and US public debt significantly increase NPLs.
Mirpourian, Seyedmehrdad and Caragliu, Andrea and Di Maio, Giorgio and L and oni, Paolo and RusinÃ , Emanuele	2016	World Development Perspectives	experimental	Empirical results show that the repayment rate improves as borrowers get closer to the loan limit, which is the maximum available loan. In other words, motivation for reaching the maximum loan level is positively associated to the repayment performance.
Dermine, J. and de Carvalho, C. Neto	2006	Journal of Banking & Finance	logistic regression	empirical results relate to the timing of recoveries on bad and doubtful bank loans, the distribution of cumulative recovery rates, their economic determinants and the direct costs incurred by that bank on recoveries on bad and doubtful loans.
Riahi, Youssef Mohamed	2019	Managerial Finance	FE	The results indicate that NPLs affect liquidity risk differently across the banks â€“specifically, there is a significant difference in the funding and managing of liquidity between the two bank types.

The synthesis of the selected papers was conducted to understand the state of the literature and the characteristics of studies and to identify potential research gaps that need to be addressed. Research synthesis describes the methods for summarizing, integrating, and possibly, aggregating the findings of different studies on a topic or research question (Mulrow, 1994). Even though both quantitative and qualitative synthesis can be applied in answering a research question, the current research adopts qualitative analysis. The qualitative synthesis paradigm was used based on the nature of the topic. The qualitative synthesis allows evaluation of the effects of intervention and the way it may be influenced by measured study characteristics and data quality (Collaboration for Environmental Evidence, 2018). Quantitative analysis on the other hand, provides estimates of size effect and reasons for heterogeneity in the effect of the intervention. A meta-analysis is a systematic review that uses quantitative methods to synthesize and summarize results and is now applied frequently in ecological research (Osenberg et al., 1999).

Unlike physical sciences, where positivity can establish, research in the social sciences tends to be problematic in positivity concerning key research questions because of the interpretation of social phenomenon (Tranfield et al., 2003). Studies in the social sciences do not usually address the same problems and, more importantly, ask the same questions. Even when the same questions are asked, economic and social contexts are significant in interpretation. Consequently, aggregative approaches to research synthesis in this area may become daunting.

Guided by the previous sampled literature sample, we synthesize and order each reference by concept (Webster & Watson, 2002). The concepts were identified in three phases through an open coding process (Tabor et al., 2018). Each reference was given a descriptive label. After the first labelling, we grouped similar labels into 13 broader groups, also called second-order codes (Corbin & Strauss, 1990). Finally, we conclude with a concept-centric framework guided by the research protocol and research questions with dimensions which include borrower specific, bank-specific and a comparison of Islamic and conventional bank types. The outcome of this coding is presented in figure 5.

The holistic framework essentializes the need for research on determinants of NPL to consider the bank-specific factors holistically within the broader borrower-specific and external factors. This framework also highlights the nuance in the NPL determinants when it comes to Islamic banks and their implications for financial stability, which is the concern of regulatory authorities, especially in jurisdictions with a dual banking system.

3. Findings and Discussion

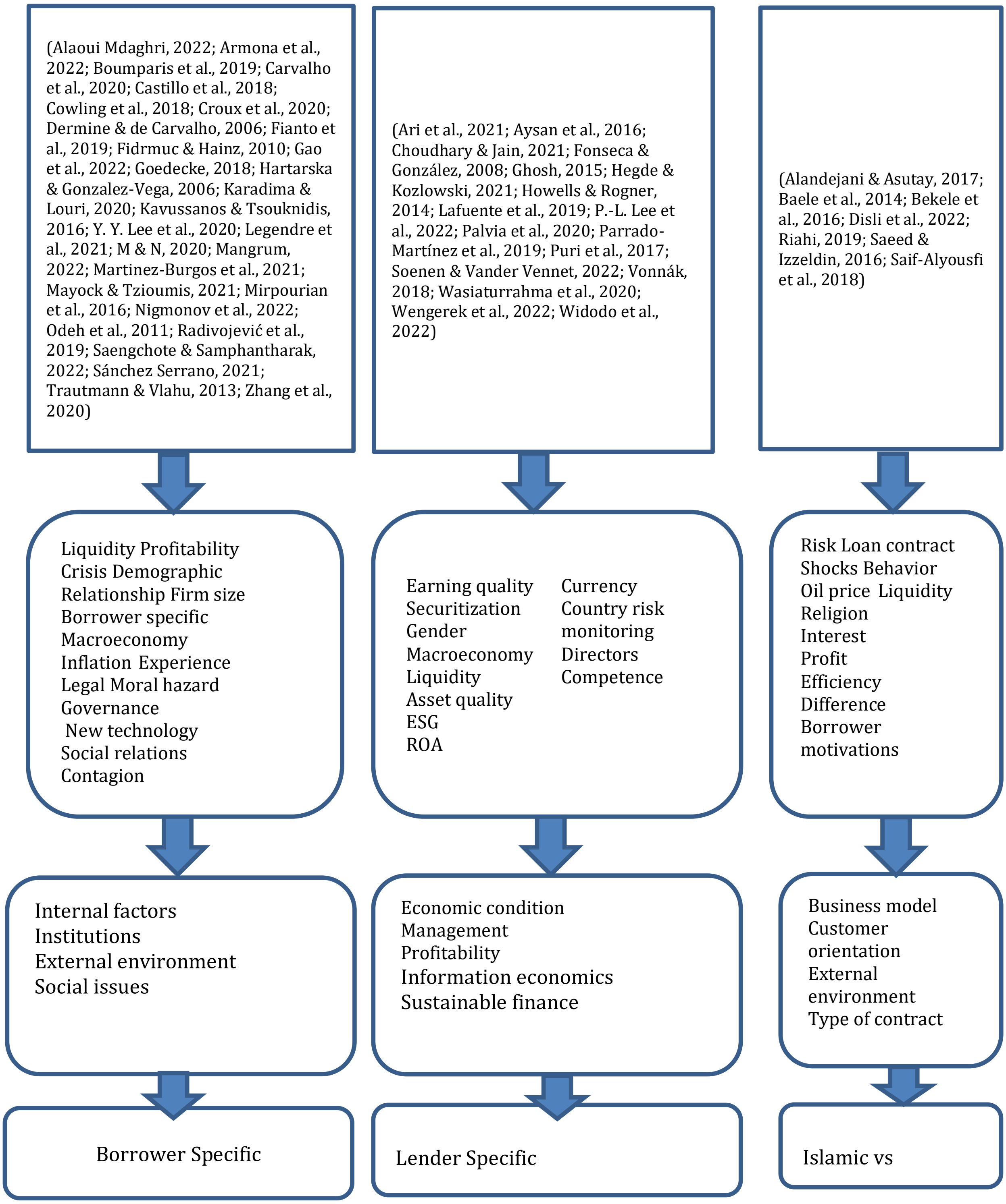

Figure 5: Articles coding and synthesis summary
Style adapted from (Manz, 2019; Tabor et al., 2018)

As indicated earlier, fifty-two (52) articles were synthesized to engender clarity in the literature and to provide more understanding. The aggregation of the first-order and second-order codes established that most of the articles studied addressed the demand side of the financial market. Specifically, twenty-four (24) articles, sixteen (16) articles and twelve (12) articles were attributed to the borrower-specific determinants of NPL, bank-specific determinants of NPL and comparison of Islamic and conventional bank type determinants of NPL respectively (see figure 6).

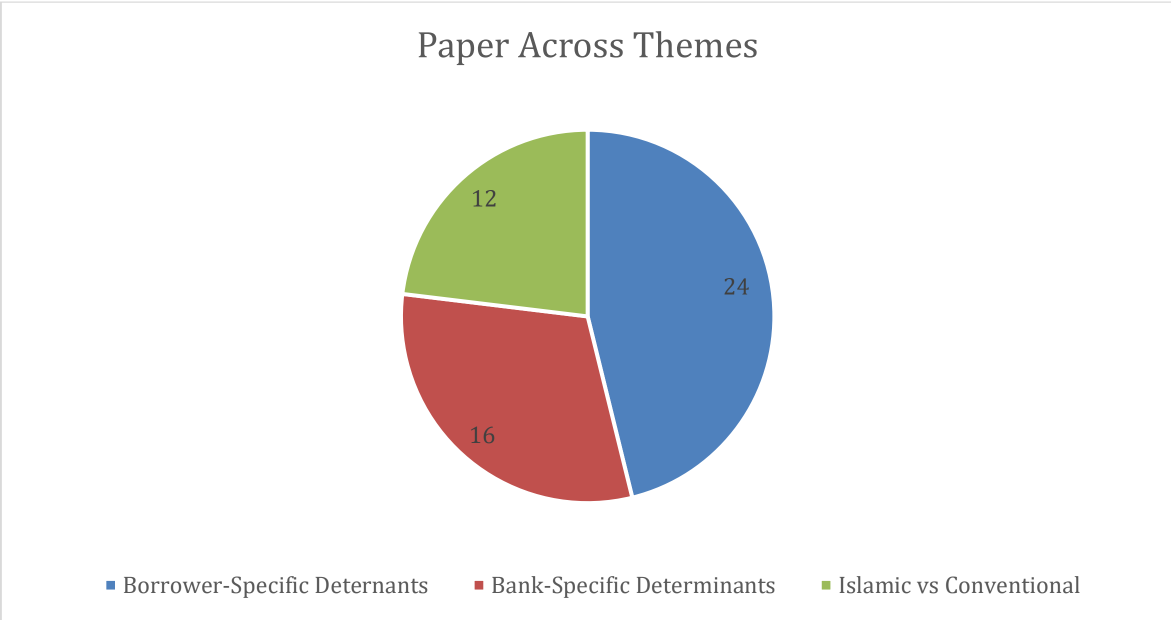

Figure 6: Themes of articles

3.1. Borrower Specific Determinants

The studies of the borrower-specific determinants of NPL are classified into Internal factors, ((Cowling et al., 2018; Fianto et al., 2019; Fidrmuc & Hainz, 2010; Gao et al., 2022; Mayock & Tzioumis, 2021; Odeh et al., 2011; Radivojević et al., 2019; Zhang et al., 2020); Institutions(M & N, 2020), External environment (Goedecke, 2018; Nigmonov et al., 2022; Radivojević et al., 2019) and Social issues (Castillo et al., 2018; Hartarska & Gonzalez-Vega, 2006; Trautmann & Vlahu, 2013). Borrower organizational profile. The analysis of the findings suggests that borrower internal company organization greatly influences the possibility of defaulting on loan payments. These internal factors range from management competency, which manifests in the inefficiency of the use of organizational resources, to financial matters, such as the company's indebtedness, which affects liquidity. Also, organizational innovation determines the possibility of default as new technologies face a higher risk of failure, which intends to constrain organizational cashflows. Also, borrowers who have established long relationships with banks reportedly have a higher chance of default, especially for SMEs. The institutional factors that contribute to a loan default are weak laws and lax regulatory regimes. These conditions make it easy for organizations to default and make the recovery of loans difficult. Most of the external factors identified relate to macroeconomic conditions and crises. High inflation, unemployment, high-interest rates, and low economic growth are attributed to loan defaults

3.2. Bank-Specific Determinants

The characteristics of how banking business is conducted also influence the NPL level. The overarching issues identified in the various reported studies include economic conditions (Ari et al., 2021; Mueller & Yannelis, 2019; Soenen & Vander Vennet, 2022; Vonnák, 2018), profitability pursuit (Choudhary & Jain, 2021; Disli et al., 2022; Parrado-Martínez et al., 2019; Wengerek et al., 2022); information economics(Parrado-Martínez et al., 2019; Widodo et al., 2022); management competence(Lafuente et al., 2019; Palvia et al., 2020; Wasiaturrahma et al., 2020); and ESG(Lee et al., 2022). Many studies from banks' perspectives attribute the level of loan default to the prevailing macroeconomic conditions. Similar to the borrower's assertion of the role of macroeconomic conditions to their inability to service their loans, bankers also admit that borrowers are likely to default in a period of distressed macroeconomic conditions. Also, the pursuit of profit maximization may influence banks to lend money to less credit worthy borrowers which is likely to lead to defaults. This is more likely when bankers bonuses are tied to the level of revenue they generate without considering the quality of revenue. Additionally, when credit assessment leads to adverse selection of borrowers, this can lead to moral hazard which is conceptualized as the economics of information. This affects repayment of loans when the character of borrowers change post-loan disbursement. It is also found that an ESG-focused lending leads to lower NPL occurrence as there is high prudence in selecting borrowers and projects. Finally, competence of bank management is also deemed to determine the probability of NPL. A well-managed bank will ensure that the borrowed funds are allocated most efficiently to ensure that the funds are paid back.

3.3. Islamic vs Conventional

23% of the articles studied addressed determinants of NPL in a comparative way (Islamic banks vs Conventional banks). The focus here was to find out if the Islamic bank business model, borrower orientation, external environment, and type of contract used have some particularities that influence NPL differently from conventional banks. The analysis of the data shows that Islamic banks defaults are less than conventional banks default, profit and loss sharing reduces default, Islamic finance face sectoral concentration risks which may drive NPL higher, tradeoff between efficiency and risk less evident in Islamic banks (Alandejani & Asutay, 2017; Baele et al., 2014; Bekele et al., 2016; Croux et al., 2020; Disli et al., 2022; Riahi, 2019; Saeed & Izzeldin, 2016). Oil prices is also seen to affect conventional banks more than Islamic banks when it comes to their impact on NPL (Saif-Alyousfi et al., 2018). Religion is seen as a moderator for customer motivation to repay their facility with an Islamic bank. This manifests in the findings that Islamic bank customers are more likely to repay the facility when their financial condition improves than conventional bank borrowers (Croux et al., 2020; Mirpourian et al., 2016). Finally, it ascertained from the literature synthesis that the contract used in structuring Islamic financial transactions may have some features that reduce the NPL occurrence. For instance, the use of profit and loss-sharing contracts is seen to be less prone to default than fixed-interest debt financing (Alandejani & Asutay, 2017; Croux et al., 2020). Contractually, this may be true, but in the economic sense, the performance of the underlining profit and loss-sharing project may signal the possibility of default.

4. Conclusions

Despite the vast literature on NPL, the determinants of NPL are still partly understood due to the complexity of the financial intermediation role of banks. This article conducts a systematic literature review on the determinants of NPL published in scientific journals. This study is motivated by the fact that NPL determinants are not fully understood, and policymakers are seeking more understanding to address NPL issues with appropriate measures in the post-covid-19. Also, Islamic and conventional banks may face similar NPL issues in their financial intermediation roles. However, it is still unclear whether the business orientation of the two bank types provides any differentiator when it comes to NPL. The review shows that the literature on NPL determinants covers many theoretical underpinnings from diverse perspectives. This paper adds to the development of this emerging field of systematic review in non-medical field settings by mapping existing research to inform future research exploits. The study also seeks to synthesize knowledge into a form that can be conceptually represented. This was done through three levels of the open coding process. Finally, this study aggregated the various research into conclusions of the NPL determinants through borrower-specific, bank-specific and comparison of Islamic and Conventional banking determinants of NPL. The synthesis of the various studies into these three themes presents a novelty of interpretation of the existing research strands, stressing the divergence within the literature.

The literature synthesis shows that borrower-specific factors that may determine NPL include borrower profile, internal factors, external factors and social issues. Also, the bank-specific factors that may influence NPL growth include economic conditions, management conditions, profit maximization, and information economic. However, the findings highlight that the way borrower profile, banks-specific factors and macroeconomic factors interact to influence NPL still needs more understanding. Further, Islamic banks and conventional banks seem to behave similarly regarding many bank-specific and macroeconomic factors even though the profit and loss sharing contract used in Islamic banks was deemed to moderate NPL positively. But the interaction of the borrower-specific factors with bank-specific and macroeconomic factors of Islamic banks clients remains unclear. This highlights an important research gap in understanding the behavior of Islamic bank borrowers towards NPL prediction.

The practical implication of the review is that the literature revealed that many NPL determinants are caused by borrower characteristics which require banks to intensify their customer profiling and monitoring in the post-loan disbursement to reduce NPL. In addition, banks should also apply a high level of competence in their credit assessment and general governance of banks to reduce predatory lending behavior motivated by the unguided pursuit of profit.

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