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Islamic and Conventional Banking Systems in the Middle East and Northern Africa region (2012-2021)

{Internal and external determinants of financial performance and financial resilience in the MENA region}

By

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Abstract: The health of the financial system has vital influence on the economic growth and development of a country. Banking systems are a key component of the financial systems and therefore, the economic importance of banks should never be underestimated. However, it is not just the financial performance of these banks that determines their success in the economic arena but also, their resilience levels. This study looks at Islamic banks and conventional banks in the Middle East and Northern Africa region to better understand (1) how and if these systems differ regarding financial performance and resilience and (2) what some of the key determinants are (both internal and external) of financial performance and resilience in the region. This study looks at 67 banks over the time 2012-2021. Several quantitative techniques including, a Manova test, logistic regressions, pooled OLS regressions and random effects models are used to differentiate between the two banking systems as well as to understand what factors determine financial performance and resilience overall. The study finds that there is no differentiation between Islamic and Conventional banks both in terms of performance and resilience. However, there are other internal and external factors that do have a statistically significant impact in determining both financial performance and resilience, respectively. Furthermore, this study finds that resilience is a key determinant of financial performance however, the causal relationship does not work the same way when reversed.

Key words: Finance, Islamic finance, Islamic banks, conventional banks, resilience, financial performance, banking, Middle East, and Northern Africa

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1.0 Introduction

The banking system plays a vital role in the economic development of a country as it directly impacts the stability of the financial environment. In 2008, the conventional banking system witnessed an unprecedented collapse (Ryu, Piao & Nam, 2022; Salim & Mahmoud, 2016). The bursting of the U.S. housing bubble did not just impact the country domestically but acted as a catalyst to a broader, global financial meltdown. In the 1980s, the creed of market fundamentalism became dominant which led to deregulation, globalization, and financial innovation, all based upon the assumption that markets tended towards a single equilibrium (Ryu, Piao & Nam, 2022). This assumption was false and with the bankruptcy of Lehman Brothers in September 2008, the foundation of the conventional banking system was shaken. It was at this time that the Islamic financial banking system stood out as an alternative system that withstood economic crises with the help of its standardized Islamic financial products, strict regulations, and supervisory arrangements (Ryu, Piao & Nam, 2022; Khediri, Charfeddine & Youssef, 2015).

Generally, maturity transformation – the conversion of short-term liabilities into long-term assets – is a core function of banks. Therefore, banks hold both illiquid assets and liquid liabilities which exposes them to liquidity mismatch risk (Farooq & Zaheer, 2015). A potential consequence of this is that the bank can become insolvent. This is just one example of a risk that banks face. In the case of the global financial crisis 2007/8 (a liquidity crisis), banks suffered because of diminished health of the financial sector even despite many of these banking having high levels of financial strength at the time of the crisis (Farooq & Zaheer, 2015). This kind of 'panic' situation tests the resilience of banking systems. Unfortunately, research surrounding financial resilience of Islamic banks (IBs) vs conventional banks (CBs) is extremely limited both generally and during times of crisis (Farooq & Zaheer, 2015).

Forty years ago, the Islamic financial system was still in its infancy, but since then it has expanded into one of the fastest growing markets with a growth rate of approximately 20%. There are 428 commercial Islamic financial institutions worldwide as of 2019 and their total assets amount to approximately $1.99 trillion (6% of total global banking assets) (Puri-Mirza, 2021). It is widely agreed by experts that IBs performed remarkably well in the financial crisis of 2007/8 because of certain features unique to the system. Rashwan (2010) points out that ownership and trading of a physical good or service is critical in the structuring of Islamic financial products and that the

selling and buying of debt is not allowed. This aided the Islamic banking system from being severely impacted by the housing crisis (Rashwan 2010). The collapse of the credit market did not affect Islamic banking directly because such banks are not in this market at all. Was the resilience and higher performance levels of the Islamic banking system at the time of the financial crisis a fluke or is the system in fact durable at times when the conventional banking system is more vulnerable?

In the last 15 years, there have been multiple global crises however, two that stand out are the Arab Spring and the COVID-19 crisis. From 2010-2013, the Arab spring – a series of anti-government protests, uprising and armed rebellions—spread across the Middle East and North Africa (MENA) region. The protests began in Tunisia and spread to Libya, Egypt, Yemen, Syria, and Bahrain (Editors, 2022). However, the social, political, and economic impact of the Arab Spring reverberated across the region with sustained street demonstrations, civil wars, and riots in countries such as Morocco, Iraq, Alegria, Iran, Lebanon, and many others (Editors, 2022). This crisis coupled with the more recent COVID-19 pandemic has had and will continue to have significant impacts on financial institutions, with possible detrimental long-term effects on banking systems across the region. The widespread ramifications of COVID-19 on economies in the Gulf Cooperation Council (GCC), for example, are already visible with banking profitability taking a plunge in 2020 at the double-digit level, mainly due to increase loan provisioning across numerous sectors (KPMG 2021).

The MENA region (including the GCC) currently holds 67,4% of the distribution of global Islamic financial assets in the world (Debes, Alenezi & Baradie 2022). Therefore, it makes a good case study when comparing financial resilience as well as performance levels of Islamic and conventional banking systems. The percentage of Islamic to CBs differs across the MENA region with it being close to 0% in Algeria, 50% in Kuwait, 40% in Iran and between 10% to 20% for majority of the other countries in the region (Fitchratings 2021).

The aim of this paper first and foremost is to examine if and how financial performance and resilience differ between conventional and IBs. However, this paper also aims to explore the broader determinants (both internal and external) of financial performance and resilience of banks in the MENA region from 2012-2021, particularly if bank type is not a discriminating factor. There are three gaps prevalent in current literature that are addressed in this paper. (1) Currently, there is

limited research available on the impact of both the Arab spring and the COVID-19 crisis on MENA banking systems, moreover, the scholarly literature that is published, mainly focuses on the Gulf Corporation Council (GCC), with limited attention given to other countries in the MENA region. (2) The relationship between financial resilience and financial performance is explored to better understand any causal and/or correlation properties (Debes, Alenezi & Baradie 2022); (3) both internal and external factors are examined to get a better picture of what influences performance and resilience levels of banks in the MENA region from 2012-2021. Relative to other pieces of work, this study looks at a nine-year window, which is considered a longer period. This will contribute to both a deeper understanding of the performance and resilience patterns in the MENA region as well as more will provide more reliable results. This brings us to the research problems of this study:

> *Do financial performance and/or financial resilience differ between Islamic and conventional banking systems in the MENA region from 2012-2021?*
>
> *What are the determinants of financial performance and financial resilience when looking at conventional and Islamic banking systems in the MENA region from 2012-2021?*

This paper is separated into six sections starting with a literature review that assesses the current scholarship on resilience, financial performance as well as IBs and CBs. This will help with establishing theoretical relationships that are expected to exist between the different factors. The paper goes on to outline a theoretical framework with several hypotheses that aim to explore financial performance and resilience levels amongst the two different banking systems, as well as the possible determinants for these two indicators. This section is followed by the methodology, a results section, a discussion section where all findings are linked to current literature in the field, and finally a conclusion that includes limitations of this study and suggestions for further research.

2.0 Literature Review & Theoretical Framework

The literature review and theoretical framework section is made up of several parts. The first part will give insight into what the Islamic banking system entails and how it differs from conventional banking systems. The second section will look at the internal factors (bank-level characteristics) that determine financial performance levels and then will construct relevant hypotheses regarding bank type and financial performance. The third section looks at the different types of resilience as

well as internal determinants that could play a role in explaining differing resilience levels. This section too will incorporate a hypothesis about resilience and its potential relationship with bank type. Finally, the last two sections will look at literature surrounding the relationship between performance and resilience overall and finally, all macroeconomic determinants of both financial performance and financial resilience will be discussed last.

2.1 Background on Islamic Banking

Although there is no universally accepted definition of the Islamic Banking model, the Organization of the Islamic Conference (OIC) define an Islamic Bank (IB) as *"a financial institution whose statues, rules and procedures expressly state its commitment to the principles of Islamic Sharia and to the banning of the receipt and payment of interest on any of its operations*" (Debes, Alenezi & Baradie, 2022). Islamic finance is founded on Shariah law. There are five principles based on Shariah law that distinguish Islamic finance from conventional finance. (1) profit and loss sharing (PLS) principle; (2) Asset-backed financing through *musharaka* and *murabaha* (Baber, 2018); (3) prohibition of *riba* (interest) (Yahya, Muhammad & Hadi, 2012); (4) prohibition of *gharar* (excessive uncertainty) and *maysar (*excessive risk/gambling); (5) prohibition of financing illicit sectors (alcohol, pork, tobacco, prostitution, drugs) (Yahya, Muhammad & Hadi, 2012). Table 1 highlights the key differences between the two banking systems.

Table 1: Key features of the banking systems

Features	CBs	IBs
Gharar/maysar	✓	×
Investment in illicit sectors	✓	×
Debt selling and buying	✓	×
Fully asset-backed financing	×	✓
PLS	×	✓
Ethical investing	×	✓
Riba (Interest)	✓	×

Source: Authors' own

As illustrated in *Table 1*, there are many features that differentiate between conventional and Islamic banking systems, a key feature being the prohibition of interest-bearing contracts in

Islamic banking as the Quran prohibits the receipt and payment of interest in any/all transactions. This raises the question, how do IBs profit from and continue their operations? The answer, IBs rely on risk sharing under profit/loss sharing (PLS) arrangements. There are two types of arrangements (contractual agreements) within the Islamic banking system (1) *mudaraba* and (2) *musharaka* (Doumpos, Hasan & Pasiouras, 2017).

Traditionally, conventional agreements involve two parties, one with capital (financier or silent partner), and one known as the entrepreneur (working partner) (Doumpos et al., 2017). The financier provides the capital to the entrepreneur as an investment, and it is the entrepreneur who has ultimate control over the project. If the project is profitable then both parties' benefit and if it is not, then the financier bears the losses (Doumpos, Hasan & Pasiouras, 2017). However, in Islamic baking there is a different arrangement known as *mudaraba* (Doumpos, Hasan & Pasiouras, 2017) where an intermediary exists (the bank) creating a triangle between the three players. Investors put their funds in the bank and then the bank invests in entrepreneurs accordingly. In this case the financier is the sleeping partner and shares the profits or absorbs the losses with the bank. Therefore, the bank has a dual role. When accepting funds from the financier they are the entrepreneur and when the bank finances a project, they are the financier.

Another common contract employed in Islamic banking is *musharaka* (Doumpos, Hasan & Pasiouras, 2017). In this case, the bank alongside one or more clients embarks in a partnership or joint venture for an economic activity where every member is expected to contribute some percentage of all three factors of economic production (capital, labor, and entrepreneurship). The partners can maintain the partnership till the very end of the project and are able to revise the PLS structure anytime a client repurchases equity units (Doumpos, Hasan & Pasiouras, 2017).

Asset portfolios of IBs also differ from conventional banking systems because the former cannot invest in interest-bearing bonds, instead they can only invest in Islamic bonds (*Sukuk*) (Doumpos, Hasan & Pasiouras, 2017). This results in IBs having fewer liquid securities on the asset side. *Sukuk's* are asset-based securities and are not considered debt instruments (Doumpos, Hasan & Pasiouras, 2017). A key issue with the liquidity of IBs is the availability of short-term liquid assets because by investing in *Sukuk's* IBs lack liquid securities on the asset side. In short, Sukuk's cannot be liquidated quickly. Alternatively, Kammer et al., (2015) highlight that IBs usually have higher liquidity levels than CBs but they suffer from a lack of developed markets for Shariah-compliant,

high quality liquid assets. This tends to push IBs to hold higher shares of cash which has a negative impact on profitability, which negatively impact financial performance (Kammer et al., 2015).

Regarding risk, IBs cannot request collateral to reduce credit risk since they embark on partnerships with their financiers. However, on the other hand, Islamic Banking prohibits *gharar* (excessive uncertainty) and *maysar (*excessive risk/gambling) so, they may be more stable than conventional banking systems as they cannot participate in risky trading activities (Yahya, Muhammad & Hadi, 2012). Essentially, there should be a balance between risks and benefits of transactions, if this is not the case, the action is deemed an excessive risk and is undesirable because the size of the possible loss is such that, if it becomes a reality, the consequences are likely to cause social harm (Noor, Ismail, Mohd, 2018). Abedifar et al., (2013) highlight that the performance of IBs may have a larger effect on their clients. For example, if a bank is providing larger pay-outs to investment account holders, then deposits are expected to increase and vice vera. However, it is also important to mention that the behavior of depositors may also depend on religiosity (Yahya, Muhammad & Hadi, 2012; Abedifar et al., 2013). So, Islamic bank depositors may be more sensitive to performance and experience higher withdrawal rates than CBs but on the other hand clients may be more loyal to IBs due to religiosity mitigating depositors' discipline (Yahya, Muhammad & Hadi, 2012; Abedifar et al., 2013).

2.2 Financial performance

2.2.1 Working definition

Financial performance can be defined as *'the complete evaluation of a company's overall standing in categories such as assets, liabilities, equity, expenses, revenue, and overall profitability'* (CFI, 2021). There are many business-related formulas that allows for the calculation of such aspects illustrated above that give exact details regarding a company's or a financial institutions' overall health and potential effectiveness. This section aims to identify internal bank-level characteristics that determine financial performance levels.

2.2.2. Internal determinants of financial performance

There is a plethora of literature that compares the financial performance of the two banking systems. This section looks at bank-level characteristics that determine banking performance mostly in the MENA region but also in other South-East Asian countries. Overall, scholars are divided on the issue of which system has better financial ratios. Financial ratios represent the magnitude of two selected numerical values taken from the financial statements of an enterprise.

These ratios are typically used in accounting and are a standard method when evaluating the financial condition of an organization/corporation (CFI, 2022). These ratios are used to determine bank-level characteristics that predict overall financial performance.

Rosman et al., (2014) conclude that the majority of IBs in the Middle East and Asia (79 banks from 2007-10) operate inefficiently at decreasing returns to scale. Hassan, Mohamad & Bader (2009) see no differences in efficiency between the two systems in Jordan and contrarily, Al-Muharrami (2008) and Shawtari, Abdelnabi Salem & Bakhit (2018) found that IBs are significantly more efficient in the GCC. Efficiency is an element that can help when determining overall financial performance however, the two factors are not the same. Efficiency is measured using input and output values. Efficiency can be obtained by using a maximum ratio -- weighted outputs divided by weighted inputs. The more output a bank produces for a given input, the more the bank can produce, resulting in higher efficiency (Rosman et al., 2014). There are several types of efficiency discussed in the literature mentioned above including pure technical efficiency, scale efficiency, technical efficiency, and cost & profit efficiency. (Rosman et al., 2014; Hassan, Mohamad & Bader, 2009; Al-Muharrami, 2008).

Khediri, Charfeddine & Youssef (2015) contribute to empirical literature on Islamic finance by investigating the features of IBs and CBs in the GCC from 2003-2010. They aim to examine whether financial ratios can be used to distinguish the two systems and their financial situations. They conclude that IBs are more profitable than CBs pre, post and during the financial crisis. Researchers Merchant (2012) and Parashar & Venkatesh (2010) differ in their conclusions in relation to the GCC indicating that IBs perform better in terms of liquidity, leverage, and capital but suffer in terms of profitability. The periods they look at are 2005-2010 and 2006-2009 respectively. Salim & Mahmoud (2016) also focus on the GCC but are critical of the Islamic banking system compared to conventional ones long-term. Salim & Mahmoud (2016) aim to understand which system performs better during a crisis and conclude that CBs show better profitability but IBs hold higher liquidity and stronger solvency conditions. This is in accordance with researchers Merchant (2012) and Parashar & Venkatesh (2010).

Four studies carried out comparing banking systems in Pakistan were conducted by Usman & Khan (2012), Hanif et al. (2012), Sehrish et al., (2012) and Jaffar & Manarvi (2011). They covered the periods 2007-2009; 2005-2009; 2007-2011 and 2005-2009 respectively. Usman & Khan

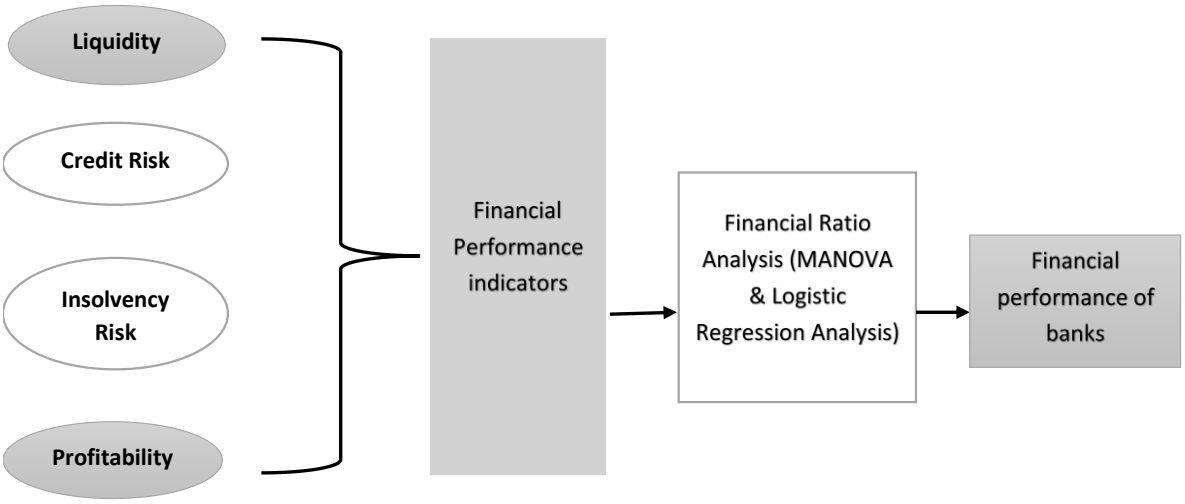
(2012) measured bank performance using profitability and liquidity indicators. Their results indicate that IBs are financial performing at a higher level compared to CBs as all the scholars agree that in terms of liquidity, leverage, riskiness, and capital adequacy, IBs surpass CBs in overall financial performance.

Ryu, Piao & Nam (2012) seem to agree with these conclusions as they conduct a comparative study between Islamic and conventional banking systems and their implications on elements such as risk and profit. This paper focuses on the example of Malaysia and concludes that the Islamic financial system is less risky and more profitable than CB systems due to the prohibition of *riba*. Some limitations of Ryu, Piao & Nam's (2012) study are that the period looked at is only from 2006-2010 and the study only looks at Malaysian banks.

Ika & Abdulla (2011) examine IB systems against CB systems before and after the enactment of Indonesia's Islamic Banking Act No. 21/2008. The law's aim was to strengthen the regulatory environment for further growth of Indonesia's Islamic financial market. The study looks at two periods including: 2000-2007 and 2005-2007. Ika & Abdulla (2011) use financial performance measures categorized into: profitability, liquidity, risk, and solvency; each with multiple indicators. The study uses a Mann-Whitney statistical test to compare the two systems in the two-time frames. The only significant finding of the study was that the two systems statistically differ in terms of liquidity as IBs are generally more liquid compared to CBs in Indonesia.

As mentioned, scholars are rather split on what exactly make up as well as what bank-level characteristics determine financial performance in conventional and Islamic banking sectors. However, after examining the different publications, it does seem that overall, IBs do have higher levels of performance in the MENA region especially regarding risk indicators as they usually partake in limited credit risk and are less likely to become insolvent. However, regarding profitability and liquidity, these indicators seem to fluctuate extensively from scholar to scholar and there is no agreement as to which system is more liquid or has higher profitability levels. Overall, several indicators of financial performance were noticed within the relevant literature, and these are the indicators that are going to be used across this study when examining the performance of banks in the MENA region. See *figure 1* for clarification.

Figure 1: Financial performance theoretical framework



Source: Authors' own

2.2.3. Financial performance hypotheses

Based on existing literature there seems to be several hypotheses that can be made about financial performance of the different banking systems. The first hypothesis is about profitability which represents marginal efficiency; higher profitability promotes constant growth of capital to protect creditors against risk (Majeed & Zainab, 2021). As mentioned IBs are likely to have loyal religious depositors who are expected to accept lower returns. These individuals are not expected to make extensive withdrawals and so this would mean that IB's profitability are less volatile than CBs Yahya, Muhammad & Hadi, 2012; Abedifar et al., 2013). Furthermore, previous empirical studies (Hassan and Bahsir, 2005; Lin et al., 2005; Pasiouras & Kosmidou, 2007) suggest that there is a positive relationship between profitability and bank capital and that IBs are known for employing more capital than CBs in funding their assets so, higher profitability is expected from the former resulting in hypothesis one:

H1. IBs are more profitable than CBs

$H1_0$. IBs are not more profitable than CBs

The second hypothesis is about liquidity. Liquidity problems can generally occur from excess withdrawal from current and savings accounts (Khediri, Charfeddine & Youssef, 2015). Significantly higher withdrawals that exceed new deposits in a short period result in banks getting into liquidity trouble. Higher liquidity ratios are generally associated with less risk. IBs do not

have as many investment opportunities when compared to CBs because of *gharar* and they do not have the same access to inter-bank markets and central banks, which challenges liquidity management (Khediri, Charfeddine & Youssef, 2015). Furthermore, despite not having high-quality liquid assets, IBs are still expected to have higher levels of liquidity in the form of cash (Doumpos, Hasan & Pasiouras, 2017) and so hypothesis two is as follows:

H2. IBs hold more liquidity than CBs

$H2_{0.}$ IBs are not more liquid than CBs

The third hypothesis is related to credit and insolvency risks. This looks at the ability of a bank to generate income and pay off long-term debts. Credit risk is the possibility that a borrower will fail to meet its obligations for repayment in accordance with their contract (Khediri, Charfeddine & Youssef, 2015). A failure to repay is a loss for the creditor (banks). A bank is considered insolvent if its total assets are lower than its liabilities (Khediri, Charfeddine & Youssef, 2015). PLS mechanisms allow IBs to maintain net worth even under different economic situations and can transfer the credit risk from the asset side to the liability side. Religiosity also plays a role in keeping borrowers and depositors loyal and mitigates their relationship with their creditor (Khediri, Charfeddine & Youssef, 2015). Finally, the principles of Islamic banking, namely, *gharar* and *maysar* are banned which limits the uncertainty of investments and can minimize adverse selection and moral hazard problems. For these reasons hypothesis three is:

H3.1. IBs have lower credit risk than CBs

$H3.1_{0.}$ IBs do not have lower credit risk than CBs

H3.2. IBs are less likely to become insolvent when compared to conventional banks

$H3.2_{0.}$ IBs are not less likely to become insolvent when compared to conventional banks.

Keeping in mind the separate components mentioned above that illustrate financial performance, it is important to incorporate a hypothesis for overall financial performance levels. Keeping in mind the explanations for hypotheses one, two and three; it is expected that IBs will outperform CBs in the MENA region resulting in hypothesis four:

H4. IBs have higher financial performance levels than CBs

$H4_0$. IBs do not have higher financial performance levels than conventional banks.

2.3 Resilience

2.3.1 Different forms of Resilience

'Resilience' is an ambiguous term that has been defined in many different contexts and disciplines. It is used in literature surrounding ecology, microbiology, cell regeneration as well as in engineering, business, and economics. Some of the most relevant forms of resilience discussed amongst scholars include: (1) *engineering resilience* which focuses on the ability of a system which is approaching some stable equilibrium to return to that same point after a shock. This type of resilience is measured by the speed of the systems' return to equilibrium and is directly linked to global stability theory (Modica & Reggiani, 2015); (2) *ecological resilience* which looks at the extent to which the shock is absorbed by a local stable domain before entering a new equilibrium, in other words, the socio-ecological theory deems a system resilient if that system can function well after facing disturbance or shock (Ghosh & Saima, 2021). (3) *adaptive resilience* which is related to complex systems theory and refers to the ability of a system to reorganize itself, minimize the disturbance or even take advantage of the shock (Modica & Reggiani, 2015).

Financial resilience is another type of resilience that is made up of a mix of concepts mentioned above. Financial resilience is dependent on an individuals': (1) knowledge of adverse events; (2) ability to effectively predict risks associated with such events; (3) access, knowledge and understanding of alternatives: and (4) resources to adapt successfully (Salignac, Marjolin, Reeve & Muir, 2019). Resources are crucial when looking at financial resilience if a financial institution is going to face financial adversity. Financial resilience differs slightly from the other types of resilience as the financial world in comparison to everyday organizations is heavily intertwined with macroeconomic factors and is said to have direct impacts on elements such as GDP growth of a country (Stewart & Chowdhury, 2021). Financial resilience is a very multidimensional complex and if it were to be measured in its entirety it would require an entire study for itself. For this reason, this study will look at one element of financial resilience namely, economic resources. This will be done by measuring a bank's growth resilience.

The economic resources component captures money-related factors than influence a financial institutions' ability to cope with crises and financial adversity. Some elements could include income, savings, debt management, liquidity. Access to savings is important for enabling

consumption and ensuring cash flow management (Salignac, Marjolin, Reeve & Muir, 2019). Struggles with repaying debt can lead the institution into becoming more vulnerable and increase their risk of becoming insolvent. It is important for a bank to be able to deal with unexpected expenses through higher liquidity levels, a key indicator of resilience (Salignac, Marjolin, Reeve & Muir, 2019). Ruza, Cuesta-Gonzalez & Paredes-Gazquez (2019) highlight that a main determinant of resilience is a bank's balance sheet information (leverage, asset size, asset composition, liability composition, international exposure, market concentration, ownership diversity).

Existing literature uses a mix of indicators to measure a bank's economic resources to better understand their resilience capacity. Cecchetti & Tucker (2016) use liquidity and capital adequacy to measure the resilience of financial institutions. Furthermore, Salignac, Marjolin, Reeve & Muir (2019) measure economic resources that make up financial resilience using indicators for savings, debt management, access to funds in an emergency and overall income. This study utilizes concepts for both studies, however, mainly utilizes Stewart & Chowdhury's (2021) model. Stewart & Chowdhury (2021) examine growth resilience – which is made up of the economic resources of banks. The authors use three indicators of growth resilience namely, bank capital, bank liquidity and bank financial stability. Stewart & Chowdhury (2021) investigate whether IBs or CBs have higher levels of growth resilience. Growth resilience is an informative measure not just when examining the economic resources of a bank and how they may behave in a crisis but also, growth resilience is expected to have strong relationships with external environmental factors (Stewart & Chowdhury, 2021).

2.3.2 Components of financial resilience

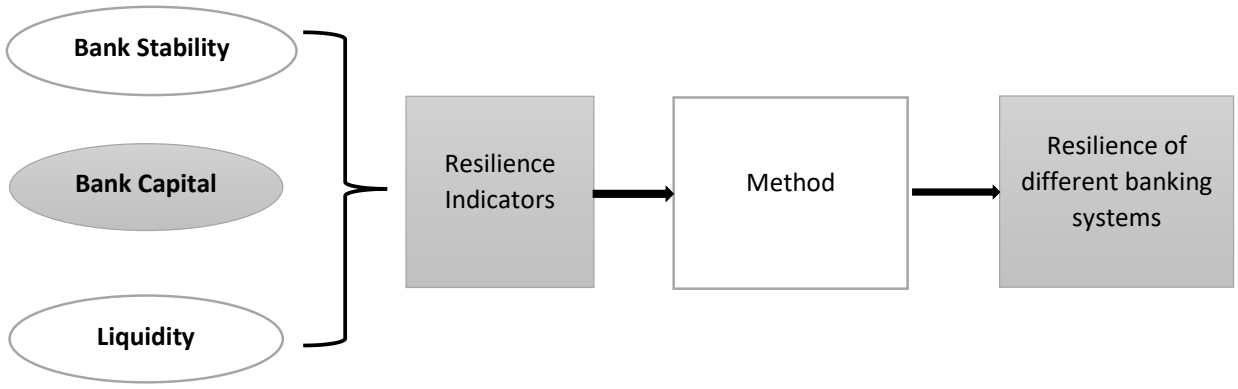
After the Global financial crisis of 2007/2008, banks went through significant transformations in the effort to improve resilience to crises. These improvements were done through the Basel III regulatory guidelines (Kammer et al., 2015). One of the things these guidelines affected was the quality and the quantity of regulatory capital and liquidity regulations. For this reason, the banking sector is expected to be in a better position now, for example during the COVID-19 crisis. Currently, there is a large amount of capital available to be drawn down to support lending (Stewart & Chowdhury, 2021). In addition, the relationship between bank capital and loan growth has been explored and it seems that banks that entered the global financial crisis with higher levels of capital were able to sustain their lending habits. According to Stewart & Chowdhury (2021) capital ratios

are weakly linked to loan growth suggesting that bank capital is more valuable as a buffer against negative bank shocks. This makes bank capital a key characteristic of financial resilience and one of its key indicators.

Liquidity has received significant attention post-Global financial crisis due to the role liquidity risk played in conceiving the crisis. Specifically, the originate-to-distribute banking business model, generated heavy reliance on wholesale funding (a strong predictor of the financial crisis) (Kammer et al., 2015). Data suggests that banks with higher core deposits-to-assets ratios had lower mortgage rejection rates. Higher core deposits suggest lower reliance on wholesale funding (Stewart & Chowdhury, 2021). Furthermore, increased liquidity is said to have a positive effect on lending and is positively correlated with bank capital and loan growth (Stewart & Chowdhury, 2021). This means that banking capital alone may not kickstart loan expansion until liquidity levels are at an adequate level. Cornett et al., (2011) were able to prove that liquidity constraints in the US during the financial crisis were able to minimize loan growth and so, liquidity plays a part in the level of growth resilience a bank has.

Financial stability is a key component discussed alongside financial resilience throughout the literature. A plethora of literature including Cecchetti & Tucker (2016), Caruana (2012) and The Duisenberg School of Finance (2015) use the two terms interchangeably however, stability seems to relate more to the ability of a system to maintain at a constant state in the face of any kind of disturbance. This is most like *engineering reliance* where a single equilibrium point exists (NEF, 2022). However, financial stability alone does not capture the holistic view of a bank's economic resources as it does not address issues such as 'easy access to funds in times of crisis' nor does it the 'overall capital of a financial institution.' The relationship between stability and resilience is complex as some authors like Stewart & Chowdhury (2021) believe that it is banking stability that causes growth resilience however, alternatively, Langvardt (2007) believes that a resilient organization can create a structure that enables and ensures stability and security during periods of change making stability a biproduct of adaptive resilience. Overall, stability is certainly important when determining growth resilience.

Figure 2: Resilience theoretical framework



Source: Authors' own

So, are the two banking systems expected to differ in their growth resilience capacity in the face of crises and disturbances? Many authors including Khediri, Charfeddine & Youssef (2015), Rashwan (2010), Hasan & Dridi (2010) and others have already statistically proven that IBs performed better and more consistently than CBs during the financial housing crisis of 2007/8. Moreover, it has already been established that IBs are expected to have higher levels of liquidity than CBs and researchers Merchant (2012) and Parashar & Venkatesh (2010) have concluded that IBs have higher capitalization so, the fourth hypothesis is formulated as follows:

H5: IBs are more resilient than CBs

$H5_0$. IBs are not more resilient than CBs

2.4 Relationship between performance and resilience

Prayag, Chowdhury, Spector & Orchiston (2018) published a piece that discussed the correlation and//or causation between organizational resilience and financial performance in the tourism sector. The paper considers organizational resilience having two dimensions – planned and adaptive. Planned resilience is established as what occurs pre-disaster in preparations and adaptive resilience typically emerges after. (Prayag et al., 2018). Adaptive resilience requires leadership, external linkages, internal collaboration, and staff well-being. Prayag et al., (2018) look to see firstly, if organizational resilience altogether contributes to overall financial performance and secondly, they looked to see if both adaptive and planned resilience explain variability in overall organizational performance or if only one form of resilience was a significant determinant. Other indicators were also considered, those being firm size, tourist attraction, location. Organizational

resilience altogether was significant in determining financial performance. When looking at each form of resilience individually, planned resilience significantly contributed to adaptive resilience however had no significant relationship with financial performance. Alternatively, adaptive resilience did have a positive and significant relationship with financial performance (Prayag et al., 2018). Essentially, growth resilience is a form of planned resilience as, it looks at the acquirement of economic resources in preparation for a crisis. This would mean that this type of resilience should not directly relate to financial performance in this study. This is not necessarily negative because Prayag, Chowdhury, Spector & Orchiston (2018) were able to show a significant relationship with adaptive resilience which in turn impacts overall financial performance. This indicates that if a direct relationship does not exist between growth resilience and financial performance, an indirect relationship may be true via adaptive resilience.

Innovation is considered a business driver due to its transformative and creative foundations, to the point where it is considered an engine of economic growth (Schumpeter, 1942). For this reason, it must be considered a favoring aspect of resilience. As for how innovation and performance correlate, it is important to consider the direct association between innovation (resilience) and two essential aspects: (1) superior performance (better results) and (2) the change or improvement process of a company's internal capacity (Carvalho, Ribeiro, Cirani & Cintra, 2016). Carvalho, et al., (2016) published a paper that examines the effect of non-innovative vs innovative companies on financial performance levels. The authors use the terms innovative and resilient interchangeably. They measure financial performance using the same indicators as this study namely, ROAE and ROAA. The study looks at the years 2011-2014 and concludes that innovative companies have higher levels of financial performance.

Zahari, Mohamed & Said (2021) highlight the relationship between organizational resilience and organizational performance. Organizational resilience is a movement that can only be sustained through adaptability and reliability as well as its capacity to manage disruptive challenges which in sum contributes to organizational performance (Zahari, Mohamed & Said, 2021). Resource-based theory states that having the resources does not mean that an organization automatically has the competitive advantage, it is important for an organization to have the necessary capabilities to allocate these resources effectively (Zahari, Mohamed & Said, 2021). Therefore, it is important to learn about both the resources the system has but as well as the capacities they must have to allocate

resources effectively. Zahari, Mohamed & Said (2021) highlight that it is organizational resilience as well as leadership capabilities that impacts overall performance of organizations. Zahari, Mohamed & Said (2021) give the example of Malaysia and how private learning institutions are less resilient compared to public institutions that obtain government financial support. This suggests that ownership should play a role in how resilience an organization is.

Overall, many authors have realized a relationship between organization performance and organization resilience (Mitroff, 2005; Akgun and Keskin, 2014; Suryaningtyas et al., 2019; Melian-Alzola et al., 2020; Zahari, Mohamed & Said, 2021). Akgun & Keskin (2014) look at examining the role of organizational resilience on 112 firms and found that higher resilience contributed to higher performance. However, one key finding from the existing literature is that there is no mention about the impact of higher performance on resilience. Scholars make it seem as though the relationship is causal only in one direction. This paper aims to understand if this is the case or if there is both correlation and causation in both directions.

2.5 Macroeconomic determinants of financial performance and resilience

This paper has already determined the micro bank-specific factors that impact banking performance and resilience however, this section looks at macroeconomic environmental factors that also play a role. Macro factors include elements like GDP growth, ownership, unemployment, interest rates, exchange rates, political stability, and the levels of competition (Clair, 2004). There is some evidence from the 1994 Mexican financial crisis that indicates it is bank-specific variables that explain the likelihood of a bank failing but, it is macroeconomic factors that determines financial performance more generally (Clair, 2004). Many studies (Lowe & Rohlin 1993; Calomiris et al., 1997; Kaufman, 1998) link bank financial performance to the business cycle. During booming periods, firms and households commit larger proportions of their income flows to debt servicing, with the hope for leverage following a pro cyclical pattern. Laker (1999) conducted a study where he highlighted the significant positive association of GDP growth and changes in real interest rates with higher financial performance.

How does GDP play a role in a bank's performance? GDP is known to follow the trend where it affects the demand for bank assets. When GDP growth is declining, the demand for credit falls which negatively affects the profitability of banks (Clair, 2004). On the other hand, in a growing economy which is expressed by positive GDP growth, demand for credit is high due to the nature

of the business cycle. Moreover, when GDP increases, a bank has the potential to earn higher return by taking greater risks, in turn boosting profit (Clair, 2004). However, if the bank takes this risk and it does not pay off, the losses are substantial which therefore reduces profitability. Country-level characteristics also play a role in bank performance as governments may choose to loosen expenditure policies during a boom and clamp down on them in times of crisis (Clair, 2004). If a government puts more emphasis on national savings than it does racking up credit, in a boom a banks' total expenditure will end up being higher than its income, resulting in negative effects on profitability and therefore overall financial performance (Clair, 2004).

The inflation rate – the rate at which the general rise in the level of prices, goods and services in an economy occurs and how this affects the cost of living of those living in the country. Higher inflation influences the purchasing power of consumers which indirectly affects demand and supply of loans (Aspal, Dhawan & Nazneed, 2019). Many studies have directly linked inflation to profitability levels. Economic theory suggests that nominal interest rates rise alongside increasing inflation rates (Aspal, Dhawan & Nazneed, 2019). The nominal interest rate has an impact on creditors and debtors who are expected to receive or pay when loans mature. For this reason, inflation is expected to be heavily related to aspects like profitability. Athanasoglou et al., (2008) concluded that profitability and the inflation level's relationship is debatable however other scholars like Aburime (2008) were able to conclude that inflation has a significant impact on bank performance in Nigeria.

Ownership is also said to have a significant role on financial performance and resilience. The classic 'development view' of state-owned banks is that government ownership stimulates growth when economic institutions are not sufficiently developed enough and will not be able to meet their financing needs as a private bank (Andrews, 2005). This view alongside the idea that the government should control the strategic sectors of the economy emerged in the 1960s and 70s mainly in Africa, Asia, and Latin America (Andrews, 2005). The issue however, of state-owned banks also has a 'political view' where politicians use these state-owned banks to provide employment, subsidies, and other benefits to supporters in exchange for votes (Andrews, 2005). Therefore, political stability of the country in question is very important. It is assumed that the more stable a country is, the less likely a state-owned bank is going to manipulate the public sphere.

How do these issues relate to financial performance and resilience? The bottom line is that state-owned banks tend to finance projects that otherwise would not be funded (Andrews, 2005). Furthermore, they are more susceptible to political instability and partisan political influence making them less resilient to crises (particularly in the political sphere) and leaves the state-owned banks more vulnerable. Generally, it is more common for them to have poorer financial performance. In China for example, there are many nonperforming loans extended to state-owned enterprises that are unable to be repaid and are therefore having to be either restructured or paid off with the support of state-owned banks (Andrews, 2005); these funds could have been redirected elsewhere. Furthermore, regarding Zahari, Mohamed & Said's (2021) argument, ownership is crucial when determining resilience as it is not just about the economic resources a bank has but also how these resources are distributed and so, a relationship between ownership and resilience levels is expected to exist.

Regarding financial resilience Gonzalez-Hermosillo (1999) found that bank capital – a key measure of resilience throughout this study—is influenced by profitability and can be used as an indicator of bank fragility. Once again key macro determinants of changes in resilience include GDP growth, changes in interest rates and gearing levels. Ceterus paribus, growth in aggregate income and output strengthens a firm/household's ability to pay off debt and improve a bank's stability (Clair, 2004). It is important to note however, that these relationships can move in the opposite direction long-term as more output will result in increased lending, leading to higher bank fragility (Gonzalez-Hermosillo, 1999). This is a big reason for the motivation for fiscal and monetary policies that are counter-cyclical as they help avoid excessive lending. Non-performing loans are also said to have a negative impact on financial resilience which in this study makes up the credit risk variable (Clair, 2004).

3.0 Methodology

The methodology section is split into seven parts. (1) the data and sample; (2) operationalization of all variables; (3,4,5) three consecutive sections that address quantitative techniques namely, a Manova test, logit regressions, pooled random effects regressions and pooled OLS regressions, which will be utilized to measure potential differences between Islamic and CBs as well as key determinants of financial performance and resilience in the MENA region. (6) limitations of the

data and the sample as well as how these issues were addressed and (7) the internal and external validity of the chosen quantitative techniques.

3.1 Data and Sample

The growth of Islamic finance has given rise to increased interest in researching the topic. Such investigations into the financial performance and resilience of IBs in comparison to CBs have been undertaken in different regions and countries, using different methodological approaches. Published literature (Sari, 2018) that compare IBs, and CBs tend to use one of these popular three approaches when conducting quantitative analysis. (1) Nonparametric frontier analyses like Data Envelopment analysis (DEA) and Stochastic Frontier Analysis; (2) studies aiming to test financial stability use supervisory rating systems or soundness indicators and (3) studies that examine the financial situation use traditional ratio analysis (T-test, MANOVA or regression). These methods are used more generally when examining financial performance, efficiency, and resilience in the banking sector (Sari, 2018). This study aims to examine the financial situation of IBs and CBs through several quantitative techniques expressed below that will be conducted on STATA—a statistical software designed for data manipulation, visualization, statistics, and automated reporting.

This study uses unbalanced yearly panel data consisting of 668 observations from sixty-seven banks based in 12 MENA region countries, namely: U.A.E, Kuwait, Bahrain, Jordan, Palestine, Egypt, Qatar, Saudi Arabia, Israel, Lebanon, Morocco, and Tunisia. Bank-level data is considered over a period spanning from 2012-2021. The bank-level, panel data was retrieved from the Orbis Bank Focus – Bureau Van Dijk - database (Orbis, 2021). Three conditions were considered when examining the available data and constructing the sample: (1) banks must be in the MENA region, (2) branches of banks are not considered in the sample, (3) the bank-level data must be available on the Orbis database and (4) all banks must be ‘small banks’ (total assets are less than 1 billion euros each year). The ORBIS database has data on 27,000 banks worldwide and their data providers are Fitch Ratings. After going through and ensuring all four conditions were met this study will inspect a total of 45 CBs and 22 IBs. See *Table 2* for a breakdown of the number of banks from each country.

Table 2: Sample

Country	IBs	CBs	Total Banks
U.A.E.	6	6	12
Kuwait	3	4	7
Bahrain	4	6	10
Jordan	2	6	8
Palestine	1	3	4
Egypt	1	1	2
Qatar	2	3	5
Saudi Arabia	3	6	9
Israel	0	5	5
Lebanon	0	1	1
Morocco	0	3	3
Tunisia	0	1	1
Total No. of Banks			**67**

3.2 Operationalization

Financial performance in this paper is defined through four key indicators namely, profitability, liquidity, credit risk and insolvency risk. This paper uses financial ratios to measure these four indicators of financial performance. Table 3 illustrates the different ratios, definitions, and the sources where the measurements were retrieved. These indicators will be examined individually against bank type to understand which, if any, differentiate between the two banking systems. Then, an index will be created for financial performance by adding all the standardized variables together equally to get a value for overall performance of a bank. This will help with gaining a holistic understanding of financial performance as a whole and its determinants.

Table 3: Operationalization of financial performance indicators

Indicators	Financial ratio	Source
Profitability ROAA ROAE	Return on actual assets = Net income/Total assets (%) Return on actual equity = Net income/Stockholders' equity (%)	(Khediri, Charfeddine & Youssef 2015)
Liquidity LA/TA NL/TA	Liquid assets/ total assets (%) Net loans/ total assets (%)	Baber (2018)
Risk ***Credit risk*** NPL LLR	Nonperforming loan ratio (NPL/gross loans) (%) Loans loss reserves/gross loans (%)	

LTD ***Insolvency risk*** Solvency Ratio	Loans/total customer deposits (%) Solvency Ratio (Assets Based) (%)	(Khediri, Charfeddine & Youssef 2015)

Similarly, three indicators will be utilized to determine the resilience of IBs against CBs. These three indicators include: Bank stability, Liquidity and Bank capital. These variables will be standardized by calculating their z-scores and then will be added together. These three indicators will be given equal weight when generating the resilience index.

Table 4: Operationalization of Resilience Index

Indicator	Financial Ratio	Source
Bank Stability	$(\text{average}(\text{ROA}) + \text{average}\left(\frac{\text{Equity}}{\text{Assets}}\right))/\sigma(\text{ROA})$. (%)	Stewart & Chowdhury (2018)
Liquidity	Liquid assets/ total assets (%) Net loans/ total assets (%)	
Bank Capital	Capital/total assets (%)	

Throughout the entirety of this quantitative analysis there will also be a set of control variables notably, ownership, political stability, GDP growth and inflation (Doumpos, Hasan & Pasiouras, 2017). The bank-level characteristic 'ownership' will be controlled for as it is a factor that plays an important role in determining bank soundness; ownership – government-owned vs non-government owned (Cihak & Hesse, 2010). Furthermore, macroeconomic factors will also be controlled for. As established previously, political stability – measures the likelihood of the government in power becoming destabilized or overthrown by unconstitutional, violent means (TheGlobalEconomy, 2022) – and ownership go hand in hand. These factors have the potential to weaken performance and resilience through the misallocation of resources. The banking sector is expected to be more vulnerable when political instability exists because of partisan political influence (Andrews, 2005). This often results in government-owned banks being worst off, as they are left to do the governments bidding. It is therefore expected that better countries with higher political stability and banks that are non-government owned will have a positive correlation with overall performance and resilience (Andrews, 2005).

GDP growth and inflation rates are also expected to impact the performance and resilience of banks. GDP growth is expected to influence profitability, which in term should directly impact financial performance (Clair, 2004). Furthermore, profitability is also expected to have a direct relationship with bank capital, meaning it could also impact financial resilience levels (Clair, 2004). Inflation too should influence both performance and resilience because of its adverse effects on real interest rates (Aspal, Dhawan & Nazneed, 2019). Scholars have established in many cases a positive relationship between increased inflation rates and performance & resilience (Athanasoglou et al., 2008); Aburime, 2008).

Table 5: Operationalization of control variables

Indicator	Definition	Source
Ownership	Government-owned/non-government owned	ORBIS
Political stability index	-2.5 weak to 2.5 strong	(TheGlobalEconomy, 2022)
GDP growth	Annual growth rate of nominal GDP adjusted for inflation in %	(TheGlobalEconomy, 2022)
Inflation	Year on year change in the consumer price index (CPI in %)	(TheGlobalEconomy, 2022)

3.3 Univariate Analysis & Manova

The Multivariate analysis of Variance helps with understanding the relationship between the different dependent variables and the independent variable simultaneously (Rashwan, 2010). The dependent variables include (liquidity, resilience, profitability, credit risk and insolvency risk) and the independent variable is a constructed dummy variable where IBs are equal to one and CBs are equal to zero. All the dependent variables will be standardized using Z-scores so that a normalized pattern exists to satisfy the MANOVA assumption – each dependent variable should be a multivariate normal (Rashwan, 2010). The analysis has three stages: (1) multivariate tests where the null hypothesis states that there is equality among the two groups on linear combinations of the dependent variables. (2) Univariate ANOVA where the null hypothesis is based on the idea that no in-between group differences exist. (3) Pairwise Comparisons where the null hypothesis highlights that there is no significant different between the two groups (IBs and CBs). All tests will be conducted using a 5% (0.05) significance level (Rashwan, 2010).

To satisfy these three stages the MANOVA test is made up of four components. Firstly, the Wilk' Lambda test, which can be interpreted as the proportion of the variance in the outcomes that is explained by an effect (bank type) (Nath & Pavur, 1985). The test aims to understand if there are differences between group means for a particular combination of dependent variables. The closer the value is to zero, the better because that means that the dependent variables contribute to differentiating between bank types. Secondly, Pillai's trace is another multivariate test and is considered the most powerful and robust statistic especially in cases where the data does not necessarily meet all necessary assumptions. For example, a key assumption for the MANOVA test is homogeneity of variance-covariance (Pillai, 1955). Thirdly, the L coefficient which too tests mean differences between the two types of banks. The null hypothesis in this case is that the centroids do not differ between the two groups. The centroid of several continuous variables is the vector of means of those variables (UCLA, 2022). Finally, there is the Roy's largest root test which is always smaller or equal to the L coefficient. If the two variables are equal, it can mean three things: (1) the effect is mostly associated to one dependent variable in particular; (2) there is a strong correlation between dependent variables. (3) the effect has a negligible contribution to the model (UCLA, 2022).

3.4 Logistic Regression Analysis

For the sake of this study two forms of logit regressions were run. A logit regression was the obvious choice as the dependent variable (which is now bank type) is a dummy variable (0=CBs & 1=IBs). A pooled logit regression is suitable for the study because it can be used to derive unbiased and consistent estimates even when time constants are present (Abduh & Omar, 2013). However, some studies show that it can be more efficient to run random effects models instead since, random effects adjust for serial correlation that is induced by unobserved time constant attributes (Abduh & Omar, 2013). This study has decided to use both methods to get a fuller picture of which variables differentiate between the two different banking systems. Both the pooled logit and the random effects logit regression will utilize a stepwise approach to better understand how and if coefficients or their significance levels change.

There are several assumptions that the data needs to meet to run logistic regressions. Firstly, the response variable needs to be binary (Stoltzfus, 2011). This assumption is met as the response variable is bank type and there are only two possible options: Islamic (1) or conventional (2). Secondly, that the observations are independent (Stoltzfus, 2011). This assumption was satisfied

since after plotting the residuals of the independent variables against time it was clear that a random patter existed, indicating independence (Stoltzfus, 2011). Thirdly, logistic regression assumes that multicollinearity among explanatory variables does not exist. This assumption is further explored below. It is important to note that logistic regression does not require normally distributed residuals, a linear relationship between the explanatory variables and the response variables or homoscedasticity (Stoltzfus, 2011).

3.4.1 Pooled Logit regression

In this section, the independent variables of the MANOVA test – liquidity, credit risk, profitability, and insolvency risk – become the dependent variables. This logistic regression analysis will enable the reader to see which financial ratios in specific discriminate between Islamic and CBs (the independent variable), if any (Khediri, Charfeddine & Youssef, 2015). The following regression model is as follows:

Equation 1: Pooled logistic regression equation

$$\log\left(\frac{p}{1-p}\right) = \alpha + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n + \varepsilon_i$$

where p is the probability of the outcome of interest (discriminating between the two banking systems), a is the intercept term, β_i for $i \in (0, 1, \ldots, n)$ represents the coefficient associated with the corresponding explanatory variable x_i for $i \in (0, 1, \ldots, n)$, and ε_i is the error term (Khediri, Charfeddine & Youssef, 2015). The dependent variable here is the logarithm of two probabilities (discriminating or not discriminating) of the outcome of interest. Logistic regressions are supposed to classify data according to probability and the maximum likelihood function. The aim is to test if a variable's effect on the prediction is significantly different from zero (Khediri, Charfeddine & Youssef, 2015). If it is not, then the variable is not helping predict the outcome which in this case is discriminating between IBs and CBs.

Some potential limitations of this approach are that it is quite sensitive to high correlation between the explanatory variables and so some variables (financial ratios) may have to be excluded in the regression due to multicollinearity problems (Khediri, Charfeddine & Youssef, 2015). To help address this issue a matrix of correlations will be reported, and variables will be removed accordingly beforehand. The final selected specification will be obtained using backward stepwise

method (Khediri, Charfeddine & Youssef, 2015). Pooled regressions are best to run when there is no significant country, nor significant temporal effects (Abduh & Omar, 2013). Since this study is unaware of the country/temporal effects within the models, a random effects model will also be conducted as this model addresses this key limitation. By running both models, it will also become clear whether there are any country-level effects impacting the results which should add depth to the contribution of this study (Abduh & Omar, 2013).

3.4.2 Random effects logit regression

Fixed effect models are used when the individual effect and the time effect are correlated and so, the error component is a part of the intercept (Achsani & Kassim, 2021). Random effect models are used when the individual effect and the time effect are not correlated and/or when the pattern between them is random. In this model, the error component of the individual effect and time effect is included as an error (Abduh & Omar, 2013). It is assumed that a random effects model will be most suitable for this study since the dependent variable (bank type) is completely independent from the independent variables (financial ratios) however, to be certain a Hausman test was conducted and $p>0.05$ meaning that the null hypothesis failed to be rejected making the random effects model most suitable for the study (Achsani & Kassim, 2021).

Overall, these two different analyses will help with determining which indicators significantly discriminate between IBs and CBs regarding performance. Below, section 3.5 will help to better understand how financial performance on a whole as well as how resilience overall differs between the two systems as well as what are the determinants of these two indicators.

3.5 Financial performance and resilience regressions

To understand what determines overall financial performance, a random effects regression model will be run with financial performance as the dependent variable (Abduh & Omar, 2013). Bank-level characteristics and macroeconomic environmental factors will be the independent variables. A stepwise random-effects model will be conducted. The model is expressed below:

Equation 2: Financial performance random effects regression equation

$$Financialperformance_{it} = \beta_0 + \beta_1 * X_{it} + \beta_2 * Z_{jit} + D\ variables_{it} + \varepsilon_{it}$$

To break down the equation, the financial performance of bank $_i$ at time $_t$ is written as a function of bank-level characteristics -- bank type, profitability and liquidity-- X; variables that consider macroeconomic, institutional, country conditions -- political stability, GDP growth, inflation -- Z;

the *D variables* (Mateev & Mrad, 2018) – the dummy variable in the regression which is ownership. Finally, ε_{it} is the residual error term (Doumpos, Hasan & Pasiouras, 2017; Abduh & Omar, 2013).

Lastly, to be able to understand what determines resilience and whether a difference in banking systems plays a significant role, a stepwise pooled OLS regression approach will be adopted. A pooled OLS approach was chosen because the dependent variable – resilience – is time invariant and so fixed and random effect regressions were not possible to utilize (Mateev & Mrad, 2018). For the sake of this regression the resilience index will be the dependent variable and all other variables in the regression will be independent (Mateev & Mrad, 2018). The equation expressed below illustrates how the pooled OLS will be run.

Equation 3: Resilience pooled OLS regression equation

$$Resilience_i = \beta_0 + \beta_1 * X_{it} + \beta_2 * Z_{jt} + D\ variables_{it} + \varepsilon_{it}$$

The equation has practically the same interpretation as the previous however, in this case the dependent variable is time invariant and as for this reason, resilience is only being considered in terms of bank $_i$. The bank-level characteristics explored in this equation will include: (bank type, profitability, credit risk, insolvency risk and financial performance). All other variables will remain the same at the previous equation.

For both the regression equations described above, there will also be a restricted time model where the same regressions are run but only for observations that are during times of crisis. Observations from the years 2012-2014 & 2019-2021 will be considered in these models bringing the new total observations value to 399. These additional regression models will be useful to understand if the determinants of financial performance and financial resilience change during times of crisis.

3.6 Limitations

There are three key limitations of this study. Firstly, not all the MENA region countries were considered due to either missing data or unavailable data during the period. This is quite a significant limitation because despite incorporating 12/19 countries, Iran was not included in this study and they, alongside Saudi Arabia, have the largest markets regarding sharia-compliant assets (Statistica, 2022). Moreover, Sudan was also not incorporated and they too as of 2020 had a high Islamic finance country index (55.71, just behind Saudi Arabia who has 60.65 and Iran who has a score of 79.03) – an indicator that captures the growth of the industry and provides assessment of

the state of Islamic banking finance in the country (Statistica, 2022). This limitation will have implications on the results section and is likely to bias the results which will in turn affect the external validity of this study. It is important to note that this limitation is not surprising. All the Iranian IBs are government-owned and due to their authoritarian regime, lack of internet freedom and lack of transparency, access to data is near impossible regarding the individual banks (Arab, 2016). Moreover, Sudan has been in a civil war from 2013-2020 and so, its political/economic turmoil partially explains why data for its financial sector is so unavailable (GCT, 2022).

Another limitation regarding the study is that it does not incorporate CBs that offer Islamic banking windows – a sub-section of the bank that offers shariah compliant financial products, arrangements, and regulations -- are still categorized as CBs. By not addressing these 'windows,' the results could experience some bias because they are a space where the Conventional banking system provides services that are based on Islamic principles and hence, this could influence a CB's financial performance (Salim & Mahmoud 2016). As of 2020, the number of CBs with sharia-compliant banking windows stands at 118 (two less than 2019) (Banker, 2022). There are some CBs in this study's sample that do have Islamic windows and therefore, this could bias the results as some of the assets, liquidity and other performance & resilience indicators of these banks could be attributed to the windows, instead of conventional banking practices in isolation. The reason this study believes that this limitation is manageable is because most studies in the field do not account for these Islamic windows when comparing financial performance and resilience and secondly, because despite their rise in popularity, IBs (excl windows) as of 2020 hold $1338bn in shariah compliant assets out of $1791bn total shariah compliant assets (approx. 75%) (Banker, 2022).

Finally, this study only looks at small banks in its sample size. This reduces the study's external validity as it can only be utilized when addressing other small banks. Furthermore, when interpreting the results regarding existing theories, there may be misalignment or a bias of results due to differing bank sizes. This limitation, however, is also manageable since many studies (Doumpos, Hasan & Pasiouras, 2017; Salim & Mahmoud, 2016; Prayag et al., 2018) introduce a control variable – bank size – and so even if the sizes were to be different, this would have been controlled for. So therefore, the real limitation is that this study will not look at whether bank size is a determinant of financial performance and/or resilience of conventional and IBs in the MENA

region. This is acceptable since no study can look at all determinants and will always have to be limited to a select few.

3.7 Internal and External Validity

Internal validity refers to the degrees of confidence that the causal relationship being tested (whether bank type causes any differentiation on financial performance and/or resilience indicators) is trustworthy and not influenced by other factors/variables. External validity refers to the extent to which results from a study can be generalized to other situations/groups/events (Hanck et al., 2021 pp.248-56).

External validity was satisfied as there was a medium size sample of sixty-seven banks that was considered. Furthermore, this study looks at a region that holds 67.4.% of global IBs (Debes, Alenezi & Baradie 2022). Therefore, this should give a good indication of how these types of banks behave overall and what factors determine their resilience and performance levels. However, it is important to note that since scholars such as Andrews (2005), Gonzalez-Hermosillo (1999) and Clair (2004), highlight the importance of macro socio-economic factors that also influence financial performance resilience of banks, the MENA region as a case study is quite different in terms of setting, religion, environment, legal frameworks, political systems compared to the Western world. Furthermore, regarding the financial arena, the MENA region benefited immensely from wealth created by the sharp increase in oil prices in the 1970s. this generally sparked growth rates of GDP and high living standards (Abed & Davoodi, 2003). Furthermore, substantial financial assets were accumulated abroad as national savings exceed investment levels, particularly in the GCC (Abed & Davoodi, 2003). So, for both political and economic reasons, it may be difficult to compare Islamic and CBs in this part of the world to other regions because their abundance in rich economic resources could potentially make them increasingly higher performers and more resilient than banks in other parts of the world (Abed & Davoodi, 2003). Or alternatively, their high levels of political instability could offset their financial arena at greater levels than experienced by the West. This study tries to control these external factors by introducing macro-environmental indicators such as political stability, GDP growth and inflation to address some of these issues.

Regarding quantitative techniques, a key drawback of the random effects logistic regression is that it is not related to external validity and so, to say that these results can be used to make inferences

about a whole population is false (Hanck et al., 2021 pp.248-56). It is for that reason that this study also examines a pooled logit regression model, as it is expected to have higher levels of external validity and is therefore, more reliable when comparing results to whole populations (Hanck, Arnold, Gerber & Schmelzer, 2021 pp.248-56).

When examining internal validity, two conditions need to be fulfilled for both the pooled OLS regression and the pooled logistic regression model to achieve validation: (1) the OLS estimator needs to be unbiased and consistent and (2) the standard errors must be valid so that the hypothesis testing and confidence intervals yield trustworthy results (Hanck, Arnold, Gerber & Schmelzer, 2021 pp.248-56). Factors that influence bias and inconsistency with the OLS estimator include omitted variable bias, measurement error, missing data, and small sample bias. All these influencing factors were accounted for apart from one, missing data. It is true that this study uses unbalance panel data however, very few values are missing, and they are missing at random, so, it can be argued that internal validity is quite high (Hanck et al., 2021 pp.248-56).

4.0 Results

The results section is separated into four parts; (1) descriptive statistics, where comparisons are made between means, standard deviations, and min/max values. (2) the Manova test, which will help determine whether discrimination between the two bank types exists. (2) a pooled logit regression and a random effects logit regression will be run to understand the financial performance of each bank type and which factors, if any, are key determinants. (4) a random effects regression, with overall financial performance as the dependent variable, will be conducted to see what factors (both internal and external) play a role in determining performance. (5) a pooled OLS regression will be analyzed with resilience as the dependent variable to understand what indicators, if any, have significant effects on resilience and whether bank type plays a role in constructing a more durable, stable system.

4.1 Descriptive Statistics

Table 6: IBs, descriptive statistics (standard units)

Variable	Obs	Mean	Std. Dev.	Min	Max
Liquidity	240	.212	.695	-1.487	1.352
Resilience	240	.23	1.447	-3.712	2.36
Profitability	240	-2.163	1.2	-11.702	.579
CreditRisk	240	-.213	1.88	-3.278	6.658

Solvencyratio	240	-0.034	0.680	-1.134	3.094
Financialperformance	240	-2.232	2.156	-7.827	5.744

Table 7: CBs, descriptive statistics (standard units)

Variable	Obs	Mean	Std. Dev.	Min	Max
Liquidity	428	-.119	1.298	-4.558	5.469
Resilience	428	-.129	2.343	-6.488	12.672
Profitability	428	-2.134	1.09	-7.869	1.697
CreditRisk	428	.12	2.356	-2.736	21.245
Solvencyratio	428	0.019	1.141	-1.40	5.745
Financialperformance	428	-2.095	3.849	-10.645	29.382

When comparing profitability between the two different banking systems, the systems have a very similar profitability mean as well as standard deviation. The average profitability for IBs is -2.163 units where for CBs it is -2.134. When looking at the min and max scores for IBs, it seems that the min score of -11.702 is quite low suggesting that some potential outliers. Liquidity is another key indicator of financial performance as well as resilience, and it is clear from *Table 6* that IBs have higher units of liquidity with a mean of 0.212 against 0.119 for CBs. Once again, the standard deviation for IBs regarding liquidity is also smaller. When examining credit risk, IBs are better off than CBs. It seems that for CBs the standard deviation value of 2.356 is significantly higher than the mean of 0.12; this alongside the fact that the max value is equal to 21.245 indicates that outliers exist in the data. Regarding the solvency ratio, the mean seems to be lower for IBs, meaning banks are healthier and therefore, less risk of them becoming insolvent. For both Islamic and CBs the standard deviations look normal.

When looking at resilience and financial performance, IBs are slightly more resilient than CBs with a mean of 0.23 compared to -0.129. Once again however, when examining the min and max value for CBs, the max value is 12.672 which does seem quite high compared to IBs. Furthermore, the standard deviation is significantly higher than the mean indicating possible outliers. Regarding financial performance, both bank types seem to have similar means, with CBs having slightly higher levels of financial performance. It is worth indicating however that the max value for financial performance is 29.382 which is significantly higher than the max value for IBs, and with a standard deviation of 2.356 for CBs it can be assumed that outliers may also exist in the data.

Table 8: Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) PoliticalStabi~y	1.000											
(2) rateofchangeof~u	0.036	1.000										
(3) Yearonyearchan~I	0.086	0.065	1.000									
(4) Liquidity	0.181	0.131	0.086	1.000								
(5) Resilience	0.004	0.141	0.184	0.830	1.000							
(6) profitability	0.095	0.238	0.113	0.046	0.155	1.000						
(7) CreditRisk	0.110	0.043	0.122	0.166	0.244	0.334	1.000					
(8) insolvencyrisk	0.042	0.064	0.015	0.329	0.246	0.132	0.478	1.000				
(9) Ownership	0.163	0.008	0.038	0.128	0.023	0.013	0.270	0.159	1.000			
(10) BankType	0.178	0.038	0.043	0.140	0.083	0.013	0.073	0.025	0.049	1.000		
(11) economicfreedom	0.051	0.020	0.067	0.148	0.155	0.114	0.061	0.030	0.001	0.068	1.000	
(12) financialperf~e	0.191	0.046	0.156	0.048	0.026	0.055	0.776	0.758	0.321	0.020	0.030	1.000

Before running both the MANOVA and the regressions it is important to analyze the correlation matrix to ensure that there is no homogeneity and multicollinearity problems between variables to fulfil the relevant assumptions. It is clear from *Table 8* that there are only three cases of high correlations. Firstly, 'resilience' and 'liquidity' are highly correlated with a value of 0.830. This was expected as the resilience index is partially made up of liquidity. Fortunately, these two variables are not going to be run in the same regressions and so, this correlation problem will not affect the results negatively. Furthermore, both credit risk and solvency ratio are correlated with financial performance, once again this was anticipated as these variables make up the financial performance index. These two risk variables will not be run in the same regression as financial performance to solve the multicollinearity issue. This is to avoid omitted variable bias. Apart from this, all the other correlations are very manageable as none of them are close to 1 or -1.

4.2 Manova

Table 9: Manova test

Number of obs = 668
W = Wilks' lambda L = Lawley-Hotelling trace
P = Pillai's trace R = Roy's largest root

Source	Statistic	df	F (df1,	df2) =	F	Prob>F
BankType	W 0.9681	1	5.0	662.0	4.37	0.0006 e
	P 0.0319		5.0	662.0	4.37	0.0006 e
	L 0.0330		5.0	662.0	4.37	0.0006 e
	R 0.0330		5.0	662.0	4.37	0.0006 e
Residual		666				
Total		667				

e = exact, a = approximate, u = upper bound on F

The Manova test looks at the extent to which bank type can be differentiated by the dependent variables which in this case include resilience, liquidity, profitability, credit risk and insolvency

risk. The four tests of the Manova are highlighted in *Table 9* and on the right-hand side of the table there is an F statistic and the associate p-value. In the Wilk's Lambda test, the value is 0.9681, meaning that the null hypothesis fails to be rejected and that there is no discrimination between the different types of banks as the variance in the dependent variables is not explained by bank type; $p<0.05$ so the results are significant and $F(5,662) = 4.37$.

Regarding Pillai's trace test, increasing values mean that the effects are contributing more to the model, opposite to the Wilk's Lambda test. The results indicate that P = 0.0325 meaning that the effect of bank type on the model is in fact limited and the null hypothesis fails to be rejected. There seems to be no discrimination between the bank types in relation to the chosen dependent variables and this result is powerful as the df is less than or equal to one.

The L value of 0.0336 also leads to the rejection of the null hypothesis and establishes that the centroids between the two groups do not differ. Finally, there is the Roy's largest root test which according to *Table 9* is equal to that of the L coefficient. This could be because resilience and liquidity are highly correlated, however, more likely, considering the results from the other tests, the issue with the model must be either (1) that one dependent variable contributes to the differentiation of the two bank types more than the rest or (2) bank type has a negligible effect on the model. Once again, the null hypothesis fails to be rejected with a significance level of 0.0006. To better understand if one dependent variable contributes more than the others when differentiating bank type further quantitative analysis is conducted below.

4.3 Logistic Regression Analysis

4.3.1 Pooled Logistic Regression

Table 10: Pooled logistic regression results

BankType	(1)	(2)	(3)	(4)	(5)	(6)
Liquidity	0.272	0.275	0.262	0.286	0.257	0.300
	(0.99)	(1.01)	(0.95)	(1.00)	(1.07)	(1.22)
Profitability		-0.0399	-0.0881	-0.0904	-0.129	-0.170
		(-0.24)	(-0.51)	(-0.52)	(-0.66)	(-0.90)
CreditRisk			-0.0719	-0.0941	-0.106	-0.132
			(-0.66)	(-0.74)	(-0.71)	(-0.93)

Solvencyratio				0.123	0.112	0.180
				(0.49)	(0.45)	(0.76)
PoliticalStability					0.478	0.460
					(1.39)	(1.37)
rateofchangeofrealGDPannu					-0.00803	0.00475
					(-0.30)	(-0.19)
YearonyearchangeintheCPI					-0.0195	-0.0336
					(-1.01)	(-1.07)
Ownership					-0.525	-0.531
					(-0.54)	(-0.53)
_cons	0.590*	-0.676	-0.784	-0.789	-0.641	-0.731
	(-2.30)	(-1.57)	(-1.76)	(-1.75)	(-1.15)	(-1.33)
N	668	668	668	668	668	399
Pseudo R2	0.0154	0.0157	0.0191	0.0208	0.0490	0.0583

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Before briefly analyzing the results from *Table 10*, It is important to note that none of the results established above are significant as p in all cases is > 0.05. However, by just examining the coefficients, when looking at regression number five, IBs have 0.257 times the odds of being liquid. However, it seems that IBs have 0.180 times the odds of having a higher solvency ratio highlighting that CBs are less likely to become insolvent. It is also clear that CBs are more profitable but, have higher credit risk than IBs. Column six looks at the same indicators but only in 'crisis periods' (2012-14 & 2019-2021). Here, the results do not change much as all coefficients appear to be in the same direction and are very similar.

When looking at the Pseudo R2 values, regression six can predict the outcome (being an Islamic or a conventional bank) the best. However, the value is still quite low with only 5.8% of the variability in the bank type being explained.

4.3.2 Random Effects Logistic Regression

Table 11: Random effects logistic regression results

BankType	(1)	(2)	(3)
Liquidity	1.237	1.144	1.266
	(1.55)	(1.61)	(0.52)
Profitability	-0.313	-0.449	-0.446
	(-1.68)	(-1.94)	(-1.46)
CreditRisk	-0.165	-0.291	-0.332
	(-1.00)	(-1.28)	(-1.16)
Solvencyratio	0.218	-0.003	0.126
	(0.61)	(0.01)	(0.31)
PoliticalStability		1.308	1.283
		(1.67)	(0.74)
rateofchangeofrealGDPannu		0.031	0.037
		(1.23)	(0.75)
YearonyearchangeintheCPI		-0.0094	-0.020
		(-0.41)	(-0.34)
_cons	-3.046**	-3.319**	-3.961
	(-4.22)	(-3.78)	(-2.13)
/ lnsig2u	6.752***	6.339***	3.703***
	(81.50)	(81.79)	(26.18)
N	668	668	399

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11 contains the results from a random effects logistic regression. Here it is assumed that the unobserved factors that are fixed overtime are independent from the values of the explanatory variables for all time periods. This model is suitable (1) because the bank type dummy is independent from all the financial independent variables and (2) because the dependent variable is a dummy and so logistic regression is necessary. When interpreting the data, there are once again no values of significance furthermore, most of the results, at least in terms of direction, are like those of *Table 11* however, the solvency ratio differs. It is evident from regression two that IBs

seem to have a lower ratio indicating that they are healthier than CBs however, in times of crisis (regression three), the opposite occurs.

4.4 Financial performance regression

Table 12: Financial performance, random-effects regression results

Financial Performance	(1)	(2)	(3)	(4)
BankType	-0.264	0.0959	0.0696	0.123
	(-0.40)	(0.14)	(0.10)	(0.18)
profitability		0.507***	0.509***	0.496***
		(4.29)	(4.36)	(3.73)
Ownership		3.945	3.858	4.169
		(1.62)	(1.61)	(1.69)
PoliticalStability		-0.445	-0.489	-0.463
		(-0.89)	(-0.96)	(-0.88)
rateofchangeofrealGDPannu		0.0505*	0.0506*	0.0718**
		(2.15)	(2.16)	(2.84)
YearonyearchangeintheCPI		0.0934***	0.0935***	0.108***
		(7.60)	(7.72)	(8.28)
Liquidity		-0.0996	0.173	0.248
		(-0.18)	(0.25)	(0.38)
economicfreedom			0.00925	0.00113
			(0.44)	(-0.04)
Resilience			-0.166	-0.165
			(-0.65)	(-0.66)
_cons	-1.968***	-1.842**	-2.462	-1.799
	(-3.47)	(-3.19)	(-1.65)	(-1.04)
N	668	668	668	399
R-squared	0.0004	0.0842	0.0817	0.1172

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The results from *Table 12* help with understanding the determinants of financial performance. Regression two has three significant values excluding the constant, namely, profitability, change in GDP and annual change in CPI. It is evident that for every unit of change in profitability,

financial performance also positively changes by 0.507 units at the 0.001 level of significance. Change in GDP as well as change in CPI also have a positive relationship with financial performance and are significant as $p<0.05$ and $p< 0.001$, respectively.

After realizing the significant impact macro-economic factors in model two (GDP and CPI) had on performance, it was decided that a broader indicator, namely, economic freedom should also be introduced to see if other environmental factors contribute to an increase/decrease in financial performance. The economic freedom index highlights the fundamental right of every human to control their own labor and property. In an economically free society, individuals are allowed to work, produce, consume, and invest it whatever way they please (The Heritage Foundation, 2022). In this type of society, governments allow for labor, capital, and goods to move freely; liberty is maintained. The index covers 12 freedoms in four categories namely, rule of law, government size, regulatory efficiency, open markets (The Heritage Foundation, 2022). Unfortunately, it is clear from *Table 12,* (regressions three and four) that the results are insignificant. In fact, model three does not seem to differ from model two very much at all. Finally, model four (the crisis period) the only change was that now the annual change in GDP variable gained significance at the 0.01 level.

Two key elements in *Table 12* stand out. Firstly, liquidity does not significantly impact financial performance, which is interesting since it is one of the indicators that make up its index. This raises the question as to whether some elements contribute more to financial performance levels and whether factors should be weighted differently when creating the financial performance index. The second element that is surprising is the fact that resilience is not a significant determinant of financial performance.

4.5 Resilience regression

Table 13: Resilience, pooled OLS regression results

Resilience	(1)	(2)	(3)	(4)	**(5)**	(6)	**(7)**
BankType	0.359	0.306	0.323	-0.072	-0.0448	-0.0678	-0.0409
	(0.79)	(0.71)	(0.85)	(-0.24)	(-0.15)	(-0.23)	(-0.14)
profitability		0.167	0.145	-1.375***	-1.306***	-1.374***	-1.303***
		(1.00)	(0.68)	(-7.00)	(-5.99)	(-7.08)	(-6.09)

solvencyratio		-0.356	-0.308	-2.93***	-2.847***	-2.925***	-2.842***
		(-1.12)	(-1.08)	(-7.32)	(-6.74)	(-7.47)	(-6.88)
CreditRisk		-0.119	-0.189	-1.69***	-1.619***	-1.685***	-1.616***
		(-1.25)	(-1.87)	(-7.70)	(-7.12)	(-7.92)	(-7.26)
Ownership			0.751	-3.78	-0.374	-0.376	-0.370
			(1.64)	(-0.89)	(-0.87)	(-0.89)	(-0.86)
PoliticalStability			-0.00531	-0.369	-0.323	-0.370	-0.324
			(-0.02)	(-1.85)	(-1.69)	(-1.84)	(-1.68)
rateofchangeofrealGDPannu			-0.0902	-0.0431***	-0.0431***	-0.0429***	-0.0430***
			(-1.91)	(-3.76)	(-4.45)	(-3.79)	(-4.41)
Yearonyearchangeintheconsumerprice			0.104**	0.0456**	0.0473**	0.0453***	0.0472**
			(2.87)	(3.59)	(3.17)	(3.54)	(3.14)
economicfreedom						-0.00369	-0.00369
						(-0.25)	(-0.25)
financialperformance				1.592***	1.537***	1.589***	1.535***
				(7.17)	(6.73)	(7.35)	(6.87)
_cons	-0.129	0.249	0.114	0.418	0.481	0.663	0.729
	(-0.38)	(0.47)	(0.19)	(1.48)	(1.84)	(0.63)	(0.69)
N	668	668	668	668	399	668	399
R-squared	0.0069	0.0928	0.1634	0.7574	0.7512	0.7575	0.7513

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13 looks at potential determinants of resilience. Bank type does not determine resilience as all the results are insignificant. Regression three has one significant value at the 0.01 level and it shows that for every additional unit of change in % of CPI, resilience is expected to increase by 0.104 units. When analyzing regression four, there are many more significant values. It can be interpreted that less profitability results in lower levels of resilience as for every additional unit of profitability resilience decreases by -1.375 units. Moreover, for every additional unit added to the solvency ratio, resilience decreases. This essentially means as a bank becomes more at risk of becoming insolvent, resilience levels decrease. For every additional unit of credit risk resilience levels are expected to decrease by -1.69. It can be derived from model four that higher financial performance is important for an increase in resilience. Interestingly, environmental factors such as the change in inflation and the yearly change in GDP also play a role in determining resilience.

The change in GDP has a negative impact on resilience at the -0.0453 level and percentage changes of CPI have a positive impact on resilience. All the significant results in regression four are significant at the 0.001 level apart from the CPI result which is significant at the 0.01 level. Regression five is the same as model four however, it constricts the time to crisis periods only however, no significant changes are observed. Finally, like in *Table 12*, economic freedom is not a significant determinant of resilience despite other macro-economic indicators like CPI and GDP growth being crucial in predicting the outcome variable.

When examining the r-squared values, model six is best as it can explain 75.75% of the variability in the dependent variable, resilience. However, generally models four through till seven all do an adequate job at explaining variability in resilience as all explain above 75%.

5.0 Discussion

This section will delve deeper into the results section to link this study's findings to the existing literature and theory. This section will be separated into three parts: financial performance, financial resilience, and the relationship between these two factors. Before delving into theory, it is important to first address that the findings of the MANOVA test, as well as Tables' 11 and 12 all highlight that there is no differentiation between the two different banking systems regarding both internal and external factors. This is in line with studies conducted by Hassan Mohamad & Bader (2009) and Yahya, Muhammad, Razak & Hadi (2012) who saw no differences between Islamic and CBs regarding performance and/or efficiency. The fact that these two different banking systems do not differ in relation to this study raises the question as to what in fact does contribute when determining financial performance and resilience in the banking sector?

5.1 Financial performance

Regarding financial performance, three variables were statistically significant determinants namely, profitability, GDP growth and inflation rate. Interestingly, liquidity alone does not seem to be a key indicator of financial performance levels. One reason why liquidity may not be a significant determinant of financial performance is because of the introduction of Basel III which established more regulatory guidelines regarding liquidity and for this reason, it could be that liquidity is no longer a determining factor when looking at financial performance as it is heavily monitored with far more constraints (Kammer et al., 2015). Another possible reason that a

significant relationship does not exist could be related to the fact that Enqvist et al. (2014), Zimon et al., (2021) and Salehi et al., (2019) all conclude that liquidity levels directly relate to profitability rather than overall financial performance. This means that liquidity might have an indirect effect on performance through profitability but is not a direct determinant. The positive relationship between profitability and financial performance was expected as profitability represents marginal efficiency; higher levels of profitability promote constant growth of capital and hence, protect the creditor against risk. Profitability is essentially the primary goal of any/all business ventures; without it, an institution will not survive long-term (Johanns & Hofstrand, 2019).

Regarding GDP growth, the negative significant relationship can be explained by Clair (2004). As GDP increases, a bank has the potential to earn higher return by taking greater risks which ideally would boost profit. However, this is not always the case because if the risks are too grand and they do not pay off, the losses are substantial and can negatively affect profitability and therefore overall financial performance (Clair, 2004). It could also be country-level characteristics to blame for the negative relationship. Governments are responsible for expenditure policies and often choose to either loosen or clamp down during a boom/crisis. For example, a bank could experience low profit during a boom if the bank has a history of prioritizing national savings compared to credit. This is because in a boom (as GDP grows) the bank is more incentivized to spend because they have such a significant national savings, making their expenditure higher than their income resulting in lower profitability levels (Clair, 2004). If profitability levels are decreasing, financial performance is decreasing since profitability is a key determinant in this study. It is, therefore, a possibility that the MENA region prioritizes national savings, or are taking risks that experience substantial losses resulting in GDP growth negatively impacting their financial performance. Abed & Davoodi (2003) highlight how the MENA region is in fact known for having high(er) national savings because many of these countries are oil abundant and when oil prices spiked in the 1970s, the MENA region was able to increase their national savings (Abed & Davoodi, 2003).

Finally, *Table 13* illustrates a significant, positive correlation between rate of inflation and resilience levels. This can be explained as theory has linked profitability and inflation levels to one another (Andrews, 2005). As established, economic theory explains how interest' rates rise with inflation rates which explains how banks end up profiting from both creditors and debtors (Andrews, 2005). Since inflation rates are supposed to be positively associated with profitability,

which in this study is positively associated with financial performance levels, it makes sense that inflation would positively impact performance of banks in the MENA region. This finding is in line with Aburime's (2008) conclusion that inflation did have significantly positive impacts on bank performance in Nigeria.

5.2 Financial Resilience

When looking at *Table 13* there were several significant findings. Bank-level characteristics namely, profitability, the solvency ratio, and credit risk were all significant determinants of resilience. At the macroeconomic environmental level, rate of change in GDP, year on year change in CPI and the financial performance index were also significant in determining resilience (Clair, 2004). How does this fit in with the relevant literature? Firstly, regarding profitability, according to the results, profitability has a negative effect on resilience levels. This can be explained by the fact that liquidity is a key indicator of resilience in this study and according to many scholars including Kammer et al., (2015) and Marques & Braga (1995) liquidity and profitability are known for having inverse relationships.

Regarding credit risk Gonzalez-Hermosillo (1999) suggests that there is a negative relationship between non-performing loans and financial resilience. This is relevant to the study as the credit risk is partially made up of the non-performing loans/ total assets ratio. It is, therefore, very likely that the MENA region has high(er) numbers of non-performing loans which is causing a negative relationship between credit risk and financial resilience. As for insolvency, the relationship established in the results section is straightforward, the less healthy the bank is, the less resilient it will be (Gonzalez-Hermosillo, 1999).

Regarding macro-level economic factors, both GDP growth and the inflation rate are significant contributors to financial resilience. The fact that GDP contributes to the model is supported by Aspal, Dhawan & Nazneen (2019) who claims that it is one of the most influential environmental factors and should have a positive effect on resilience. This study, however, indicates that there is a negative impact of GDP growth on growth resilience. This finding contrasts Stewart & Chowdhury's (2021) conclusion that there is a positive relationship between growth resilience and GDP growth. The reason this study might show a negative relationship is because according to ECB (2016), elements like good governance and increased resilience levels are typically associated with long-term GDP growth and because this study only looks at 2012-2021, the potential effects

of GDP growth on resilience may not be effectively captured. Another explanation could be that banks in the MENA region during booms (times of GDP growth), change their behavior and increase their credit risks, which do not pay off, leaving the banks less resilient (Gonzalez-Hermosillo, 1999). This makes banks less resilient since it has been previously established, particularly in this study, how credit risk is negatively correlated to resilience levels (Gonzalez-Hermosillo, 1999).

5.3 Financial performance and resilience

Finally, regarding the relationship between financial performance and resilience, *Table 13* shows that financial performance is a key contributor towards financial resilience however, the causal relationship does not exist in the opposite direction. Correlation between performance and resilience has been discussed by authors including Chowdhury, Spector & Orchiston (2018), Carvalho, Ribeiro, Cirani & Cintra (2016) and Zahari, Mohamed & Said (2021) however, these authors tend to highlight the importance of financial resilience in explaining financial performance levels. This study realizes that it is financial performance that determines resilience and not the other way around. This finding could be specific to growth resilience and the financial arena since most of these studies tend to focus on general organizational resilience. Unfortunately, there is not a lot of literature published surrounding the relationship between financial resilience and performance, and more specifically there is not much literature published that looks at how financial performance may cause increased resilience. However, when looking at the indicators that make up resilience, there are three: bank capital, bank stability and bank liquidity. Bank stability is likely to correspond significantly with profitability of a bank as they are both calculated using ROAA. Moreover, bank capital is expected to be positively correlated with profitability as the two are often used to determine bank fragility (Gonzalez-Hermosillo, 1999). Profitability is a significant determinant of financial performance in this study making the significant positive relationship between financial performance and resilience understandable.

When examining *Table 12*, resilience is not a significant determinant of financial performance. This is in line with Prayag, Chowdhury, Spector & Orchiston's (2018) reasoning. This study looks at growth resilience, a form of planned resilience as it aims to measure the economic resources of a bank in order to determine its resilience levels. Prayag, Chowdhury, Spector & Orchiston (2018) conclude that planned resilience is not directly associated with financial performance and therefore, there is no significant relationship. However, planned resilience is expected to have an

indirect effect on performance by significantly determining adaptive resilience levels which are directly related to financial performance levels. Hence, there could be a possible indirect relationship between growth resilience and financial performance that is not explored in this study. Furthermore, another reason a relationship may not exist is because this study does not look at how these economic resources are distributed which, according to Zahari, Mohamed & Said (2021) and resource-based theory, is just as important if not more important that the number of economic resources an organization has.

6.0 Conclusion

Banking systems in the MENA region are key contributors to the economy as monetary strategic instruments for governments as well as private entities to facilitate development plans and economic growth. However, for these targets to be achieved, banking systems need to be able to withstand global economic crises, political, economic and/or social in nature, and if this is going to be possible both the financial performance of these banks and their financial resilience needs to be at a high level. The MENA region represents one of the world's fastest growing markets in the banking and capital markets sector. The financial services sector is booming, and it is both conventional and IBs that are contributing to the financial stability of the region.

This study aimed to analyze the difference in financial performance and financial resilience between conventional and IBs in the MENA region, over the period 2012-2021. To do this the paper looked to understand two problems: (1) whether the type of banking system (Islamic or conventional) plays a role in determining financial performance and resilience and (2) what factors (both internal and external) determine overall financial performance and resilience of banks in this region. When addressing the first issue, this study concludes that the bank type is not differentiated regarding performance and/or resilience in the MENA region. Both bank-level characteristic as well as macro-economic environmental factors do not play a role in differentiating between Islamic and CBs.

When addressing the second issue, this study was able to highlight some key statistically significant determinants of performance and resilience of banks in the MENA region aside from bank-type. Macro-economic external factors such as inflation rates and GDP growth both had statistically significant effects on both financial performance and resilience in the region.

Moreover, bank-levels determinants also played a role in determining resilience and performance overall. Regarding financial performance, profitability was a key determinant whereas liquidity fell short and was not statistically significant in determining performance. Bank-level characteristics that were realized as significant determinants of resilience included profitability, credit risk and insolvency risk. Moreover, this paper also examined periods of crisis (2012-2014 & 2019-2021) and whether these impacted the effect of bank-level characteristics and/or macro-economic environmental factors on dependent variables: bank type, overall performance, and/or overall resilience. It seemed that the results did not differ significantly whether the period was a crisis period or not. Aspects such as ownership, political stability, economic freedom, and liquidity proved to be insignificant in differentiating between bank types as well as determining performance and resilience.

Lastly, this paper was able to further explore the relationship between financial resilience and financial performance. This study finds that growth resilience of banks in the MENA region is heavily determined by the banks' financial performance levels. This relationship was not significant in the opposite direction. This finding is different to other authors (Mitroff, 2005; Akgun and Keskin, 2014; Suryaningtyas et al., 2019; Melian-Alzola et al., 2020; Zahari, Mohamed & Said, 2021) who instead find the opposite causal relationship between the two factors (resilience being a causal factor of performance) to be true. Unfortunately, there is limited literature published surrounding the relationship between financial resilience and performance, and more specifically not many authors look at how financial performance causes increased financial resilience levels.

6.1 Limitations and direction for future research

Some key limitations of this study include (1) the lack of financial data overall in the region as well as the lack of available data before the year 2012. Had there been more data from years prior to this time, maybe some kind of significant relationship would have been found between bank-type and bank-level characteristics/macro-economic factors. (2) The fact that CBs with Islamic windows were not included as a separate bank type. A suggestion for the future would be to incorporate CBs that have Islamic windows as a third category for bank type. This may have an impact on whether internal and/or external factors play a role in differentiating between banking systems.

For future research it would be interesting to conduct a study that examines the casual relationship between financial resilience and financial performance across a larger sample size and a longer time-period. Moreover, it could be interesting to create a resilience index that looks at resilience more holistically. Instead of only looking at a bank's economic resources, other factors can be included in the measurement such as 1) knowledge of adverse events; (2) ability to effectively predict risks associated with such events; (3) access, knowledge and understanding of alternatives (Salignac et al., 2019). Furthermore, very few studies create a financial performance index, instead they look at bank-level characteristics separately and then give a rather nuanced conclusion regarding whether a bank and/or firm performs better. It could be useful for more studies to create a financial performance index where rather than all characteristics being of equal weight, some weigh more than others. This would link back to the findings of this study since profitability is a statistically significant determinant of financial performance however, liquidity is not.

7.0 Bibliography

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