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The impact of COVID-19 on financial structure and performance of Islamic banks: a comparative study with conventional banks in the GCC countries

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Abstract

Purpose – The aim of this paper has twofold: (1) to explain and compare the financial evolution of Islamic and conventional banking sector in the Gulf Cooperative Council (GCC) countries before and during the COVID-19 pandemic and (2) to explore the key success factors that might affect Islamic and conventional banks performance before and mainly during COVID-19 pandemic period.

Design/methodology/approach – Orbis Bank Focus database and annual financial reports are used to collect financial information of Islamic and conventional banks in GCC countries over four years: 2017, 2018, 2019 and 2020. Descriptive statistics, *T*-test, multiple regression, and 2SLS and GMM models are employed to analyze the financial structure and performance of Islamic and conventional banks before and during the COVID-19 pandemic period.

Findings – Results of this study reveal that (1) there is a significant difference between Islamic banks and conventional banks during the crisis of COVID-19, where the conventional banks have presented a higher level of financial performance and financial liquidity than their Islamic counterparts, (2) conventional banks have revealed higher capacity to manage their financial risk during the crisis period, and (3) a high level of non-performing loan, high inflation rate and high percentage of non-important cost have a negative impact on the financial performance of Islamic banks mainly during the pandemic period of COVID-19. However, the result indicates that a high level of liquidity risk increased the performance of Islamic banks but this impact falls sharply during the pandemic period.

Originality/value – This study provides information that supports investors, regulators and executive managers in GCC countries. A well-structured balance sheet would improve the financial performance and risk management of the banking sector in GCC countries, especially in times of crisis and pandemics.

Keywords Islamic banks, Conventional banks, Bank performance, Capital structure, Financial risk, GCC countries

Paper type Research paper

1. Introduction

The Islamic banking business has grown rapidly during the last decades. Unlike traditional banks, the use of traditional interest and the excess of uncertainty are forbidden in the Islamic banking system. Islamic banks prohibit any activity that is not in confirmation with Islamic

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principles such as life insurance and gambling (Hassan and Aliyu, 2018). Islamic banks employ and create specific financial products that are consistent with the principles of Shariah (Islamic law).

Many researchers have tried to better understand this type of banks (Abdeldayem and Darwish, 2018), and several other researchers have demonstrated the ability of Islamic banks to foster and accelerate the economic growth in society by offering innovative financial services according to Shariah rules (Aulia *et al.*, 2020; Gheeraert, 2014; ElDeeb, 2015; Hassan and Aliyu, 2018). For decades, Islamic banks are functioning in Islamic countries and numerous Asian and European nations (Amba and Almukharreq, 2013).

In general, the Islamic bank system is closer to the Swiss-German form of universal banking than the Anglo-Saxon type of conventional banking. Islamic banking funds are mobilized via several Islamic financial products like Mudarabah (profit sharing) and Wakalah (as an agent charging a fixed fee for managing funds) (Abdeldayem and Darwish, 2018).

Islamic banks operate based on two main principles: (1) prohibition of interest and (2) profit and loss sharing. Generally, they perform the function of investment partner instead of paying a fixed interest value for depositors. Deposits in Islamic banks are thus perceived as customers' interest-free credit to the banks.

It can be noticed that the comparison between Islamic and conventional banks has attracted the attention of numerous scholars across the world such as Abdo (2020) in Jordan; Hashem and Sujud (2019) in Lebanon; Miah and Uddin (2017), Alqahtani *et al.* (2017), Siraj and Pillai (2012) in GCC region; Etab and El-Moslemany (2020) in Egypt; Sghaier *et al.* (2016) in MENA region; Aziz *et al.* (2016), Abbas *et al.* (2016), Hunjra and Bashir (2014) in Pakistan; Abdul-Majid *et al.* (2017), Wasiuzzaman and Gunasegavan (2013), Ahmad and Abdul Rahim (2012) in Malaysia; Setiawan and Kodratillah (2017) in Indonesia; and Abu-Alkheil *et al.* (2013) in UK and Switzerland.

The result of empirical findings concluded that innovation, capital structure, risk level and cost control are the key factors that affect the performance of the Islamic banking system. In addition, they revealed that bank category has a significant impact on the financial structure and performance.

Several authors take for granted that Islamic banks have a superior performance during the crisis (Salih *et al.*, 2019). For example, El-Chaarani and Ragab (2018) revealed that Islamic banks have shown efficient capacity to resist and manage their liquidity during the Arab crisis in the Middle East region. Abdulle and Kassim (2012) argued that Islamic banks were less exposed to liquidity risks during the crisis of 2008/2009. In the same line, Alqahtani *et al.* (2017) explored the efficiency of 80 banks located in the GCC during the crisis of 2008/2009. Their results showed that Islamic banks had a higher level of cost-control efficiency than their conventional counterparts.

On the other hand, numerous studies revealed that conventional banks perform better than Islamic banks during crisis periods. Sghaier *et al.* (2016) indicated that the performance of conventional banks was higher than the performance of Islamic banks during the crisis of 2008/2009. Alqahtani *et al.* (2017) confirmed that Islamic banks have shown a low return level during the crisis of 2008/2009.

Nowadays, there is no doubt that the new crisis of Coronavirus (COVID-19) pandemic has hit all sectors in developed and developing countries (El-Chaarani, 2021). The banking sector and mainly Islamic banks were highly affected due to the long lockdown period. Hasan (2020) mentioned that Islamic banking faced an impactful test with the novel Coronavirus pandemic across the globe. Elnahass *et al.* (2021) and Demirgüç-Kunt *et al.* (2021) also revealed that the COVID-19 outbreak led to a negative abnormal impact on conventional banks. They stated that some banking firms across the globe suffered large reductions in their financial efficiency and stock prices.

Thus, the current study has the objective to explore the financial resilience of the Islamic banking sector based on a comparison with conventional banks in GCC countries during the COVID-19 pandemic period.

This study is different from previous studies since it examines a broader sample of banks in GCC countries and it covers a recent period (from 2017 to 2020), including the pandemic period of COVID-19.

This paper contributes to academia and practitioners in different ways. *First*, it adds to the literature by exploring the success factors of Islamic and conventional banks during the COVID-19 pandemic period; where no prior research has explored the links between capital structure, risk management, cost management, and financial performance of Islamic banks during the COVID-19 pandemic crisis. *Second*, this paper compares Islamic banks with conventional banks during a very critical period; where the findings would help in exploring the financial resistance of both Islamic and conventional banks during the pandemic period. *Third*, the findings will be helpful to bank managers, policymakers, and regulators to optimize the financial structure and behavior of conventional and Islamic banks as well as devising appropriate policies which aim to mitigate the adverse impact of COVID-19.

The rest of this paper is organized as follows: Section 2 provides a background on Islamic banks' activities. Section 3 presents the literature review of the financial performance of Islamic and conventional banks. Section 4 defines the research design. Section 5 provides data analysis and discussion of results. Finally, Section 6 concludes the study and presents the research limitations and suggestions for further research.

2. Islamic banks activities

The financial operations in Islamic banks are established on the prohibitions of "Riba" (interest), "Ghararar" (excessive risk) and some other operations related to gambling and alcohol. The literature widely admits that Islamic financing techniques are the key revenue source for Islamic banks (Bukhari and Qudous, 2012; Alzoubi, 2018). Islamic banks' funding techniques are classified into two wide groups. The first is based on the principles of equity, as well as, profit and loss sharing, and contains two types of investment contracts: "Murharabah" and "Musharakah." The second group is based on the principle of cost-plus/profit-margin derived from debt-based principle and generally includes different types of contracts such as "Ijarah" and "Salam."

"Murharabah" (cost plus) is the most popular financial product in Islamic banks. It is implemented when a bank buys goods and resells them to the client on an agreed profit margin. The borrower here is expected to repay the borrowed money as a "Qardhasan" (loan) (Abdul-Majid *et al.*, 2017).

Deposits in Islamic banks should have no fixed remuneration such as the case in traditional banks. Deposits are considered as an investment between banks and depositors. Islamic Banks use the principle of risk-sharing with depositors on their business activities (Abdul-Majid *et al.*, 2017; Alzoubi, 2018).

The main features related to Islamic banks as profit and loss sharing, capital adequacy, capital efficiency, deposits and capital profitability are discussed below.

2.1 Profit and loss sharing in Islamic banks

The Islamic laws prohibit any interaction that involves usury and interest. Accordingly, Islamic banks replace the compound interest, largely practiced in traditional banks, with profit and loss sharing contracts. Many scholars have indicated that the profit and loss sharing contracts like Islamic forward contract (Salam) and Islamic partnership contract

(Musharaka) eliminate the payment of a fixed return on capital and improve the financial return of the Islamic banking industry.

Nienhaus (1983) argued that Islamic banks use the market interest rate as a foundation to set their income-loss share ratio. His research showed that the financial fees paid by customers based on the profit and loss sharing principle are relatively high. He added that this type of fee is a key factor used by Islamic banks to enhance their overall performance.

Many other studies have revealed that profit and loss-sharing financing techniques like Musharakah and Mudharabah have a positive impact on the performance level of Islamic banks (Asutay and Izhar, 2007; EI-Deeb, 2015).

In the same context, Muda *et al.* (2013) illustrated how shareholders in Islamic banks might benefit from profit-sharing agreements to maximize their wealth. Husain *et al.* (2015) found that Islamic banks in Malaysia have presented high financial efficiency due to their profit-loss sharing principle and their specific financial decisions.

The profit dynamics of Islamic and traditional banks in the United Kingdom were examined by Yanikkaya *et al.* (2018). Their results demonstrated that profit-sharing funding is a risk-averse technique used by Islamic banks to increase their financial profitability and lower their financial risk.

2.2 Islamic capital adequacy

Any decision related to the capital structure is essential for Islamic banks, characterized in general by a low ratio of total equity to total assets.

The capital structure in Islamic banks is tightly monitored by different regulators. Thus, managers in Islamic banks must follow national and international rules defined by financial and non-financial regulators like Central Bank, Sharia Controlling Board (SCB) and BASEL committee. Shareholders are also concerned by the capital structure of Islamic banks since their rate of return and their risk level are highly correlated with equity and leverage ratios.

A bank with a high-performance level and high leverage ratio must expect a high level of moral hazard risk and its owners should project a greater rate of return (Jacques and Nigro, 1997). Thus, the selection of the capital structure and the monitoring of risk-return trade-off are very important in Islamic banks (Othman *et al.*, 2017; Al-Kayed *et al.*, 2014; Alzoubi, 2018) to prevent market, liquidity and credit risk.

Islamic banks are differentiated by their nature, and they are normally viewed as equity-based institutions. The distinctive feature of investment deposits in Islamic banks lies in the absence of a guarantee on equity and a fixed rate of return. Some scholars believe that Islamic banks depositors are shareholders who get dividends if a profit is realized by the bank (Abdul-Majid *et al.*, 2017).

According to Altunbas *et al.* (2000), there is a positive link between high capital ratio and profitability in Islamic banks. Based on the simultaneous equations model, Berger and Udell (2002) revealed a positive impact of high and well-structured equity on the financial performance of the banking sector.

Asma'Rashidah *et al.* (2011) observed that the level of the capital ratio has a positive effect on the profitability of Islamic banks. They revealed that a well-capitalized bank is exposed to lower bankruptcy costs and higher returns. Muda *et al.* (2013) confirmed that a high level of capital adequacy is capable to increase banks' profitability and decrease shareholder's risks in Islamic banks.

2.3 Islamic capital efficiency

Risks are sometimes very significant and more difficult to be monitored in Islamic banks due to the diversity of their contracts compared with conventional banking (Menicucci and Paolucci, 2016).

According to several studies (Hassan and Aliyu, 2018; Khairi *et al.*, 2018), the risk management policy is anticipated to enhance the bank's financial performance. More specifically, the more risk the bank dares to take, the higher the profit opportunities. On the other hand, a high level of risk in the banking sector can increase the bankruptcy cost. Thus, Islamic banks must balance their risk level and their financial performance.

An adequate funding method can be used to mitigate the financial risk in Islamic banks. The practice of profit and loss sharing by signing Musharakah and Mudharabah contracts with customers leads to raising the risk level of Islamic banks. In the case of Musharakah and Mudharabah, Islamic banks play the role of a partner that shares the loss and profit with customers.

However, the use of alternative contract types like Murabahah can mitigate the financial risk. This contract is very simple, and it is considered a debt financing method in traditional banks. The client asks the bank to buy an asset and the bank defines a contract in which all conditions of payments and profits are well set.

Despite the literature on banking efficiency, few studies focus on the relation between capital structure, risk management and financial performance in Islamic banks.

Diamond and Rajan (2001) have argued that Islamic banks need to develop their funds to perform the principle of loss and profit-sharing. Thus, they must finance their capital need by increasing the equity level to prevent credit and market risk. However, this management approach raises the operational cost and reduces the cost-effectiveness (Khairi *et al.*, 2018).

Othman *et al.* (2017) reported that Islamic bank inefficiencies are relatively high due to the practicing of loss and profit-sharing principle financed by high equity level. Farooq and Ahmed (2013), proposed the use of the Murabahah contract in Islamic banks to raise short-term funding.

They also showed that the management cost of the Murabahah contract is relatively low and less dangerous than the raising of equity through other techniques.

Bahrini (2017) confirmed the wide implementation of the Murabahah contract in Islamic banks as an alternative method to raise capital efficiency. For the author, the Murabahah contract is less risky and less costly than another type of financing method based on profit-sharing principles such as Musharakah and Mudharabah. Bukhari *et al.* (2013), Husain *et al.* (2015), Bahrini (2017), confirmed that Murabahah contract in Islamic bank is less risky than alternative equity-based finance (Mudharabah and Musharakah).

Cost management and capital efficiency seem to be the main contributors to the profitability and efficiency in Islamic banks according to several theoretical and empirical investigations (Diamond and Rajan, 2001; Hassan and Aliyu, 2018; Yanikkaya *et al.*, 2018). Thus, Islamic banks must optimize their capital efficiency by implementing an adequate funding method.

2.4 Islamic bank profitability

The profit-margin-based finance principle can be practiced in Islamic banks through several types of contracts, such as Murabahah, Ijara, and Salam. However, Murabahah is the most used contract by Islamic banks due to its positive impact on financial performance (Husain *et al.*, 2015; Bahrini, 2017).

The research of Abusharbeh (2014) showed that the use of Murabahah funding has enhanced Indonesian banks' profitability. For the author, Murabahah funding, which generates significant profits for Islamic banks, has low credit risks compared to profit-share financing methods (Mudharabah and Musharakah).

Sutrisno (2016) confirmed that Murabahah funding has a positive impact on the financial performance of Indonesia's Islamic banks (profitability). However, the practice of other funding methods like Mudharabah and Musharakah has no significant impact on Islamic

bank profits. The same results are also revealed in Islamic Malaysian banks by Abusharbeh (2014) and Samad and Hassan (2006).

In comparison with equity financing methods (Musharakah and Mudharabah), Farooq and Ahmed (2013) have argued that the credit risk in Islamic Banks is quite low in the case of indebted financing. The authors confirmed that the Murabahah funding method leads to decrease lending risks and improves the financial return in Islamic banks.

Other studies have empirically evaluated the effect of Islamic bank funding modalities on its financial risk and return (Alzoubi, 2018; Farooq and Ahmed, 2013; Muda *et al.*, 2013). The results showed that the reduction of financial risk and the increase of financial return in Islamic banks are correlated to funding methods.

On the other hand, the connection between asset quality and profitability in Islamic banks is studied by many researchers (El-Chaarani and Ragab, 2018; Abdo, 2020). They revealed that non-performing loans have a negative impact on the financial performance of Islamic banks. Some other studies have revealed a significant correlation between Islamic bank performance and macroeconomic factors like GDP, unemployment and inflation (Al-Kayed *et al.*, 2014).

3. Financial performance of Islamic and conventional banks: a literature review

In the context of developing countries, several scholars have studied and analyzed the financial performance of both Islamic and conventional banks.

In Indonesia, the results of Ika and Abdullah (2011) revealed that Islamic banks have a higher level of liquidity than conventional banks. Tho'in (2019) confirmed that Indonesian Islamic banks performed better than their conventional counterparts before and after the formation of the ASEAN Economic Community. Fakhri and Darmawan (2021) showed that both Islamic and conventional banks in Indonesia are affected by several macro factors. They stated that Islamic banks are more volatile because they are highly correlated to the inflation rate.

In Pakistan, the study of Majeed and Zainab (2021) indicated that Islamic banks are less risky, better capitalized, and have higher levels of liquidity than commercial banks. On the other hand, the profitability level of Islamic banks is found lower than commercial banks.

In Jordan, Abdo (2020) revealed a significant difference in return on equity between Islamic and conventional banks between 2001 and 2011. The study concluded that Islamic banks should improve their financial structure to enhance their financial efficiency.

In Egypt, Etab and El-Moslemany (2020) revealed that conventional banks performed better than Islamic banks over the period 2002–2010. Conventional banks have assigned a higher level of adequacy, profitability, assets management quality and liquidity.

The study of El-Chaarani and Ragab (2018) indicated that conventional banks have more capacity to manage their assets while Islamic banks focus on the management of capital adequacy and liquidity risk during the Arab crisis period of 2010–2015 in the Middle East region.

In the GCC region, Siraj and Pillai (2012) compared traditional banks with Islamic banks over the period 2005–2010. The results showed that (1) Islamic banks were better financed than conventional banks, (2) conventional banks were generating higher revenue growth over time, and (3) the financial crisis of 2008/2009 affected all performance indicators of the banking sector. During the global crisis of 2008/2009, Alqahtani *et al.* (2017) examined the profitability of 80 banks in GCC countries. Their findings confirmed that Islamic banks are less efficient.

In Europe, the results of Abu-Alkheil *et al.* (2013) revealed that conventional banks performed better than Islamic banks mainly during the crisis of 2008/2009. The Islamic banks showed a low level of return and weak cost control efficiency.

In the MENA region, the study of Sghaier *et al.* (2016) indicated that all types of banks are affected by the crisis period of 2008/2009. Based on the return on assets and return on equity, they found that Islamic banks performed better than conventional banks. In the same line, Abdulle and Kassim (2012) showed that Islamic banks are less exposed to liquidity risks than conventional banks in Malaysia during the international crisis of 2008/2009. Ftiti *et al.* (2013) confirmed that Islamic banks in GCC countries were highly efficient during the financial crisis of 2008/2009.

Hashem and Sujud (2019) showed that the level of capital adequacy in Islamic banks is higher than the level of capital adequacy in their conventional counterparts. However, conventional banks showed a higher level of return and liquidity than their Islamic counterparts.

Throughout 2005–2014, Miah and Uddin (2017) examined the performance of 28 Islamic and 48 conventional banks. The data showed that conventional banks are more cost-effective than Islamic banks. In addition, they revealed that Islamic banks are more stable than conventional banks.

During the crisis and unstable periods, the banking sector's vulnerability to risk is a critical concern in preserving the stability of the financial system. Choudhury *et al.* (2021) studied the systemic risk and domestic interbank links of eight Chinese banks over the period 2006–2018. Their results suggested the need to employ new strategies during the crisis to mitigate the systemic risk of the banking sector.

The reaction of the financial markets to the COVID-19 outbreak has never been bleaker. After the appearance of the pandemic, investors across the globe employed new financial strategies and behaviors to minimize their risk exposure. As a result, the financial markets became volatile.

Many studies provided empirical evidence of COVID-19 adverse effect on stock markets and investors' confidence (Kinateder *et al.*, 2021; Hassan *et al.*, 2021; Adrian *et al.*, 2019; Ben-Rephael *et al.*, 2017). Scholars showed that during times of crises and uncertainty, investors in financial and non-financial sectors employ the "flight-to-safety" behavior because they prefer safe and liquid assets.

Miah *et al.* (2021) assessed the impact of COVID-19 on the Islamic banking system in Bangladesh and they tested if Islamic banks are exposed to increase their risk due to their role as a provider of "merchant capital". Their results revealed that the investment pattern of Islamic banks is skewed toward trade and merchant financing. They also showed that Islamic banks are highly vulnerable to the economic shock resulting from COVID-19.

Arafat *et al.* (2021) studied how COVID-19 had affected conventional and Islamic banks' performance and stability in Pakistan, Malaysia, and GCC countries. Based on a sample of 44 listed conventional banks and 21 listed Islamic banks, the authors expected that Islamic banks should perform better due to their participation-based funding model. However, their results revealed that COVID-19 had a significant negative impact on the profitability of both types of banks.

Mateev *et al.* (2021) investigated the impact of competition and capital structure on the risk behavior of banking institutions in the Middle East and North Africa (MENA) region during the COVID-19 pandemic. Based on panel data techniques applied on 225 banks selected from 18 countries, the results showed that (1) banks tend to hold higher capital ratios when they are operating in a competitive environment, (2) banks in the MENA region tend to raise their capitalization levels in response to higher risk exposure and vice versa and (3) banking concentration (measured by the HH-index) and credit risk have a significant and positive impact on capital ratios of Islamic banks, whereas competition does play a significant role in determining the level of their capital.

Akkas and Al Samman (2021) compared the stock values of Islamic and conventional financial institutions, as well as Islamic windows in GCC countries, during the COVID-19 pandemic period. They found that Islamic financial institutions are less vulnerable than

conventional and Islamic window financial institutions in the GCC region to the effects of the COVID-19. Furthermore, they showed that the COVID-19 epidemic did not affect the Islamic financial institutions in Saudi Arabia and Oman. The same results were observed in Bahraini banks from November 1, 2020, to March 17, 2021. They recommended governments in the GCC region execute reforms and enhance the monitoring system of financial institutions. Finally, they recommended Islamic banks employ Islamic ontology to be more efficient.

The previous literature indicates that Islamic banks performed better than conventional banks during the crisis over the last decades. The financial structure and behavior of Islamic banks kept them safe from any shock that happened in the market because they are founded based on interest-based deposit/lending. In addition, the literature review reveals that Islamic banks have a higher capacity to manage their financial risks during crises because Islamic principles prohibit any type of financial speculation. However, the literature review did not reveal a comparative study between Islamic and conventional banks on the sample before and during the COVID-19 period. Moreover, the majority of empirical findings were based on a small sample in one country. Thus, it is impossible to generalize the empirical findings shown above.

Hence, the current paper seeks to complete the previous literature review by providing further evidence on the financial performance of the Islamic vs conventional banks in the GCC region during and after the COVID-19.

4. Research design

4.1 Research method

This study seeks to compare Islamic banks with conventional banks in the GCC countries before and during the COVID-19 pandemic period. Therefore, it covers four years from 2017 to 2020. The impact of COVID-19 on the banking sector should be reflected on the financial data at the end of 2020 because the new virus had appeared since the end of 2019.

To achieve the first objective of this study, six categories of variables are considered in this analysis: capital structure, liquidity level, financial risk, profitability, general ratios, and macroeconomic indicators. This descriptive analysis explains the financial evolution of the Islamic and conventional banking sector in GCC countries. It also helps to study the financial behavior of Islamic and conventional banks in the six different GCC countries before and during the crisis of COVID-19.

The second objective of this study is to compare the financial structure, liquidity, risk, and profitability of conventional and Islamic banks. In other words, the comparison between these two different categories of banks aims to reveal the financial behavior of each bank category before and during the crisis period. As shown in Figure 1, four variables are used to carry out the *T*-test. This test has the advantage to compare two different independent samples.

The final objective of this paper is to explore the determinants of profitability of Islamic and conventional banks before and during the Covid-19 pandemic period in GCC countries. The multiple regression model is employed to determine the impact of micro and macro variables on banks performance (Figure 2).

4.2 Sample selection

The sample of this study is selected from the banking sector working in the GCC countries. The importance and the development of Islamic banks in this region could shed light on the capacity of Islamic banks to resist during crises. Six countries are considered in this study: Qatar (QA), Saudi Arabia (SA), United Arab Emirates (AE), Oman (OM), Kuwait (KW) and Bahrain (BH).

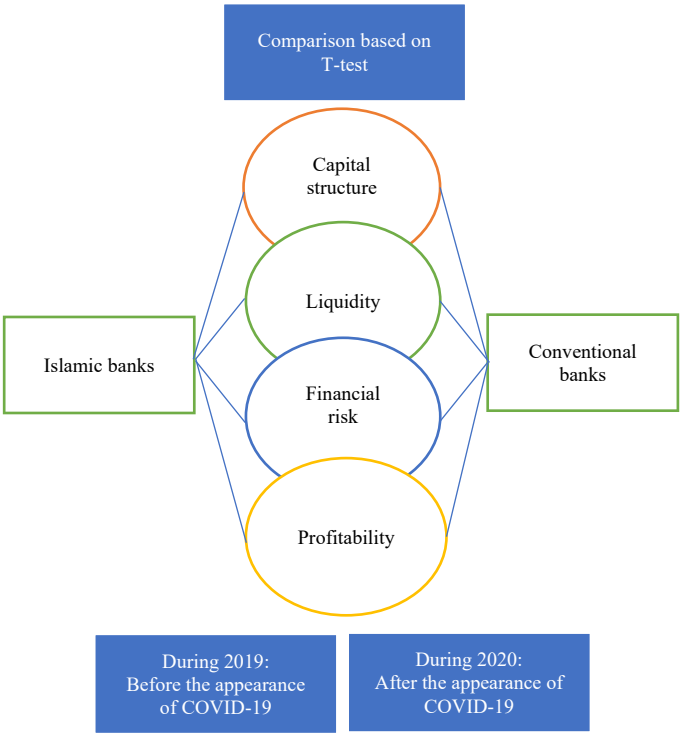

Figure 1.
Financial ratios-based performance of Islamic and conventional banks

The financial data of Islamic banks and conventional banks in the GCC countries was collected from different sources, mainly the annual report of banks and the Orbis Bank Focus database. The number of banks explored in this study is 198 banks, among them 86 banks with no financial data for two consecutive years were excluded from the analysis. Table 1 as well as Figure 3 present the distribution of the sample per country and bank type. The sample includes 112 banks (45 Islamic banks and 67 conventional banks).

Despite the importance of Islamic banks in the GCC countries, the conventional banks are still the most developed in these countries.

4.3 Variables description

In this paper, six categories of variables are employed to achieve its objectives. The first category of variables is related to the capital structure of Islamic and conventional banks. The second category of variables is related to the liquidity level of the banking sector. The third category of variables includes financial risk ratios, and the fourth category covers profitability ratios. The final two categories include general ratios and macroeconomic indicators. All key information and financial variables employed in this paper are defined and presented in Table 2.

5. Empirical findings

5.1 Descriptive analysis

5.1.1 Capital structure level in the GCC countries. Table 3 shows the level of capital adequacy and capital structure of conventional banks and Islamic banks in the GCC countries from 2017 to 2020. The results reveal that the Islamic banks in Oman and conventional banks in Kuwait have

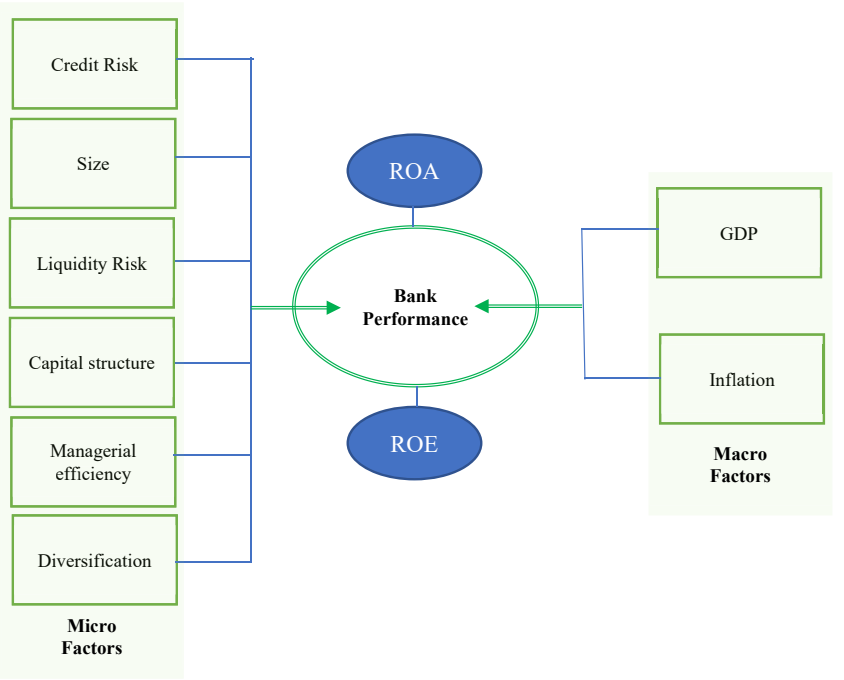

Figure 2.
Relationships among variables of the regression model

	N. of Islamic banks	N. conventional banks	Total per country
Qatar (QA)	6	9	15
Saudi Arabia (SA)	4	7	11
United Arab Emirates (AE)	7	13	20
Oman (OM)	4	10	14
Kuwait (KW)	5	5	10
Bahrain (BH)	19	23	42
Total per category	*45*	*67*	*112*

Table 1.
Distribution of the sample per country and bank type

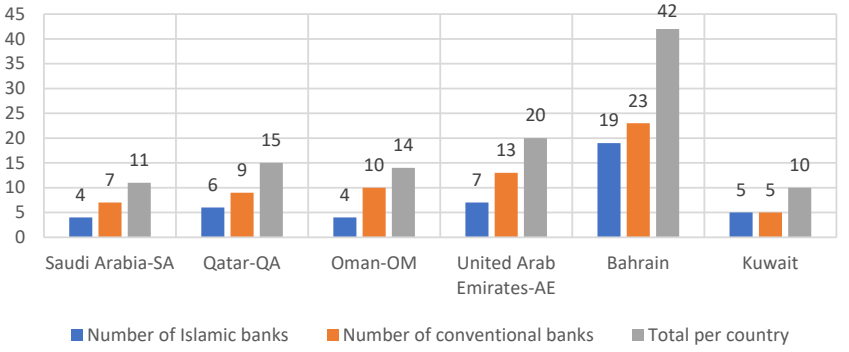

Figure 3.
Distribution of sample per country and bank type

Category	Ratio	Symbol	Formula
Capital structure ratios	Equity to loan ratio	ELR	$(\sum equity)/(\sum loans)$
	Total adequacy ratio	CAR	*Capital adequacy based on Basel rules:* $(\sum tier1\ capital) + (\sum tier2\ capital)$ over $(\sum risk\ weighted\ assets)$
	Equity to assets ratio	EAR	$(\sum equity)/(\sum assets)$
Liquidity ratios	Loans to assets	LTA	$(\sum loans)/(\sum assets)$
	Loans to deposits	LTD	$(\sum loans)/(\sum deposits)$
	Liquid asset ratio	LAR	$(\sum liquid\ assets)/\sum(deposits)$
Financial risk ratios	Loans loss reserve ratio	LLR	$(\sum loan\ loss\ reserve)/(\sum loans)$
	Non-performing loan	NPL	$(\sum Non\ performing\ loan)/(\sum loans)$
	Loans loss reserve to impaired loans	LRIL	$(\sum loan\ loss\ reserve\ )/(\sum Non\ performing\ loan)$
Profitability ratios	Return on assets	ROA	$(\sum net\ income)/(\sum assets)$
	Return on equity	ROE	$(\sum net\ income)/(\sum equity)$
General ratios	Bank size	SIZ	*Natural logarithm of total assets*
	Managerial efficiency	MAE	$(\sum cost)/(\sum net\ income)$
	Diversification	DIV	$(\sum non\ financial\ income)/(\sum average\ assets)$
Macro factors	GDP	GDP	*Gross domestic product rate per capital*
	Inflation	INF	*GDP deflator variation rate*

Table 2.
Key ratios of the study

		Equity / Net Loans (ELR)				Total capital adequacy ratio (CAR)				Equity / Total assets (EAR)			
Country ISO code	Type of bank	2020	2019	2018	2017	2020	2019	2018	2017	2020	2019	2018	2017
SA	Conventional	27.966	33.785	30.055	32.445	20.725	18.431	18.365	18.505	15.846	19.255	18.645	19.706
	Islamic	20.726	22.293	23.696	23.786	22.667	23.223	24.436	23.762	14.946	15.686	16.333	16.916
QA	Conventional	18.082	19.615	20.736	20.417	18.597	18.703	18.115	17.994	11.724	12.857	13.222	13.863
	Islamic	32.672	26.025	27.143	30.573	17.846	18.132	17.832	18.284	13.73	14.40	15.815	15.98
OM	Conventional	24.386	25.976	21.552	20.885	20.516	18.962	17.470	18.106	16.713	16.138	16.026	15.843
	Islamic	16.167	15.613	16.899	18.844	13.682	14.374	15.590	15.982	13.247	12.280	13.417	14.652
AE	Conventional	28.018	29.036	30.159	28.056	18.436	18.452	17.355	18.765	16.752	17.590	17.282	17.367
	Islamic	32.809	32.590	28.353	26.537	18.909	18.233	17.205	17.446	19.510	19.623	17.622	16.932
BH	Conventional	30.811	33.030	28.573	28.899	20.723	21.692	19.583	20.246	15.170	16.035	14.986	15.080
	Islamic	18.823	20.002	20.912	22.645	22.382	27.851	28.322	30.292	9.882	23.316	28.483	29.114
KW	Conventional	20.864	22.600	22.584	21.126	18.014	17.652	17.391	17.532	12.394	18.406	20.596	19.962
	Islamic	14.565	17.205	16.816	16.370	17.366	18.257	18.845	19.702	22.194	29.802	30.073	25.253
GCC	Conventional	**25.050**	**27.016**	**25.207**	**25.293**	**19.112**	**18.986**	**18.146**	**18.522**	**14.764**	**17.046**	**16.792**	**16.976**
	Islamic	**22.623**	**22.294**	**22.303**	**23.125**	**18.300**	**20.013**	**20.376**	**20.916**	**15.582**	**19.184**	**20.292**	**19.807**

Higher Islamic | Lower Islamic | Higher Conventional | Lower Conventional

Table 3.
Capital structure ratios in GCC countries

the lowest capital adequacy (CAR) level in the GCC region. The highest level of capital adequacy exists in Bahrain Islamic banks from 2017 to 2020 and in Saudi Arabia Islamic banks in 2020.

The analysis of equity to loan (ELR) and equity to assets (EAR) ratios indicates that conventional banks in Qatar have the weakest equity structure in the GCC countries. The Islamic banks in Kuwait have the highest level of ETR and the lowest level of ELR during the pandemic period.

On the other hand, Figure 4 shows the variation of capital structure in both Islamic and conventional banks during the period of the study. The result indicates that the level of equity to loan (ELR) is almost stable in Islamic banks during the period of 2017–2020. The level of ELR has decreased in conventional banks from 27.01% in 2019 to 25.05% in 2020. In addition, the level of equity to asset (EAR) in Islamic and conventional banks has decreased during the pandemic period. Finally, the average level of capital adequacy ratio (CAR) in the GCC Islamic banks has significantly decreased in 2020. However, the CAR of conventional banks has increased during 2020.

5.1.2 Liquidity level in GCC countries. The liquidity ratios of Islamic and conventional banks in the GCC countries are presented in Table 4 and Figure 5. The results of net loans over total assets (LTA) indicate that both Islamic and conventional banks in Oman have the highest level of LTA. The lowest level of LTA is noticed in Bahraini banks.

As for the loan to deposit ratio (LTD), the results indicate that both conventional and Islamic banks in Bahrain have the lowest level of LTD ratio. However, the result shows that the highest level of LTD is attained by conventional banks in Saudi Arabia and Islamic banks in Oman.

Finally, the results of the liquid assets ratio (LAR) show that conventional banks in Bahrain have the highest level in the GCC countries. The lowest level of LAR in conventional banks exists in Qatar during 2017, 2019 and 2020.

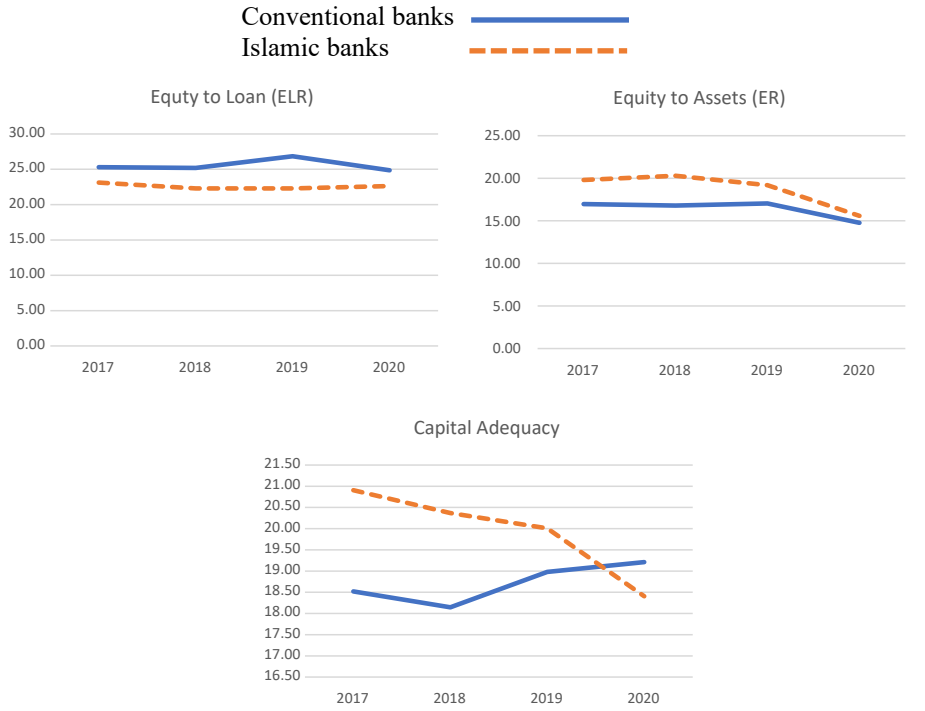

Figure 4.
Capital structure level in the GCC countries

Country ISO code	Type of bank	Net Loans / Total assets (LTA)				Net Loans / Total Deposits (LTD)				Liquid Assets / Total Deposits (LAR)			
		2020	2019	2018	2017	2020	2019	2018	2017	2020	2019	2018	2017
SA	Conventional	58.974	57.245	58.705	57.716	75.956	103.554	105.985	107.815	20.386	37.844	29.474	21.266
	Islamic	70.536	60.733	67.566	69.113	82.646	80.533	78.467	80.673	12.383	17.096	19.416	18.085
QA	Conventional	65.386	65.494	64.627	67.602	85.626	86.703	86.669	89.126	18.683	19.657	23.877	14.053
	Islamic	62.323	63.632	62.539	63.947	78.948	80.9936	81.490	80.457	22.755	20.394	23.433	20.083
OM	Conventional	71.666	71.652	74.400	75.474	93.960	93.726	94.849	93.339	23.807	24.753	23.042	16.298
	Islamic	81.927	78.675	79.462	77.326	97.220	95.027	97.407	94.170	21.225	23.242	22.216	25.217
AE	Conventional	54.630	57.426	59.944	60.027	75.269	78.562	85.174	84.263	31.766	31.552	29.696	25.576
	Islamic	62.450	57.024	58.535	60.108	80.027	75.433	75.854	77.222	21.995	24.951	25.053	25.176
BH	Conventional	43.090	38.052	40.315	41.519	51.032	48.095	52.703	54.224	37.026	39.750	37.784	32.474
	Islamic	47.373	44.114	42.916	42.898	60.853	61.166	56.992	59.744	22.704	25.230	25.564	28.026
KW	Conventional	60.715	59.416	59.494	60.713	76.365	73.513	72.995	73.384	29.515	30.023	30.777	25.223
	Islamic	60.212	47.622	49.623	51.342	72.404	69.823	72.387	71.720	23.084	24.515	24.524	23.936
GCC	Conventional	**59.075**	**58.216**	**59.586**	**60.502**	**76.366**	**84.023**	**86.395**	**92.026**	**26.866**	**30.596**	**28.946**	**22.486**
	Islamic	**64.106**	**58.632**	**60.104**	**60.785**	**78.516**	**77.160**	**77.095**	**77.338**	**20.766**	**22.726**	**22.855**	**22.616**

Higher Islamic | Lower Islamic | Higher Conventional | Lower Conventional

Table 4.
Liquidity ratios in GCC countries

In the case of Islamic banks, the lowest level of LAR exists in Saudi Arabia and the highest level of ratio exists in Bahraini banks from 2018 to 2019. During the pandemic period, the Islamic banks in Kuwait have shown the highest level of liquid assets ratio.

The above results indicate that the liquidity level in Bahraini banks is the highest in the GCC countries and the lowest level of liquidity exists in Saudi Arabia, Oman, and Qatar.

The level of LTD has significantly decreased in conventional banks during 2020. However, the value of LTD has slightly increased in Islamic banks.

Finally, the liquid assets ratio (LAR) has decreased in both Islamic and conventional banks in the GCC countries in 2020. Thus, these results indicate that banks in the GCC countries are suffering from a decrease of liquid assets during the COVID-19 pandemic period.

The above results indicate that the liquidity level in Bahraini banks is the highest in the GCC countries and the lowest level of liquidity exists in Saudi Arabia, Oman, and Qatar.

5.1.3 Financial risk level in GCC countries. Table 5 presents the financial risk of Islamic and conventional banks in the GCC countries from 2017 to 2020. The results show that conventional and Islamic banks in Bahrain have the highest non-performing loan ratio which reflects their exposure to high credit risk. The lowest level of non-performing loan ratio exists in Omani conventional banks and Kuwaiti Islamic banks.

The analysis of loans loss reserve to non-performing loan ratio (LLR and LLR/NPL) shows that Islamic banks in Saudi Arabia and conventional banks in Kuwait are the most protected against the non-performing loan during the pandemic period of COVID-19. Before the COVID-19 pandemic period, the lowest level of LLR/NPL was existing in Bahraini banks. The lowest level of LLR/NPL in conventional banks exists in the United Arab Emirates. Thus, the conventional banks in the United Arab Emirates are exposed to a high level of credit risk during 2020.

The results of Figure 6 show that the arrival of COVID-19 has decreased the average of LLR ratio and NPL ratio of the banking sector in the GCC countries. The financial risk in both conventional and Islamic banks is well managed during the pandemic period. On the other

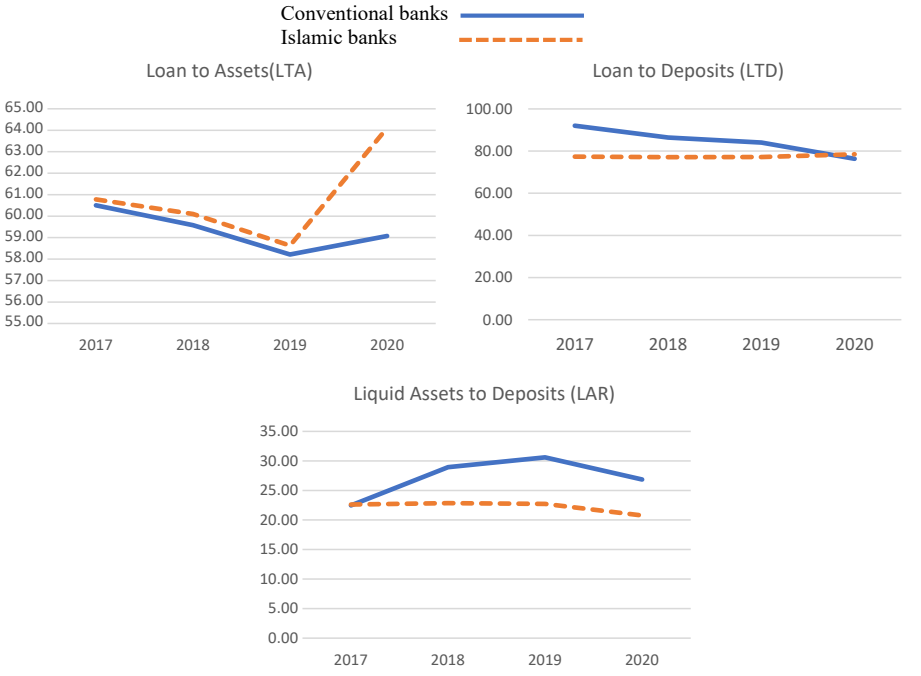

Figure 5.
Liquidity ratios in the GCC countries

		Loans Loss Reserve / Gross Loans (LLR)				Non-Performing Loans / Gross Loans (NPL)				Loans Loss Reserve / Non-Performing Loans (LLR/NPL)			
Country ISO code	Type of bank	2020	2019	2018	2017	2020	2019	2018	2017	2020	2019	2018	2017
SA	Conventional	3.105	2.812	2.585	2.046	3.286	3.225	2.344	1.555	104.095	98.225	121.994	135.705
	Islamic	3.073	2.604	2.876	2.156	2.855	2.964	2.836	1.756	207.756	181.674	194.744	198.147
QA	Conventional	3.566	3.866	4.055	2.734	3.332	3.422	3.417	2.878	127.107	129.636	133.106	105.535
	Islamic	7.153	4.863	3.263	1.343	6.083	4.724	3.014	2.419	129.453	111.637	123.073	61.634
OM	Conventional	4.332	3.186	3.106	2.952	4.424	3.793	3.073	2.804	101.283	87.073	104.543	108.733
	Islamic	4.113	3.147	2.547	2.834	1.290	0.706	0.582	0.263	119.007	102.006	108.236	114.203
AE	Conventional	6.752	7.997	7.363	6.125	10.612	9.053	9.634	7.106	82.532	81.805	92.167	98.906
	Islamic	7.386	9.249	8.883	8.266	10.310	7.063	10.594	10.005	75.340	87.464	92.623	92.637
BH	Conventional	10.274	13.843	13.226	9.837	10.903	16.392	12.402	11.024	97.160	89.873	103.113	123.594
	Islamic	16.953	17.635	11.437	8.705	24.624	23.477	18.273	17.174	83.379	59.617	56.736	48.814
KW	Conventional	5.485	5.005	5.503	5.346	2.147	1.554	1.505	1.633	256.944	284.404	364.737	295.033
	Islamic	8.163	12.693	12.652	16.44	8.974	12.994	12.066	10.102	182.942	175.967	200.097	162.734
GCC	Conventional	**5.596**	**6.116**	**5.975**	**4.843**	**5.687**	**6.743**	**5.396**	**4.496**	**128.185**	**128.835**	**153.24**	**144.584**
	Islamic	**6.309**	**8.368**	**6.944**	**6.622**	**8.198**	**9.375**	**7.894**	**6.957**	**132.976**	**119.724**	**129.24**	**113.037**

Higher Islamic	Lower Islamic	Higher Conventional	Lower Conventional

Table 5.
Financial risk ratios in the GCC countries

Conventional banks
Islamic banks

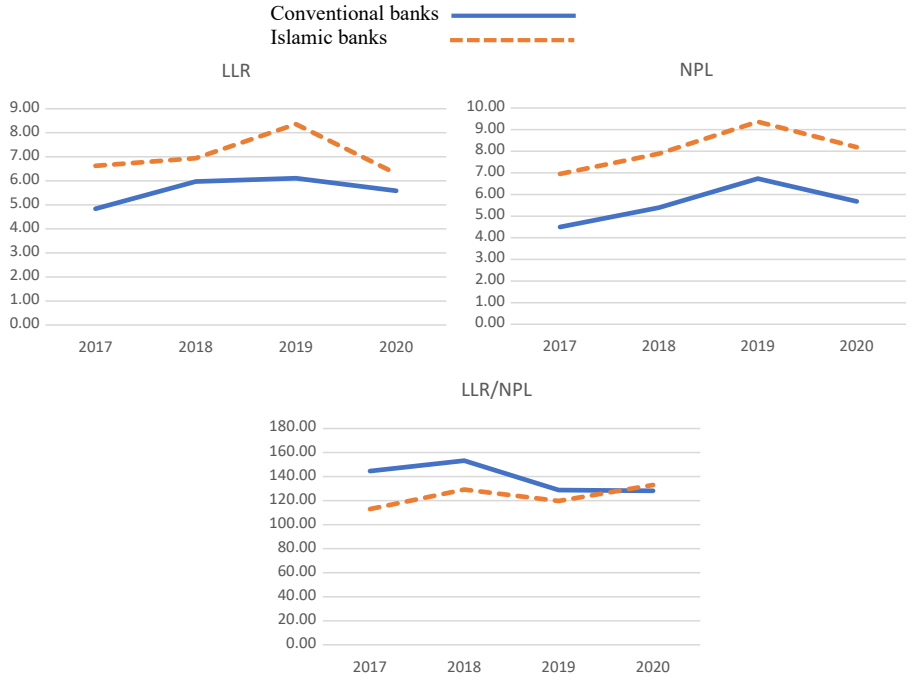

Figure 6.
Risk level in the GCC countries

hand, the loans loss reserve to non-performing loans ratio has increased in Islamic banks during the pandemic period. Thus, the results reveal that the average loans loss reserve has been increased in Islamic banks to protect them during the COVID-19 pandemic period.

5.1.4 The profitability level in the GCC countries. Table 6 shows the profitability level of Islamic and conventional banks in the GCC countries from 2017 to 2020. The results reveal that conventional banks in Qatar and Islamic banks in Saudi Arabia achieved the highest level of profitability during the pandemic period. However, conventional banks in the United Arab Emirates and Islamic banks in Bahrain attained the lowest level of return on assets and return on equity.

The results in Figure 7 indicate that ROA and ROE in both Islamic and conventional banks are highly affected by the appearance of COVID-19. The average ROE in Islamic banks and the average ROA and ROE in conventional banks decreased between 2019 and 2020 in almost all the GCC countries. However, the results indicate a slight improvement of ROA in Islamic banks.

Finally, the results show that Islamic banks in Kuwait and Oman have succeeded to sustain and develop their activities during the pandemic period.

5.2 Comparison between Islamic and conventional banks before and during COVID-19

Tables 7–10 present the financial comparison between Islamic and conventional banks based on the *t*-test model. This comparison is based on the financial data of the banking sector in the GCC region before and during the pandemic period of COVID-19. Thus, two years are considered: 2019 and 2020.

		Return on Asset (ROA)				Return on Equity (ROE)			
Country ISO code	**Type of bank**	**2020**	**2019**	**2018**	**2017**	**2020**	**2019**	**2018**	**2017**
SA	Conventional	0.955	3.744	3.335	3.725	6.804	11.863	10.835	13.395
	Islamic	1.536	2.083	1.163	2.013	10.404	12.884	7.127	12.345
QA	Conventional	1.103	1.363	1.332	1.202	9.686	11.176	10.826	10.033
	Islamic	0.396	0.532	0.254	1.015	6.827	8.383	8.166	9.686
OM	Conventional	0.633	1.286	1.375	1.46	3.962	8.326	8.894	9.023
	Islamic	0.996	0.310	0.806	0.217	7.202	1.184	5.794	1.483
AE	Conventional	0.013	0.723	0.454	1.044	−1.527	3.392	2.306	7.465
	Islamic	−0.582	−0.192	0.592	0.352	−3.464	−1.276	7.216	7.792
BH	Conventional	−0.896	−0.853	−0.095	2.264	2.346	4.454	3.225	9.072
	Islamic	−4.613	−2.756	−0.046	0.432	−9.754	−2.653	1.903	1.382
KW	Conventional	0.082	1.124	1.034	1.295	0.662	6.776	8.443	8.051
	Islamic	0.184	−2.833	3.042	0.312	3.416	1.077	12.223	4.540
GCC	Conventional	**0.536**	**1.235**	**1.244**	**1.826**	**3.654**	**7.663**	**7.427**	**9.505**
	Islamic	**−0.359**	**−0.387**	**0.976**	**0.753**	**2.444**	**3.279**	**7.076**	**6.207**

Higher Islamic	Lower Islamic	Higher Conventional	Lower Conventional

Table 6.
ROA and ROE in the GCC countries

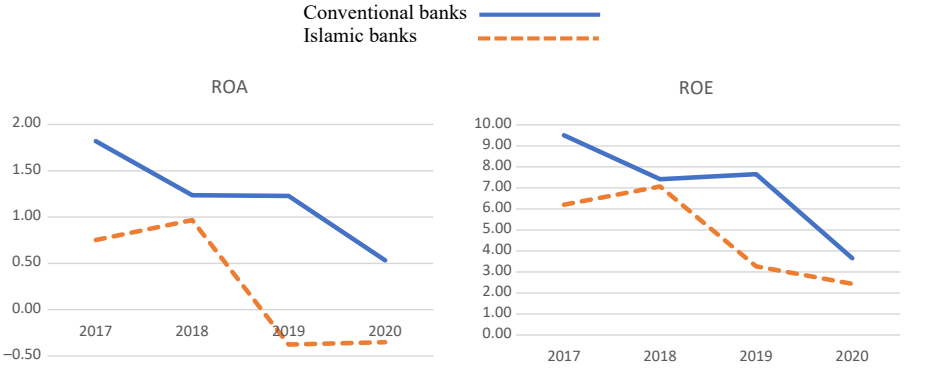

Figure 7.
ROA and ROE in the GCC countries

Table 7 presents the comparison of financial performance between the Islamic and the conventional banks before and during the pandemic period. The results indicate that conventional banks in the GCC countries have a significant (p-value < 0.05) and a higher level of financial profitability than their Islamic counterparts. ROA and ROE of conventional banks are 0.53 and 3.65 respectively. However, ROA and ROE of Islamic banks are (−0.35)

and 2.44 respectively. The same result of significant differences (p-value < 0.05) between Islamic and conventional banks is revealed during 2019. The performance level of conventional banks is greater than that of Islamic banks before the pandemic period.

Thus, the observed significant results indicate that the conventional banks in the GCC countries have achieved an acceptable level of financial performance during the COVID-19 period. On the other hand, the Islamic banks should review their financial strategies to improve their financial performance mainly during the pandemic period.

The result in Table 8 shows the comparison of liquidity ratios between the conventional and the Islamic banks in the GCC countries during 2019–2020. The t-test reveals that the liquidity level in the conventional banks is greater than the liquidity level in the Islamic banks during 2020 (p-value < 0.05). The LTA and LTD in conventional banks are 59.07 and

Table 7. Comparison of financial performance between Islamic and conventional banks before and during COVID-19 pandemic period

Ratio	Symbol	Conventional banks Mean	*N*	Islamic banks Mean	*N*	Mean difference	*t*-test Sig (2 tailed)
Panel A: During COVID-19 pandemic period							
Return on assets	ROA	0.535	67	−0.356	45	0.885	0.004
Return on equity	ROE	3.656	67	2.444	45	1.212	0.003
Panel B: Before COVID-19 pandemic period							
Return on assets	ROA	1.232	67	−0.384	45	1.616	0.003
Return on equity	ROE	7.669	67	3.277	45	4.397	0.001

Table 8. Comparison of financial liquidity between the Islamic and the conventional banks during COVID-19 pandemic period

Ratio	Symbol	Conventional banks Mean	*N*	Islamic banks Mean	*N*	Mean difference	*t*-test Sig (2 tailed)
Panel A: During COVID-19 pandemic period							
Loan to assets	LTA	59.077	67	64.106	45	5.036	0.000
Loan to deposits	LTD	76.362	67	78.517	45	2.156	0.002
Liquid asset ratio	LAR	26.866	67	20.762	45	6.125	0.001
Panel B- before COVID-19 pandemic period							
Loans to assets	LTA	58.215	67	58.633	45	0.422	0.402
Loans to deposits	LTD	84.023	67	77.160	45	6.860	0.002
Liquid assets ratio	LAR	30.592	67	22.725	45	7.876	0.001

Table 9. Comparison of capital structure and capital adequacy between Islamic and conventional banks during COVID-19 pandemic period

Variable	Symbol	Conventional banks Mean	*N*	Islamic banks Mean	*N*	Mean difference	*t*-test Sig (2 tailed)
Panel A: During COVID-19 pandemic period							
Equity to loan ratio	ELR	25.055	67	22.627	45	2.436	0.002
Total adequacy ratio	CAR	19.116	67	18.303	45	0.812	0.411
Equity ratio	ER	14.767	67	15.582	45	0.820	0.323
Panel B: Before COVID-19 pandemic period							
Equity to loan ratio	ELR	27.014	67	22.293	45	4.725	0.006
Total adequacy ratio	CAR	18.983	67	20.017	45	1.030	0.303
Equity ratio	ER	17.042	67	19.189	45	2.142	0.110

76.36, respectively. However, the LTA and LTD in Islamic banks are 64.10 and 78.51, respectively. In addition, the results of the LAR ratio indicate that the conventional banks have more liquid assets than their Islamic counterparts (p-value < 0.05). The LAR of the conventional banks during the pandemic period is 26.86 while the LAR of Islamic banks is 20.76 during the same period.

Before the pandemic period, the significant result (p-value < 0.05) reveals that the level of liquidity of the Islamic banks was greater than their conventional counterparts. The LTD ratio in the Islamic banks (77.16) is less than LTD in the conventional banks (84.02). However, the level of liquid assets (LAR) in the conventional banks was greater than the Islamic banks during 2019.

These results indicate that the conventional banks have less financial risk and more capacity to cover withdrawals of depositors and non-performing loans during the downturn with the arrival of COVID-19.

The results of Table 9 present the comparison of the capital structure and the capital adequacy between the conventional and the Islamic banks during the pandemic period. The result of the t-test does not reveal any significant differences (p-value > 0.05) of the capital structure and the capital adequacy between the Islamic and the conventional banks in the GCC countries during 2019 and 2020.

The equity to loans ratio has a significant difference between the Islamic and the conventional banks. This result is due to the level of loan disparities between the different types of banks. The level of capital adequacy and the level of capital structure are controlled by central banks and financial authorities in GCC countries. Thus, the Islamic and the conventional banks in the GCC region do not have full control over their capital structure and they are following almost the same regulations defined by financial authorities.

The comparison of the financial risk between the Islamic and the conventional banks during and before the COVID-19 period is presented in Table 10. Since the p-value is greater than 0.05, the t-test does not reveal any significant differences of LLR and LRIL between the Islamic and the conventional banks during 2020. However, the results show a significant difference (p-value < 0.05) of NPL between the conventional and the Islamic banks during 2020. The NPL of the Islamic banks is 8.19 and the NPL of the conventional banks is 5.68. The significant difference reveals that the Islamic banks are more exposed to credit risk than the conventional banks during the pandemic period.

Before the pandemic period, all financial risk ratios have shown significant differences between the Islamic and the conventional banks (p-value < 0.05). The level of loan reserve (LLR) in conventional banks is lower than that of Islamic banks. The level of non-performing

Table 10. Comparison of financial risk between Islamic and conventional banks during COVID-19 pandemic period

Ratio	Symbol	Conventional banks Mean	*N*	Islamic banks Mean	*N*	Mean difference	*t*-test Sig (2 tailed)
Panel A: During COVID-19 pandemic period							
Loans loss reserve ratio	LLR	5.594	67	6.304	45	0.713	0.433
Non-performing loans	NPL	5.685	67	8.195	45	2.514	0.002
Loans loss reserve to impaired loans	LRIL	128.187	67	132.978	45	4.799	0.224
Panel B: Before COVID-19 pandemic period							
Loans loss reserve ratio	LLR	6.116	67	8.364	45	2.256	0.022
Non-performing loans	NPL	6.743	67	9.378	45	2.634	0.001
Loans loss reserve to impaired loans	LRIL	128.836	67	119.728	45	9.113	0.012

loans (NPL) in Islamic banks is greater than that of their conventional counterparts. Finally, the level of loan loss reserve to impaired loan (LRIL) in the conventional banks is greater than their Islamic counterparts. These results reveal that conventional banks know how to manage efficiently their financial risk. However, Islamic banks have more tendency to accumulate loan loss reserves due to their risk-averse strategy.

5.3 Determinants of the financial performance of Islamic and conventional banks before and during COVID-19

The last objective of this paper is to explore the determinant factors of the financial performance of Islamic and conventional banks before and during the COVID-19 pandemic period. Two different categories of independent variables are considered in this paper. The first category includes macro factors related to each country in the GCC region (Gross Domestic Product-GDP and inflation-INF.). The second category includes micro factors related to financial characteristics of the banking sector (non-performing loans-NPL; the size of bank-SIZ; Equity ratio-ER; Loan to deposit-LTD; Managerial efficiency-MAE and Diversification-DIV).

Tables 11 and 12 present the impact of macro and micro factors on the financial performance of banks in the GCC countries during the pandemic period of COVID-19.

The analysis of the impact of non-performing loans (NPL) on bank performance reveals several conclusions. First, there is no significant impact of non-performing loans on the performance of the conventional banks before the pandemic period. However, the result in Table 11 shows a negative and significant impact of non-performing loans on ROA and ROE of the conventional banks during the COVID-19 pandemic period. Second, the non-performing loan ratio has a negative impact on the financial performance of the Islamic banks before the COVID-19 period and this negative impact becomes higher during the pandemic period. Third, the negative impact of the non-performing loan ratio on the financial performance of the Islamic banks is greater than its impact on the conventional banks during the health crisis period. Thus, the decrease in ROA and ROE can be explained by the rising of non-performing loans during the COVID-19 period. The performance of the Islamic banks is more sensitive to NPL ratio than their conventional counterparts.

	During Covid-19			
	Islamic banks		Conventional banks	
	ROA Coefficient	ROE Coefficient	ROA Coefficient	ROE Coefficient
(Constant)	1.8275***	1.7093***	1.6812***	1.6501***
NPL	−0.0387***	−0.0416***	−0.0116***	−0.0175***
LTD	0.0653***	0.0977***	0.1051***	0.1229**
SIZ	0.0132	0.0227	0.0252	0.0324
ER	0.1712	0.1283	0.1358	0.1001
MAE	−0.1871***	−0.2162***	−0.1532**	−0.1845**
DIV	0.0351	0.0527	0.0456	0.0627
GDP	0.0455	0.04931	0.0341	0.0514
INF	−0.1621***	−0.1506***	−0.1377*	−0.1109*
R^2	0.6085	0.5526	0.5313	0.5079
Adj. R^2	0.5022	0.4628	0.4245	0.4016
F-stat	7.3719	7.3217	7.0067	6.9284

Note(s): *Significant at 10%; **significant at 5%; ***significant at 1%

Table 11. Regression results of the impact of macro and micro factors on the financial performance of banks in the GCC countries during COVID-19

Table 12.
Regression results of the impact of macro and micro factors on the financial performance of banks in the GCC countries before COVID-19

	During Covid-19			
	Islamic banks		Conventional banks	
	ROA Coefficient	ROE Coefficient	ROA Coefficient	ROE Coefficient
(Constant)	1.7821***	1.7364***	1.6105***	1.8043***
NPL	−0.0156***	−0.0299**	−0.0131	−0.0202
LTD	0.1141**	0.1326*	0.1507**	0.1937**
SIZ	0.0316	0.0489	0.0264**	0.0727*
ER	0.1483	0.1103	0.1257	0.0958
MAE	−0.1309**	−0.1598***	−0.1222*	−0.1419**
DIV	0.0441	0.0517	0.0463	0.0508
GDP	0.0325	0.0453	0.0215	0.0506
INF	−0.1552	−0.1258	−0.1623	−0.1235
R^2	0.5895	0.5440	0.5667	0.6282
Adj. R^2	0.5242	0.4826	0.4973	0.5433
F-stat	7.6618	7.1181	6.4184	7.7194

Note(s): *Significant at 10%; **significant at 5%; ***significant at 1%

The implementation of an efficient managerial process and cost control strategy by the banking sector is between the most important key determinant of ROA and ROE before and during the pandemic period. The results in Tables 11 and 12 reveal a negative and significant impact of managerial efficiency ratio (MAE) on the financial performance of the banking sector in the GCC countries. In addition, the result shows that banks in general and mainly the Islamic banks in the GCC countries are the most affected by (MAE) ratio during the COVID-19 pandemic period. Thus, the Islamic banks have to excel in their cost strategy by eliminating non-essential expenses mainly during crisis periods.

Before the pandemic period, the ratio of loans to deposit (LTD) has a positive and significant impact on the financial performance of banks in the GCC countries. However, the results in Table 11 show that the positive impact of the LTD ratio falls sharply during the pandemic period. Increasing the level of the credit risk by providing an excess of loan leads to an increase in the profitability of the banking sector but this positive impact become limited during the crisis period. On the other hand, the results show that the Islamic banks in the GCC countries are not able to achieve a high-performance level like their conventional counterparts due to their risk-averse strategy.

Before COVID-19, the results in Table 12 show that the bank size has a positive impact on the ROE and ROA of the conventional banks in the GCC countries. However, during the COVID-19 period, bank size does not show any impact on the performance of conventional banks. Results in Tables 11 and 12 do not reveal any impact of bank size on the financial performance of the Islamic banks before and during the pandemic period.

As for the inflation impact (INF), the results in Table 12 do not show any significant impact of inflation on ROA and ROE of both the Islamic and the conventional banks before the pandemic period. During the pandemic period, the impact of inflation becomes significant and negative. The rise in inflation due to a higher production cost and a sharp fall in customer purchasing power have reduced the ability of creditors to fulfill their payments obligations. In addition, inflation during 2020 has increased the rate of nominal interest and reduced the level of bank deposits. Thus, banks have ceased lending and their financial performance is negatively and highly affected.

Finally, the results presented in Tables 11 and 12 do not show any significant impact of capital structure (ER), gross domestic product (GDP), and diversification (DIV) on the financial performance of the banking sector in the GCC countries before and during the COVID-19 pandemic period.

5.4 Robustness test

The static 2SLS model and dynamic GMM estimators are also employed in this paper to eliminate the unobserved impact of any constant and estimate the problems of endogeneity and heteroscedasticity. Blundell and Bond (2000) and Bond (2002) stated that GMM estimators could minimize the sample bias and enhance the findings quality. García-Herrero *et al.* (2009) argued that GMM estimators can resolve the problem of endogeneity in case of studying the performance determinants of banking sector.

The results of GMM estimators in Tables 13 and 14 showed similar conclusions of regression models presented in Tables 11 and 12. These results lead to the conclusion that the standard errors of the model are unbiased and justify the dynamism of the employed model.

The empirical findings in Tables 15 and 16 reveal that internal and external determinants of Islamic and conventional banks profitability are the same regardless the employment of 2SLS or OLS. Thus, these results reveal the absence of endogeneity problem and the absence of variables that could bias the relationship between the bank profitability and the profitability determinants in GCC region.

Since the Bahraini banks in this sample represent 37.5% (42/112) of the population, we decided to reevaluate the profitability determinants of the Islamic and the conventional banks

	Islamic banks		Conventional banks	
	ROA Coefficient	ROE Coefficient	ROA Coefficient	ROE Coefficient
NPL	−0.033*	−0.032*	−0.112	−0.051
LTD	0.091***	0.133*	0.091***	0.112**
SIZ	0.034	0.053	0.037*	0.051**
ER	0.131	0.152	0.104	0.049
MAE	−0.117***	−0.141***	−0.117**	−0.145***
DIV	0.021	0.044	0.051	0.027
GDP	0.053	0.061	0.116	0.071
INF	−0.098	−0.129	−0.113	−0.044
AR (1)-P	0.003	0.052	0.007	0.021
AR (2)-P	0.321	0.609	0.385	0.352

Note(s): *Significant at 10%; **significant at 5%; ***significant at 1%

Table 13. GMM robustness test before COVID-19 period

	Islamic banks		Conventional banks	
	ROA Coefficient	ROE Coefficient	ROA Coefficient	ROE Coefficient
NPL	−0.052**	−0.044***	−0.051***	−0.022*
LTD	0.031***	0.021*	0.123***	0.134**
SIZ	0.052	0.076	0.055	0.083
ER	0.133	0.121	0.093	0.005
MAE	−0.163***	−0.194*	−0.095***	−0.157**
DIV	0.032	0.024	0.042	0.023
GDP	0.045	0.013	0.023	0.053
INF	−0.126*	−0.157***	−0.098**	−0.142*
AR (1)-P	0.006	0.012	0.005	0.063
AR (2)-P	0.293	0.214	0.302	0.234

Note(s): *Significant at 10%; **significant at 5%; ***significant at 1%

Table 14. GMM robustness test during COVID-19 period

	During Covid-19			
	Islamic banks		Conventional banks	
	ROA Coefficient	ROE Coefficient	ROA Coefficient	ROE Coefficient
NPL	−0.012**	−0.044**	−0.035	−0.044
LTD	0.141**	0.214**	0.124**	0.157**
SIZ	0.023	0.041	0.046**	0.041**
ER	0.128	0.136	0.162	0.055
MAE	−0.151**	−0.166**	−0.166*	−0.171***
DIV	0.033	0.021	0.071	0.016
GDP	0.063	0.055	0.102	0.033
INF	−0.124	−0.146	−0.102	−0.095
R^2	0.633	0.618	0.652	0.611
Adj. R^2	0.502	0.497	0.538	0.465

Note(s): *Significant at 10%; **significant at 5%; ***significant at 1%

Table 15.
2SLS test before COVID-19 period

	During COVID-19			
	Islamic banks		Conventional banks	
	ROA Coefficient	ROE Coefficient	ROA Coefficient	ROE Coefficient
NPL	−0.044**	−0.021**	−0.072**	−0.026**
LTD	0.073**	0.044**	0.174**	0.115**
SIZ	0.042	0.050	0.055	0.038
ER	0.152	0.093	0.132	0.012
MAE	−0.152**	−0.139**	−0.117***	−0.168***
DIV	0.062	0.051	0.055	0.037
GDP	0.032	0.097	0.036	0.071
INF	−0.148**	−0.161**	−0.148*	−0.146**
R^2	0.598	0.616	0.573	0.629
Adj. R^2	0.500	0.504	0.495	0.521

Note(s): *Significant at 10%; **significant at 5%; ***significant at 1%

Table 16.
2SLS test during COVID-19 period

after excluding all Bahraini banks. The objective of this robustness test was to reveal if the study results were biased by the domination of Bahraini banks. The results presented in Tables 17 and 18 show the same outcomes presented in Tables 11 and 12. Thus, the results do not suffer from any bias related to the sample composition.

6. Conclusions, limitations and suggestions for further research

This study aims to examine the financial resilience of Islamic and conventional banks in the GCC region against the economic crisis during the COVID-19 pandemic period. The results reveal that there is a substantial difference between the Islamic and the conventional banks during the COVID-19 economic crisis. The conventional banks have stronger financial performance and financial liquidity than their Islamic counterparts, and they have a better ability to manage their financial risks during the crisis.

The *t*-test result suggests that the financial return ratios of the conventional banks (ROE and ROA) are higher before and during the pandemic period than their Islamic counterparts, which is in line with the results of Etab and El-Moslemany (2020). In addition, the results

	Islamic banks		Conventional banks	
	ROA Coefficient	ROE Coefficient	ROA Coefficient	ROE Coefficient
NPL	−0.012**	−0.042**	−0.035	−0.044
LTD	0.141**	0.216**	0.124**	0.157**
SIZ	0.025	0.045	0.046**	0.041**
ER	0.128	0.132	0.162	0.055
MAE	−0.159**	−0.162**	−0.166*	−0.171***
DIV	0.030	0.024	0.071	0.016
GDP	0.066	0.055	0.102	0.033
INF	−0.124	−0.143	−0.103	−0.095
AR (1)-P	0.004	0.045	0.006	0.011
AR (2)-P	0.373	0.655	0.095	0.073

Note(s): *Significant at 10%; **significant at 5%; ***significant at 1%

Table 17. GMM robustness test before COVID-19 period and after excluding Bahraini banks

	Islamic banks		Conventional banks	
	ROA Coefficient	ROE Coefficient	ROA Coefficient	ROE Coefficient
NPL	−0.042**	−0.053**	−0.033**	−0.015**
LTD	0.060**	0.052**	0.141**	0.151*
SIZ	0.033	0.031	0.033	0.047
ER	0.146	0.183	0.175	0.008
MAE	−0.125**	−0.222*	−0.125***	−0.142***
DIV	0.024	0.068	0.066	0.084
GDP	0.066	0.071	0.044	0.066
INF	−0.132**	−0.144**	−0.171*	−0.132**
AR (1)-P	0.007	0.047	0.005	0.071
AR (2)-P	0.201	0.601	0.251	0.473

Note(s): *Significant at 10%; **significant at 5%; ***significant at 1%

Table 18. GMM robustness test during COVID-19 period and after excluding Bahraini banks

support the claim that the conventional banks have a higher liquidity level (LTA, LTD, and LAR) than their Islamic counterparts.

During COVID-19's pandemic period, the Islamic banks had a higher level of financial risk (NPL) than the conventional banks. However, the results of capital structure and capital adequacy suggest that there is no substantial difference between the Islamic and the conventional banks in 2020.

With the arrival of COVID-19 at the end of 2019, the descriptive statistics of the GCC countries from 2017 to 2020 show that both the conventional and the Islamic banks' financial performance and the financial structure have changed. The results also show that the Islamic and the conventional banks' ROE and ROA are declining. Both the Islamic and the conventional banks' liquidity levels and capital sufficiency have fallen in 2020.

During the pandemic period, the conventional banks performed well in Qatar, while the Islamic banks performed well in Saudi Arabia. Omani banks have the highest liquidity ratio in the GCC region. The data show that COVID-19 will have a negative effect on Bahrain's banking sector. Both Islamic and conventional banks in Bahrain exhibited high financial risk and low liquidity levels in 2020; where the financial performance of Islamic banks in Bahrain is the lowest in the GCC during the pandemic.

The regression results of the study reveal that a high level of non-performing loans, the high inflation rate and the high percentage of non-important costs have a negative impact on the financial performance of the Islamic banks mainly in the pandemic period. However, the results indicate that the high level of liquidity risk leads to increase the performance of the Islamic banks but this impact falls sharply during the pandemic period.

6.1 Implications for practice and research

This research enriches the extant literature of conventional and Islamic banks in different ways. First, this paper supports many theories and empirical findings showing that crisis periods have a negative impact on the financial profitability of the banking sector in all GCC countries.

Second, this research offers an in-depth understanding of the financial performance and structure of Islamic and conventional banks during a crisis indicating that several internal and external factors could affect the profitability and thus, leads banks to review their financial decisions during unstable periods.

Third, this paper reveals that the financial superiority of Islamic banks shown in several studies cannot be generalized since the result in this paper indicates that conventional banks perform better than Islamic banks during crises.

Fourth, this study shows that practicing Islamic principles like profit and loss sharing cannot be enough to mitigate the negative impact of the international crisis, Islamic bankers should innovate their financial strategies and financial products to face any international crisis.

Fifth, this research indicates that the impact of COVID-19 on banking financial indicators like non-performing loans ratio, capital structure and liquidity ratio is not consistent in GCC countries. Several banks in many countries like UAE and Bahrain succeeded to manage their liquidity risk whereas other banks in other countries faced high liquidity risks. Banks in KSA and Bahrain succeeded to control their capital adequacy while banks in Kuwait and Oman did not. As for the financial risk level, Islamic banks in Oman and conventional banks in Kuwait have shown higher capacity to control the level of non-performing loans whereas many banks in other countries like Bahrain suffered from a ratio of high non-performing loans ratio.

On the other hand, this research paper has several important managerial implications for bankers, governments, and financial regulators. First, in GCC countries, banks need to thoroughly understand their available capital and liquidity resources and assess the resilience of these core pillars. A balance between supporting the wider economy at a time of need, and ensuring their stability is needed. Bankers in both Islamic and conventional banks must reallocate their resources and redesign their capital structures after analyzing the financial behavior of their customers and their investors during a crisis.

Second, executives in Islamic financial institutions must review their commercial strategies and financial decisions during the crisis to mitigate the negative impact of the COVID-19 pandemic period.

Third, governments, regulators and financial authorities in the GCC region must improve their control and enhance their financial support for both Islamic and conventional institutions during the crisis. They must review the socio-economic impacts of the COVID-19 pandemic period to execute more reforms mainly in the banking sector.

6.2 Limitations and future research

However, this paper has some limitations. First, the study considers the GCC area without studying the impact of important micro and macro factors such as the level of legal protection and the corporate governance mechanisms. Second, the impact of COVID-19 on the banking sector is studied during a very limited period (one year). Third, the sample of the study is

relatively small due to the gap of information related to many banks in the GCC area. Finally, the ROA and ROE are not considered by many scholars as efficient variables to measure the performance of the banking sector.

Therefore, it is suggested that this study could be extended into several directions. The performance of COVID-19 can be measured through more sophisticated variables like Tobin' Q. Several other profitability and performance measures such as Market to Book ratio (M/B), volatility, and market value could be used in future research. Qualitative performance and benchmark measures also could be considered in the future. Furthermore, this paper employs *t*-test, OLS, 2SLS, and GMM to compare Islamic and conventional banks and reveals the profitability determinants. Other pooled statistical models like RE, FE, GLS, and PCSE could be tested on the same data or more developed data. Finally, there is an opportunity to carry out further research during many years by considering other micro and macro indicators that might affect the financial performance of banks in the GCC countries. For example, the employment of some indicators like legal protection, oil prices and political connections could enhance the analysis of this research (El-Chaarani, 2019).

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