Islamic Banks and Sustainable Development Goals in the Arab World: A Case Study of Selected Countries

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Contents

Islamic Banks and Sustainable Development Goals in the Arab World:

A Case Study of Selected Countries

Abstract

Both governments and corporations consider the achievement of sustainable development goals as the most appropriate means to support people, the planet, peace, and partnerships. In this study, we examine empirically how Islamic banks contribute to achieving the UN sustainable development goals (SDGs) in the Arab world. Based on the data collected from selected countries namely, Saudi Arabia, United Arab Emirates, Kuwait, Oman, Jordan, and Sudan, the ARDL model was applied to analyze the relationship over the period 2013-2020. Based on the study's results, Islamic banks' financing practices in Saudi Arabia and the United Arab Emirates have positively contributed to achieving sustainable development goals. It was because the bank financing received in these countries tended to support economic activities aligned with the SDGs. Further, the mandatory corporate social responsibility disclosure programs set up by the Saudi Arabia and UAE governments to promote social responsibility made for an excellent choice in making a positive social impact and achieving sustainable development goals. On the other hand, no statistical evidence found that Islamic banks played a significant role in SGD's achievement in Kuwait, Oman, Jordan, and Sudan. This is because banks' financing practices in these countries appears to be more focused on economic activities that may not be aligned with SDGs, but probably focus on activities that maximize profits, or in other words, they are primarily concerned with business income-oriented. In light of the findings in this study, policymakers, central banks, and regulators can determine whether Islamic banks are promoting economic, environmental, and social responsibilities. They can also develop financing frameworks and standards to ensure Islamic banks are financing or investing in portfolios that meet the SDGs.

Introduction

Following the Millennium Development Goals (MDGs) from 2000-2015, which have been instrumental in reducing poverty, facilitating educational access, preventing disease, and developing infrastructure in the world's poorest nations. There is a set of Sustainable Development Goals (SDGs) targeting the period 2016-2030 that have been agreed upon under United Nations (UN) supervision to establish a more equitable and sustainable development and to reduce the threats of human-induced climate change[1]. The General Assembly of the United Nations approved the 2030 Agenda for Sustainable Development on September 15, 2015. This agenda contains 17 SDGs. Which are, no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry; innovation and infrastructure; reduced inequality; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace and justice strong institutions; and partnerships to achieve the goals.[2]

In the Arab region, many Arab states have taken actions to integrate sustainable development goals into their national plans. For example, such Arab states are making efforts to increase the use of renewable energy[3]. In addition, there is a partnership between the League of Arab States, Arab Water Council, with some international organizations such as the Food and Agriculture Organization (FAO), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP, The United Nations Human Settlements Programme (UN-Habitat), United Nations International Strategy for Disaster Reduction (UNISDR) and World Food Programme (WFP), as well as the SDG Climate Facility towards accelerating climate finance in a way that combats climate change, while creating benefits across the SDGs such as poverty reduction, gender equality, and maintaining peace in the Arab world[4]. Further, UNDP has spearheaded the launch of the SDG Climate Facility in the Arab region during the Secretary General's Climate Action Summit in September 2019 to reduce the green finance gap[5].

A widely used index of SDGs used to assess countries' performance on the agenda 2030 of the United Nations (UN) and indicates that Arab countries have reached a satisfactory level of sustainable development, especially the countries that have seen more stability during the last decade. According to Figure (1), Saudi Arabia, the United Arab Emirates (UAE), Jordan, Kuwait, and Oman achieve high levels of sustainable development, ranging from 62 to 71 points, while Sudan score about 45 points. Recently, the Green Initiative Summit on climate change was organized in Saudi Arabia in October 2021. This was to discuss green finance's channellings, investment opportunities, and share of responsibility in achieving SDGs objectives and fighting against the climate crisis. Additionally, such global coming events will be held in the Arab region, for example, Egypt will host the 27th UN Climate Change Conference 2022 (UNFCCC COP 27)[6] and the UAE will host the 28th UN Global Climate

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[1] https://sdgs.un.org/goals
[2] https://www.un.org/development/desa/disabilities/envision2030.html.
[3] Challenges Facing Sustainable Development Goals in Arab States (arabcenterdc.org).
[4] Closing the green finance gap | UNDP in the Arab States.
[5] Closing the green finance gap | UNDP in the Arab States.
[6] Egypt to host COP27 international climate conference in 2022 -ministry | Reuters.

Conference in 2023[7]. In addition, the UAE government developed a mandatory Corporate Social Responsibility (CSR) disclosure plan to ensure companies are accountable for their social commitments (Lewellyn, 2016). To enhance motivation and competition in corporate social responsibility, the UAE has established a CSR National Statistics to collect data on companies' CSR activities and reward them in an annual CSR announcement[8] (Al-Haija, Kolsi, & Kolsi, 2021). Further, the UAE developed guiding principles on sustainable finance in 2020. This set of guidelines aims to integrate Environmental, Social, and Corporate Governance (ESG) factors into corporate governance, risk management, and disclosure practices at UAE financial institutions. In particular, at the national level, the principles support the implementation of the UAE's sustainability priorities. Internationally, the principles signal that the UAE recognises the importance of ESG factors to the investor community. At the regulated community level, the principles aim to facilitate the UAE's transition to a more sustainable economy and help organisations to develop strategies which re-orientate and diversify the economy, help mitigate risks of reduced global demand for oil, adapt to the physical risks of climate change and explore the new investment opportunities it presents[9]. In addition, the Kingdom of Saudi Arabia is considered second in integrating and adopting CSR practices in the Middle East and North Africa[10]. As reported by Saudi Arabia's National Commercial Bank, many companies have utilized CSR activities to build consumer trust, community development, employee recruitment, and retention, as well as improve their financial performance. (Nalband & Al-Amri, 2013).

Figure (1): Level of Sustainable Development Goals Achievement in Selected Countries
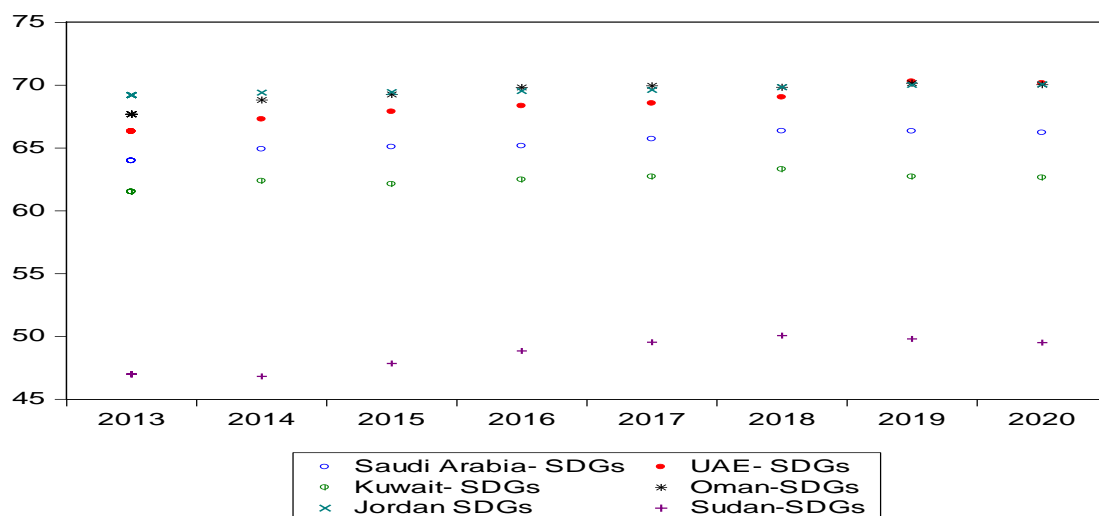
Source: Prepared by Author based on Sustainable Development Index Report 2021 (sdgindex.org).

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[7] UAE to host Cop28 in 2023 after UN approval in Glasgow (thenationalnews.com).
[8] https://maan.gov.ae/?gclid=CjwKCAiA7dKMBhBCEiwAO_crFPiVfaVJxvQR_ih9xZZ9WtG8Xi32YPskY4_M23fyNyBD926llTZRbxoCp54QAvD_BwE.
[9] GUIDING PRINCIPLES ON SUSTAINABLE FINANCE in the UAE were prepared by the following institutions: Dubai FSA, CBUAE, Insurance Authority, Securities and Commodities Authority, Financial Services Regulatory Authority of the Abu Dhabi Global Market, Ministry of Climate Change and Environment, Dubai Islamic Economy Development Centre, Dubai Financial Market, Nasdaq Dubai, and Abu Dhabi Securities Exchange The Guiding Principles on Sustainable Finance are aimed at the integration of Environmental, Social, and Corporate Governance (ESG) factors into governance, strategy, and risk management of UAE financial firms, along with the promotion of appropriate ESG-related reporting and disclosures. These principles are voluntary and will serve as a gateway to the increased implementation and integration of sustainable practices among the UAE's financial entities.
[10] https://www.arabnews.com/node/1829441/saudi-arabia

As far as sustainable development practices are concerned, Islamic finance appears to have exhibited conformity to the UN SDGs according to existing literature. Among the components of global Islamic finance, Islamic banking represents the largest segment, followed by Islamic bonds (Sukuk), Islamic funds, and Islamic insurance (Takaful)[11]. A significant proportion of the total banking assets of many Middle Eastern economies comes from Islamic banking, which plays a crucial role in economic development and growth[12]. In aggregate, Saudi Arabia, the UAE, Kuwait, and Qatar held 19.5, 14.1, 11.4, and 11 percent of global Islamic Banking assets, respectively. Al Rajhi Bank, Dubai Islamic Bank, and Kuwait Finance House are the top three Islamic banks in the world, with assets totalling USD 124,970, USD 78,834, and USD 70,687 million, respectively[13]. As shown in Figure 2, the quarterly volume of Islamic banks' *Sharīʿah* -compliant financing provided for the study selected countries has consistently increased since 2013 and indicates that Omani Islamic banks' financings have exhibited steady growth over the period from 2013 to 2020. Following this, we have Saudi Arabia, U.A.E., Sudan, and Jordan.

Figure (2): the trend of Islamic banks' *Sharīʿah*-compliant financing for selected countries (USD Million)
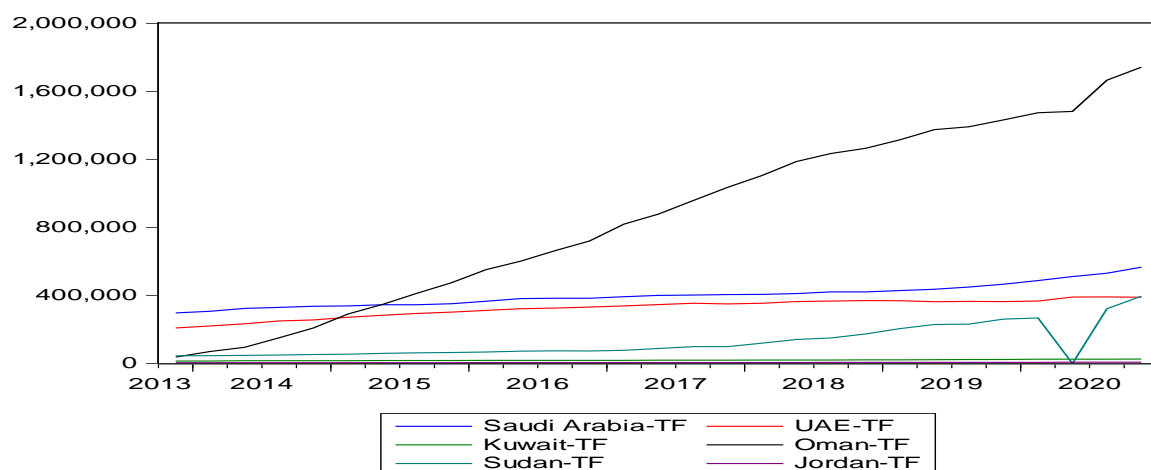
Source: Prepared by Author based on IFSB database.

As reflected in *Sharīʿah's* laws or *Maqāṣid* al-*Sharīʿah*, Islamic economics and finance are motivated by human development and its preservation (Khan, 2019). Based on the *Maqāṣid* al-*Sharīʿah* framework human development progress is achieved when: (a) religious faith is supported and preserved, (b) life with dignity is maintained, (c) the future generations are cared for, (d) the mind and intellect are used responsibly, and (e) wealth and grace are provided (Chapra, Khan, & Al Shaikh-Ali, 2008). In which the *Maqāṣid* al-*Sharīʿah* framework was compiled by scholars including al-Ghazali, Ibn Taimiyyah, Ibn al-Qayyim, and al-Shatibi in the 12th and 14th centuries (Khan, 2019). The SDGs also aim to promote and preserve human development. Thus, religious philanthropic and faith-based frameworks can supplement public resources and private investments to support the SDGs.

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[11] Source: Islamic Financial Services Industry Stability Report 2020, P.13)

[12] https://www.mckinsey.com/middle-east/our-work/islamic-banking.

[13] https://www.theasianbanker.com/ab500/2018-2019/largest-islamic-banks.

Unlike the Millennium Development Goals, the SDGs emphasize local realities, values, and institutions (Khan, 2019). Islamic financial institutions (IFIs) should therefore support SDGs achievements as part of their faith practices and responsibility to fulfill the *Maqāṣid* al-*Sharīʿah*.

By incorporating the broader goals of *Sharīʿah* into financial institutions' operations, Islamic finance will be able to have a more significant impact on SDGs in the future (Ahmed, Mohieldin, Verbeek, & Aboulmagd, 2015). For example, the Islamic finance model can help to achieve the SDGs from four different perspectives: its ideals of mobilizing domestic resources, its enhancement of financial inclusion, its risk-sharing capabilities, and its redistributive aspect (Hashem, 2019). In addition, regarding environmental protection, according to the Holy Qur'an, environmental protection is an imperative element of Islamic responsibility (Aribi and Gao, 2010). The Qur'an says, "do not spread mischief on the earth, after it has been set in order, and invoke Him with fear and hope; surely, Allah's Mercy is (ever) near unto the good-doers" (The Holy Qur'an, *surah al a'raf*-S7:56). Islam offers significant advantages for the protection, conservation, and sustainable development of the environment, in that it provides laws that are conforming to Islamic society's values and can be applied with ease to develop an effective and implementable environmentally friendly policy (Bagader et al., 1994 & Aribi and Gao, 2010). Thus, by using Islamic finance tools, we will enhance resilience, develop sustainable infrastructure, and achieve environmental and social goals.

While Islamic finance has grown rapidly, some argue that Islamic finance has failed to serve humanitarian purposes (Siddiqi 2004). Numerous studies report that Islamic financial institutions do not contribute significantly to environmental and societal goals. For instance, Aribi and Arun (2012) interviewed 18 Islamic financial institution executives in the Gulf Cooperation Council (GCC) and found that corporate social responsibility is not one of their major concerns. Similarly, Sairally (2007) examined 48 Islamic financial institutions from 19 different countries, finding that despite some engagement by Islamic financial institutions in corporate philanthropy, social responsibility, however, it was not incorporated into their organizational strategy or business plan. This study, therefore, aims to empirically investigate whether the Islamic bank's financing practice in the Arab region is aligned with UN SDGs objectives.

Literature Review

Business organizations operating in Islamic environments are encouraged to gain legitimate profits by operating according to Quranic guidelines[14]. Business ventures that wish to succeed in a Muslim environment must pay attention to social, environmental, and sustainable economic issues to achieve UN sustainable development goals that accordance with *Maqāṣid* al-*Sharīʿah*. CSR is therefore critical for Islamic organizations to be successful and to earn community trust (Alshubrumi, 2018). An analysis of the United Nations' Global Goals and the *Sharīʿah* principles, conducted by Williams and Zinkin (2010) found that the

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[14] As Almighty Allah says in the Quran: "You who believe, do not wrongfully consume each other's wealth but trade by mutual consent." Surah An-Nisa 4:29.

UN Global Compact ten principles are consistent with *Sharīʿah* prescriptions in business matters. Aside from the prohibited actions and behaviors, results of the *Sharīʿah* demonstrate that *Sharīʿah* regulations have a broader scope and a clearer code of ethics than the UN Global Compact minimum standards (Al-Haija, Kolsi, & Kolsi, 2021). Alammer et al. (2015) concluded that faith transactions in Islamic entities cannot be separated from stakeholders' rights and social responsibility, and that profit can only be generated by utilizing legal methods which benefit the entire economy (Al-Haija, Kolsi, & Kolsi, 2021).

In terms of the theoretical and empirical literature, there is a limited amount of research on the nexus between Islamic banking and SDGs achievements or social responsibility, particularly in the Arab region. For instance, in a study of 19 Islamic banks' social reporting, Kamla and Rammal (2013) found no evidence that Islamic banks are contributing to social development or having serious poverty eradication interventions or enhancing fair distribution of wealth among their beneficiaries. In their conclusion, they explain that Islamic banks have not been able to fulfill their ideological claims as a result of a failure to incorporate social justice into their core business values (Kamla and Rammal 2013). A study of 90 Islamic Banks found a lack of social responsibility toward environmental factors, but that they were more concerned with achieving stakeholder satisfaction and adhering to Sharīʿah law (Mallin, Farag, & Ow-Yong, 2014).

In 2007, Haniffa and Hudaib led a study on seven annual reports of Islamic financial institutions spread over four countries in the GCC countries. The study aimed to examine the discrepancy between the disclosed information and an "ideal" disclosure by Islamic banks. The findings show that ethical and social communication in Islamic Financial Institutions is far from what would be deemed necessary, and the reports indicate that communication is very minimal for IFIs throughout the study. Maali et al. (2006) establish a standard to measure social disclosure in Islamic banks. Their results demonstrate that Islamic banks are far below the benchmark in terms of social disclosure, and there are wide variations among Islamic banks regarding voluntary social disclosure (Aribi & Gao, 2010).

As part of regression analysis, Khansa and Violita (2021) examined the relationship between the financial performance of Islamic banks and Islamic Social Responsibility (ISR) as reflected in their support of the SDGs. Based on statistical tests, the ratios of profit-sharing financial and zakat performance are positively correlated with ISR disclosure levels. Despite the findings, the ISR disclosure level has no significant impact on the ratio of director employee welfare or the equitable distribution ratio. In 2020, Ghoniyah and Hartono studied how Islamic and traditional banks in Indonesia are contributing to the achievement of sustainable development goals. From 2011 to 2018, 801 annual reports of traditional and Islamic banks in Indonesia were analyzed. The finding of the study shows that traditional and Islamic banks promote sustainable development differently. According to the authors, the bank could contribute to the SDGs through credit and financing as long as the financing is in line with the goals of the bank. The profit demands of a bank are indicative of capitalism or faith orientation.

In general, most of the studies tend to measure the contribution of Islamic banks to social responsibility by paying more attention to disclosure reports in their financial statements. However, there is a lack of studies that empirically evaluate banks' financing and investment

orientation towards economic activities that support the SDGs. This study, therefore, tried to fill up the gap by examining the association between total financing of Islamic Banks' Sharī`ah-compliant contracts and SDGs achievement index for selected countries namely, Saudi Arabia, UAE, Kuwait, Oman, Jordan, and Sudan.

Methodology

Data Sources and Variables Measurements

The study utilized quarterly data of the total amount of Islamic Banks' *Sharī`ah*-compliant financing contracts such as *Murābahah*, Commodity *Murābahah / Tawwaruq*, Salam, *Istisnā*, *Ijārah / Ijārah Muntahia Bittamlīk, Muḍarabah, Mushārakah*, Diminishing *Mushārakah*, *Wakālah*, *Qarḍ Hassan*, and Ijarah *Mawsufa fi al-dhimma* (also called forward ijarah) for selected countries namely, Saudi Arabia, United Arab Emirates, Oman, Kuwait, Jordan, and Sudan throughout 2013Q4 to 2020Q4. The study period was justified as Islamic Banks began to release *Sharī`ah* -compliant financing contracts data to the IFSB only in the last quarter of 2013. The chosen countries were selected because their data was available during the study period.

Murābahah by definition is an agreement to sell a specified asset at a profit margin plus cost (selling price) wherein, the cost and profit margin must be disclosed, and the seller must own the asset fully (Islamic Financial Services Board (IFSB), 2010). Commodity *Murābahah*, on the other hand, is an innovative product developed for Islamic banking and finance, based on *Murābaĺah* and *Tawarruq* transactions (Noor & Mahadi, 2010). As for *Muḍārabah*, is an agreement between the capital provider and the entrepreneur whereby the capital provider provides capital for an enterprise or enterprise-related activity, which is administered by the entrepreneur (IFSB, 2010). In Arabic, *bay 'al-salam* refers to a fixed price sale with immediate payment for a certain thing, to be delivered on a specific date in the future (Muhammad & Chong, 2007).

Istisnā` is an agreement between a bank and a client, wherein the client requires goods to be manufactured or shipped, which the bank then sells to the client by a prearranged arrangement, in which the price and the schedule for payments are mutually agreed upon beforehand (Imady & Seibel, 2006). *Ijārah / Ijārah Muntahia Bittamlīk* is a financial arrangement in which a bank provides an asset for a rental fee, while the customer ultimately buys the asset at a price minus the rental fees already paid (Imady & Seibel, 2006). The *Mushrakah* is a system of equity participation, investment, and management involving all partners; profits and losses are divided according to a predetermined ratio (Imady & Seibel, 2006). While Diminishing *Mushārakah* is an agreement based on a *Musharakah* contract, which is a type of joint venture agreement that involves business and asset ownership (Arbi, 2021).

Wakalah is a customer authorization for the bank to perform certain business on his or her behalf (Badshah & Ullah, 2018). Qarḍ Hassan is a contract that offers charitable loans without interest and profit margins (Musari, 2019). Bai Ajel is an agreement in which the bank pays the bank first and the customer pays the bank later for the goods (Imady and Seibel, 2006). The Ijarah *Mawsufah fi al-dhimma* (forward lease) is an arrangement in which the lessor accepts rent before the asset or property is delivered (Dieng, 2019). Table (1)

displayed the Islamic financing contracts that were practiced by Islamic Banks in the chosen countries.

Table (1): Type of *Sharī`ah*-Compliant Financing Contracts that Practiced by Islamic Banks in Selected Countries

Financing contracts	Saudi Arabia	United Arab Emirates	Oman	Kuwait	Jordan	Sudan
Murābahah	√	√	√	√	√	√
Commodity *Murābahah / Tawwaruq*	√	√	-	√	√	-
Salam	-	√	-	-	-	√
Istisnā`	-	√	√	√	√	√
Ijārah / Ijārah Muntahia Bittamlīk	√	√	√	√	√	√
Muḍārabah	√	√	√	√	√	√
Mushārakah	√	√	-	√	√	√
Diminishing Mushārakah	-	√	√	-	√	-
Wakālah	-	√	√	√	√	√
Qarḍ Hassan	-	√	√	√	√	√
Bai Ajel	-	√	-	-	√	√
Ijarah mawsufa fi al-dhimmah (also called forward ijarah)	-	√	-	-	√	√

Source: IFSB database and Central Banks.

The data on SDGs achievement scores for the selected countries was obtained from Sustainable Development Report 2021 or the respected (sdgindex.org) website. Despite the United Nations approving the Sustainable Development Goals Agenda on September 15, 2015, the index of the Sustainable Development Goals was established when the Millennium Development Goals (MDG) were introduced in 2000. As such, data on SDGs can be found in this study covering the same period of 2013 to 2020.The overall score indicates how far a country has progressed toward achieving all 17 SDGs. SDG achievement is quantified as a percentage ranging between 0 and 100, with zero representing non-achievement and 100 representing all SDGs that have been met.

Method of Analysis

Based on an autoregressive distributed lag (ARDL) model developed by Pesaran and Shin (1995), Pesaran et al. (1996), and Narayan (2004), this study examined the contribution of Islamic banks to achieving sustainable development goals in the Arab world. In order to achieve this, the ARDL model was analyzed in several steps which determined the optimal lag, testing for Cointegration, estimated the long-run and short-run coefficients, and, finally, performed diagnostic tests to determine the model's validity and stability. ARDL was chosen

due to applying's ARDL model being more robust and producing better results with small sample sizes, according to Narayan (2004). In addition, it is useful when the underlying regressors are either purely $I(0)$ or $I(1)$ or mutually cointegrated (Pesaran et al., 1996 and Pesaran et al. 2001).

Testing for Cointegration (Bound Test)

Having determined the optimal lag length for each model under study by searching the $(p+1)^{k+1}$ for the various unrestricted ARDL models. Abound test was conducted to determine whether there is a presence of cointegration among variables in each of the models studied using the F-statistics in the conditional, unrestricted ARDL model demonstrated in equation (1):

H0: δ1 = δ2 = 0   (1)

H1: δ1 ≠ 0, δ2 ≠ 0

As a consequence, the null hypothesis stipulated that there was no cointegration among the variables in the ARDL model, while the alternative hypothesis suggested that cointegration did exist among the identified variables. The F-statistic values that are produced by conditional unrestricted ARDL models will be compared with the critical values at significant levels of 1%, 5%, and 10% respectively. The F-statistic may indicate cointegration when it is above the upper bound of the critical value for a specific significance level. Whenever the calculated F-statistic falls below the critical value of the lower bound, no cointegration takes place. Nevertheless, the results are inconclusive if the computed F-statistic falls within the lower and upper bounds (Narayan, 2004).

Long Run and Short-Run Dynamics

Having confirmed the cointegration of variables using the Bound tests discussed above, the estimated coefficients of long-run association in the proposed models will be measured using the ARDL (m1, m2) model:

$$\text{SDGs}_t = \alpha_0 + \sum_{i=1}^{m1} \alpha_1 \text{ SDGs}_{t-i} + \sum_{i=0}^{m2} \alpha_2 \text{ IF}_{t-i} + + \mu_t \quad (2)$$

Where SDGs refer to a total score of sustainable development goals achievement for each country under study, IF denotes the total amount of Islamic Banks' *Sharī`ah*-compliant financing contracts that contributed by Islamic banks for each selected country, α_0 denotes the constant term, $\alpha_1 \dots \alpha_2$ are a coefficient describing long-run relationships between variables, [m_1, m_2] denote the lag orders for each variable in the model, μ_t stands for the residual error term, t- is the time, and i is the time of the previous observation value.

We can derive the short-run coefficients using the Error Correction Model of the following formula:

$$\Delta \text{SDGs}_t = \beta_0 + \sum_{i=1}^{p-1} \beta_1 \Delta \text{SDGs}_{t-i} + \sum_{i=0}^{p-1} \beta_2 \Delta \text{IF}_{t-i} + \psi \, ECM_{t-1} + \mu_t \quad (3)$$

In which all variables are as previously defined, in this case, β_0 represents the constant term, $\beta_1 \, and \, \beta_2$ are the coefficients of the first difference variable, ψ signifies the adjustment

coefficient of the error correction term (ECM_{t-1}), which derived from equation number (2) as illustrated above that estimates the long-run relationship. *p* is the maximum number of lagged lengths, μ_t implies the residual white noise, *t-* is the time, and *i* is the time of the previous observation value.

Diagnostics Tests

In the end, ARDL models with their specified parameters were subjected to several diagnostic tests to verify their validity and stability. This includes the Breusch-Godfrey Serial Correlation LM Test, Breusch-Pagan-Godfrey heteroscedasticity test, and normality tests. After all, the Cumulative Sum of Recursive Residuals (CUSUM), and Cumulative Sum of Squares of Recursive residuals (CUSUMsq) tests were performed to ensure that the specified ARDL models are well stable.

Findings and Analysis

The descriptive statistics for the variables under study are shown in table (2), which include the mean, minimum, maximum, standard deviation, and normality distribution. According to the mean values of the SDGs scores, Oman and Jordan achieved the highest score over the period of 2013-2020 with an average score of 69.69 percent. This was followed by UAE, Saudi Arabia, Kuwait, and Sudan with score values of 68.71, 65.62, 62.58, and 48.83 percent respectively. The maximum score of 70.29 was achieved by UAE over the period while the minimum SDGs achievement score was recorded by Sudan with the value of 46.82 marks. In addition, the mean of the highest total contribution of Islamic banks financing was provided by Oman with the total amount of USD 891088.30 million and maximum amount of USD 1742748.00 million while minimum financing amount of 70197.00 million. Next in line are Saudi Arabia, UAE, Kuwait, Sudan, and Jordan, with total amounts of USD 400566.71, USD 325840.4, USD 19429.88, USD 129461.3, and USD 5475.25 million respectively.

In addition, the normality distributions of the SDGs score achievement and the total amount of Islamic Banks' *Sharī`ah*-compliant financing contracts for the selected countries were evaluated by skewness, kurtosis, and Jarque-Bera statistic values. In particular, the skewness and kurtosis values of SDGs score achievement indices display that the data of SDGs indices were normally distributed over the period of the study since the measurement indices values were ranged between (−1 to +1) for skewness (Hair et al., 2006) and the kurtosis statistical values were less than +3.0 as per the recommendation of Stock and Watson (2006). Furthermore, skewness distribution values for SDGs scores indexes for Saudi Arabia, Kuwait, Oman, and Sudan were negatively skewed. This indicates that the level of SDGs achievement in these countries may downward in the near future. Despite this, the skewness distribution values for UAE SDGs index achievement were positive, indicating that the country will continue to advance, increasing the level of achievement of the sustainable development goals.

Table (2): Descriptive Statistics

	Mean	Max	Min	Std. Dev.	Skewness	Kurtosis	J-Bera	PP	Obs
SDGs- SUA	65.62	66.35	63.98	0.67	-0.38	2.16	1.54	0.46	29
SDGs-UAE	68.71	70.29	66.31	1.13	0.01	2.11	0.96	0.62	29
SDGs-KWT	62.58	63.3	61.51	0.40	-0.1	3.81	0.85	0.65	29
SDGs-OMN	69.69	70.16	68.81	0.45	-0.97	2.54	4.671	0.96	28
SDGs-JOR	69.69	70.06	69.21	0.27	0.19	1.62	2.48	0.29	29
SDGs-SUD	48.83	50.06	46.82	1.17	-0.69	1.97	3.44	0.18	28
IF-SUA	400566.7	566312.9	296538.5	66357.82	0.67	3.02	2.18	0.34	29
IF-UAE	325840.4	391552.3	208636.2	53024.9	-0.79	2.48	3.34	0.19	29
IF-KWT	19429.88	25729	13824.58	3249.99	0.42	2.33	1.38	0.5	29
IF-OMN	891088.3	1742748	70197	511107.7	-0.09	1.74	1.87	0.39	28
IF-JOR	5475.25	7472.9	3984.3	987.46	0.31	2.25	1.14	0.56	29
IF-SUD	129461.3	395169.1	44498	95184.71	1.24	3.57	7.52	0.02	28

Unit Root Test Results

The results of the unit root test are reported in Tables 3. The outcomes of both ADF and PP tests indicate that such variables' series are found stationary on the level $I(0)$ such as SDGs-SUA, SDGs-UAE, and SDGs-OMN, however, the rest of the variables were non-stationary on the level but the series becomes stationary at the first difference $I(1)$. This is because the P-values of ADF and PP tests were found statistically significant at a 1 percent level. This, therefore, justified applying the ARDL model in the analysis since it can be used for regressors that are purely $I(0)$, purely $I(1)$, or mutually cointegrated (Pesaran et al., 1996 and Pesaran et al., 2001).

Table (3): Unit Root Test for Variables under Study

Variables	On levels		On first differences	
	Intercept and trend		Intercept and no trend	
	ADF	PP	ADF	PP
SDGs-SUA	-3.085368	-3.264852**	-7.689243***	-7.965159***
SDGs-UAE	-3.609428**	-3.711578**	-6.679283***	-7.33229***
SDGs-KWT	-2.73337	-2.981313	-6.680566***	-6.680566***
SDGs-OMN	-4.918279***	-4.760251***	-9.003936***	-9.761542***
SDGs-JOR	-2.935566	-2.840696	-1.735707	-7.820239***
SDGs-SUD	0.691139	-0.41051	-1.29966	-5.545157***
IF-SUA	2.930564	2.224992	-1.004238	-6.035269***
IF-UAE	-1.890305	-1.992982	-3.67701**	-3.600198**
IF-KWT	-1.468827	-1.440133	-5.512946***	-5.553762***
IF-OMN	-2.14653	-2.301356	-5.129573***	-5.129573***
IF-JOR	-2.661994	-2.895116	-6.235856***	-6.627818***
IF-SUD	2.634166	2.73934	-0.812678	-6.646733***

Note: ***, **and * denotes significant level at 1%, 5% and 10% significance respectively

Identified the optimal lag length

A key component of measuring the cointegration between variables is determining the optimal lag length (p) for the ARDL model under different scenarios, for instance, restricted constants, unrestricted constants, restricted and unrestricted trend, or restricted intercept and not trend using unrestricted ARDL model. To identify the optimal lag length, four criteria have been employed which are Akaike's Information Criteria (AIC), Schwartz-Bayesian Criteria (SBC), Hannan-Quinn Criterion (HQC), and the Adjust R-Square Criterion. The lag order of each optimal ARDL (m1 and m2) is obtained based on the $(p+1)^{k+1}$ formula, where p refers to the maximum number of lags to be utilized, and k indicates the number of regressors in the equation. This, therefore, assess for obtaining the ideal ARDL model with lag length specification, as reported in Table (4) and confirmed by Figure (1) below.

Table (4): Optimal Model & Lag Length Specification

	Optimal Model	LogL	AIC	BIC	HQ	Adj. R-sq.	Lag Specification
Saudi Arabia	41	121.829923	-10.0754	-9.52993	-9.94694	0.970832	ARDL (2, 7)
UAE	2	25.948867	-0.90444	-0.11096	-0.71752	0.974053	ARDL (7, 6)
Kuwait	1	117.759365	-8.78075	-8.39071	-8.67257	0.780745	ARDL (4, 1)
Oman	11	133.448174	-10.0359	-9.64581	-9.92767	0.922232	ARDL (2, 4)
Jordan	2	53.393559	-3.616130	-3.125274	-3.485906	0.979818	ARDL (5, 2)
Sudan	6	11.141078	-0.09509	0.395766	0.035134	0.951091	ARDL (3, 4)

Figure (1): Optimal lag length specification for each induvial model
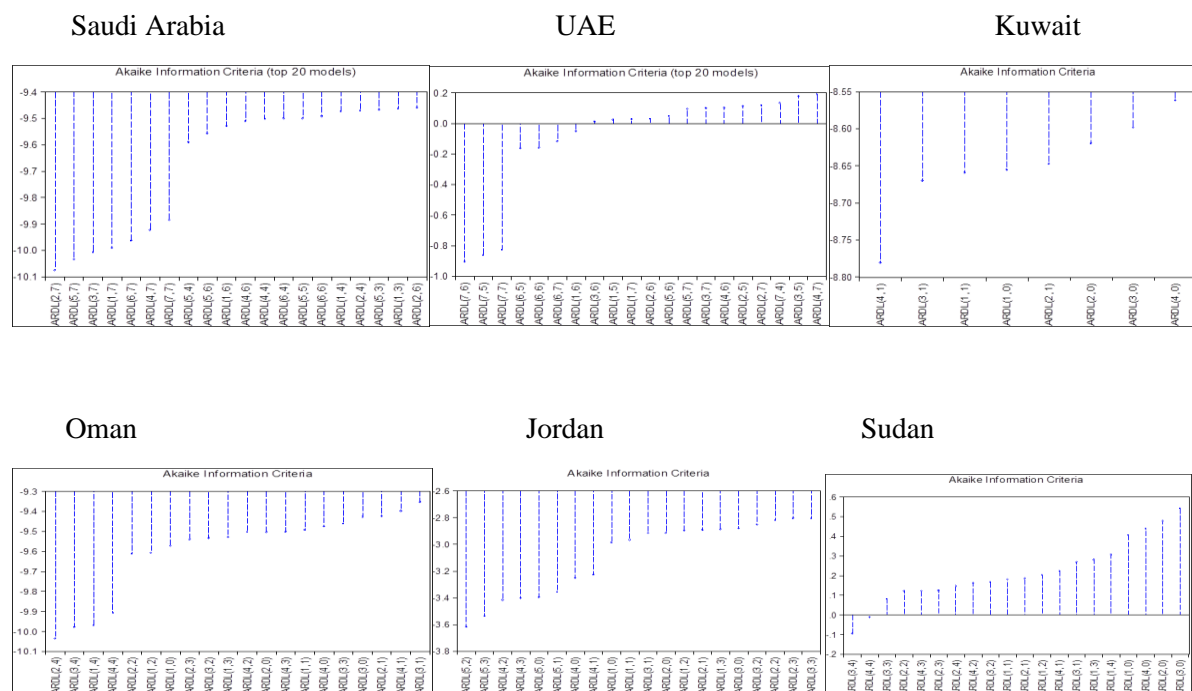
Bounds Test Results

The bound test is applied in this stage to test whether there is a cointegration relationship between sustainable development goals achievement index and Islamic banks' financing contributions in the selected countries. This was done by comparing the F-statistic value for each model with the critical bounds test value provided by Narayan (2004) for only two cases: (a) restricted intercept and not trend, while (b) restricted constants and trend. All models indicate that there is a time trend effect for UAE, Kuwait, Jordan, and Sudan. In contrast, Saudi Arabia and Oman models show there are constant effects and no time trend impact as depicted in Table 4. As the F-statistic values reported in Table (4) are exceeding the upper critical bounds value, it can be established that the null hypothesis of no cointegration can be rejected at a significant level of 1 percent for all models except for the Kuwait and Jordan model which found that there is cointegration at a 5 percent significant level. Hence, we can conclude that the accomplishment of sustainable development goals and Islamic bank financing in the selected countries are integrated into the long run.

Table (4): Bound Test Results for each Individual Model

	F-statistic	Sig Level	**I(0)**	**I(1)**
Saudi Arabia	10.87414***	10%	4.04	4.78
		5%	4.94	5.73
		1%	6.35	7.24
UAE	10.35889***	10%	5.59	6.26
		5%	6.56	7.3
		1%	8.74	9.63
Kuwait	7.838326**	10%	5.59	6.26
		5%	6.56	7.3
		1%	8.74	9.63
Oman	11.85417***	10%	4.04	4.78
		5%	4.94	5.73
		1%	6.84	7.84
Jordan	9.497944**	10%	5.59	6.26
		5%	6.56	7.3
		1%	8.74	9.63
Sudan	13.22405***	10%	4.04	4.78
		5%	4.94	5.73
		1%	6.35	7.24

Note: ***, **and * denotes significant level at 1%, 5% and 10% significance respectively

Estimation of Long-Run Coefficients with the Associated Error Correction Term

After establishing that there is a cointegration relationship between the sustainable development goals achievements and Islamic banks financing contributions in the selected countries based on the bound's tests in the previous section, then the following step is to estimate the long-run coefficient and the associated error correction term. Table (5) displays that Islamic banks' financing in Saudi Arabia contributes positively and significantly to achieving sustainable development goals. This is because the Islamic banks in Saudi Arabia

are progressively implementing such sustainability criteria through *Murābahah*, Commodity *Murābahah / Tawwaruq*, *Ijārah / Ijārah Muntahia Bittamlīk, Muḍārabah*, and *Mushārakah* contracts financing, therefore it is well-positioned to maximize social impact and achieve the sustainable development goals. As an example, according to the IFSB database, it was found that most of SDG objectives such as food security and agriculture, Water & Sanitation, Health, Education, Eco-Systems/ Biodiversity as illustrated in Appendix (I) were financed aligned side with banks' business income orientation such as real estate activities, financing of households and wholesale and retail trade by Islamic banks in Saudi Arabia.

Further, the size of the funds that are provided in the Islamic banking industry in Saudi Arabia is critical to achieving the SDGs as the banks' investments cover most of the economic activities that align with the SDGs, as shown in Appendix (I). In addition, it was found that the UAE's Islamic banking financing practices contribute positively to sustainable development goals, but statistically, these contributions are not significant. This is because the size of the funds provided by Islamic banks to finance economic activities that aligned with SDGs objectives was not enough to achieve the SDGs objective in UAE as illustrated in Appendix (I). This comes in line with the UN estimation that large amounts of funds are needed for developing countries in order to achieve the SDGs throughout 2015-2030 for different economic activities as illustrated in Table (6).

Table (6): Investment needs in developing countries throughout 2015- 2030 to achieve SDGs

Investment Area	Total Investment needs (Billion USD)
Power	630-950
Transportation	350-770
Telecommunication	230-400
Water & Sanitation	410
Food security and agriculture	480
Health	210
Education	330
Eco-Systems/ Biodiversity	70-210
Climate change mitigation	550-850
Climate change adaptation	80-120

Source: UNCTAD (2014)[15]

Table (5) shows that Islamic banking financing did not play a positive role in achieving sustainable development goals in Oman, Kuwait, Jordan, and Sudan. It may be because Islamic banks do not focus on economic activities in alignment with SDGs. In Oman, banking industry financial activities that support the SDGs objectives, such as water supply, sewerage management, and solid waste management, education, information and communications, climate change mitigation, and climate change adaptation, professional, scientific, and technical activities, mandatory social security, human health, and social work activities, arts, entertainment, and recreation, as well as activities by extraterritorial organizations and bodies, did not exist at all as illustrated by Appendix (I). Instead, the banks' financing focused more on economic activities that are business income orientation such as financing of households, real estate activities, and service activities (export).

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[15] Schmidt-Traub, G., & Sachs, J. D. (2015). Financing Sustainable Development: Implementing the SDGs through Effective Investment. Sustainable Development Solution Network. Retrieved from: https://irp-cdn. multiscreensite. com/be6d1d56/files/uploaded/150619-SDSN-Financing-Sustainable-Development-Paper-FINAL-02. pdf.

Nevertheless, as seen in Appendix (I), the Omani banks' financing gave a good concentration on economic activities such as manufacturing and construction, but the level of financing was not enough to achieve the SGDs.

Furthermore, the findings in Table (5) suggest that Islamic banks financing was unfavourable to achieving the SDGs in Jordan. There may have been a lack of funds available, and the size of the funds provided compared to the amount needed to achieve the SDGs. In addition, as shown in Appendix (I) the focus of Islamic banks financing did not include fields that aligned with SDGs like telecommunication; water and sanitation; scientific and technical activities, administrative and design services, public administration, the activity of households as employers; ecosystems and biodiversity; climate change mitigation, and climate change adaptation. There are however contributions to economic activities that are aligned with SDGs objectives such as agriculture, food security, education, transportation, and power but with a low level of funding. During the concerned period, a greater emphasis was placed on activities that generate income for a business, such as real estate activities, house loans, wholesale and retail trade, and motor vehicle and motorcycle repair as shown in Appendix (I).

The study also indicates that Islamic banks' financing contribution is not helpful in achieving the SDGs in Sudan. The reason for this is that Islamic banking financing was not offered to economic activities that aligned with the 17 Sustainable Development Goals. Appendix (I) below illustrated that economic activities such as accommodation and food service activities, water supply, construction, education, information and communication, health, mining and quarrying, financial and insurance activities, public administration, arts, entertainment and recreation, activities of extraterritorial organizations and bodies, and financing to non-residents, as well as climate change mitigation, climate change adaptation were not offered any funds by Islamic Banks in Sudan throughout 2013 to 2020. In short, Islamic banks' activities in Sudan did not support Sudan's recent achievement of attaining the SDGs; they were instead concentrated on activities that are indicative of banks' business income, including service activities (export), administrative and support service activities, wholesale and retail trade, and the repair of motor vehicles.

Further, Appendix (I) was verified that there were such economic activities as agriculture, forestry, hunting and fishing, and manufacturing financed by Islamic Banks in Sudan, however, the size of funds for these activities was not enough to achieve SDGs objectives. According to the current study, the outcomes demonstrated in the case of Islamic banks financing practices in Kuwait, Oman, Jordan, and Sudan are similar to those reported by Aribi and Arun (2012), Kamla and Rammal (2013), Mallin, Farag, and Ow-Yong (2014). They found that Islamic banks were not taking corporate social responsibility seriously as a major concern. In addition, they have a lack of social awareness of environmental issues. Instead, they were more concerned with achieving stakeholder satisfaction and adhering to Sharia law.

Table (5): Estimated Long-run Coefficients Results and the Error Correction Term Associated with Each Individual Model under the Study

Model	Variable	Coefficient	Std. Error	t-Statistic	Prob.	ECM_{t-1}
Saudi Arabia	IF-SUA	0.082748***	0.004231	19.559225	0.0000	-0.8984***
	C	3.131806***	0.054443	57.524547	0.0000	
UAE	IF-UAE	0.000009	0.000007	1.15601	0.29160	-1.722285***
	C	62.254085***	2.585664	24.076636	0.00000	
	@TREND	0.151049	0.02289	6.598951	0.00060	
Kuwait	IF-KWT	-0.121915***	0.023659	-5.152923	0.0001	-0.94594***
	C	5.298657***	0.227149	23.32676	0.000	
	@TREND	0.002752***	0.000439	6.268305	0.000	
Oman	IF-OMN	-0.00125	0.002501	-0.499701	0.6237	-0.85516***
	C	4.268197***	0.035664	119.677239	0.00000	
Jordan	IF-JOR	-0.000503**	0.000206	-2.442927	0.0284	-0.618812***
	C	71.071410	0.788473	90.138003	0.0000	
	@TREND	0.090521	0.024234	3.735257	0.0022	
Sudan	IF-SUD	-0.000016***	0.000001	-20.904799	0.0000	-2.492666***
	C	46.62182***	0.076084	612.76763	0.0000	
	@TREND	0.274543***	0.006604	41.570487	0.0000	

Note: ***, **and * denotes significant level at 1%, 5% and 10% significance respectively

In addition, Table (5) shows that the error correction coefficients ECM_{t-1} for all specified models are negative and statistically significant at the 5 percent level of significance. These findings further demonstrate the stability of the links between the SDG achievements indices and the Islamic banks' financing practices in the Arab World over the long run. The coefficients of ECM_{t-1} are estimated as -0.081179, -0.94594, -0.85516, and -0.618812 for Saudi Arabia, Kuwait, Oman, and Jordan, which suggests a relatively slow adjustment process to the equilibrium compared to the shock adjustment back to the long-run equilibrium in the case of UAE and Sudan with estimated values of -1.722285 and -2.492666.

Diagnostic Tests Result

Finally, the study employed several diagnostic tests namely Breusch-Godfrey Serial Correlation LM, Heteroskedasticity test, and normality test to validate the suitability of the ARDL models for investigating the relationship between Islamic banks financing and sustainable development goals achievement for selected countries. The outcomes of the diagnostic tests are reported in Table 7 below. ARDL residuals were found to be free from serial correlation and heteroskedasticity effect since the null hypotheses of serial correlation and heteroskedasticity were rejected at a significant level of 5 percent for each individual model, as shown in Table (7) below. In addition, the skewness and kurtosis statistics outcomes values for the normality tests for each ARDL model indicate that the error terms were normally distributed which is also confirmed by the P-value of Jarque–Bera test that is more than the selected significance level of 5 percent as reported in Appendix (II). Moreover, the figures of the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMsq)

have been presented in Appendix (III), which show the stability of the specified ARDL models over the study period. The graphs for CUSUM and CUSUMsq do not exceed the critical boundaries at the level of significance of 5 percent.

Table (7): Diagnostic Tests Outcomes for Each Model under Study

Saudi Arabia	Breusch-Godfrey Serial Correlation LM Test:	F-statistic:	0.414907	Prob. F(2,9)	0.6724
	Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistic	1.070619	Prob. F(10,11)	0.4531
UAE	Breusch-Godfrey Serial Correlation LM Test:	F-statistic:	4.160238	Prob. F(2,4)	0.1054
	Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistic	2.680941	Prob. F(15,6)	0.1151
Kuwait	Breusch-Godfrey Serial Correlation LM Test:	F-statistic:	0.199509	Prob. F(2,15)	0.8213
	Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistic	0.593469	Prob. F(7,17)	0.7527
Oman	Breusch-Godfrey Serial Correlation LM Test:	F-statistic:	0.439241	Prob. F(2,15)	0.6526
	Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistic	1.983437	Prob. F(7,17)	0.1179
Jordan	Breusch-Godfrey Serial Correlation LM Test:	F-statistic:	0.425427	Prob. F(2,12)	0.6630
	Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistic	2.063569	Prob. F(9,14)	0.1083
Sudan	Breusch-Godfrey Serial Correlation LM Test:	F-statistic:	3.193277	Prob. F(2,12)	0.0773
	Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistic	1.052837	Prob. F(9,14)	0.4492

Conclusion and Recommendations

The study evaluated the contribution of Islamic banks to achieving sustainable development goals for selected countries, including Saudi Arabia, UAE, Kuwait, Oman, Jordan, and Sudan. The ARDL model was applied using quarterly data from 2013 Q4 to 2020 Q4. The results of the study showed that Islamic Banks' financing practices have a positive effect on the achievement of sustainable development goals in Saudi Arabia and UAE. This is because the Islamic banks in Saudi Arabia and UAE are increasingly applying such sustainability criteria through Islamic financing contracts such as *Murābahah*, Commodity *Murābahah / Tawwaruq*, *Ijārah / Ijārah Muntahia Bittamlīk*, *Muḍārabah*, *Mushārakah*, and Salam, which may well position to maximize social impact and achieve the sustainable development goals. While in Kuwait, Oman, Jordan, and Sudan, Islamic banks' financing practices may not have played an important role yet in their implementation of SGDs. It was probably due to how the banks' financing practices tended to focus more on economic activities that may not align with the SDGs, and their focus instead was on economic activities that were business income-

oriented. For instance, banks' financing practices were not offered to finance economic activities that more complied with the Sustainable Development Goals such as food security and agriculture, water and sanitation, telecommunication, education, transportation, power, conservation of biodiversity, and climate change mitigation. Nevertheless, banks' financing practices focused on activities that generate a higher income to the bank, such as real estate activities, household financing, wholesale, and retail trade, as well as motor vehicle and motorcycle repairs.

Considering the results of this study, such policies can be recommended to policymakers, central banks, regulators, and particularly Islamic banks' management to reach SDGs objectives.

I.   Regulatory agencies and central banks can develop guidelines and criteria that will align Islamic banks' financing practices and investment strategies with SDGs.

II. To connect Islamic banks financing and the SDGs agenda, such issue needs to be considered seriously by Islamic bank managements: (a) raise awareness amongst banks stakeholders that investing and financing with the SDGs economic activities is co-components of *Maqasid* al-*Shari'ah*; (b) find out the investment and financing opportunities in economic activities that are SDGs based; and (c) identify barriers, challenges, and gaps that prevent SGDs further achievements in the Arab world.

III. Islamic banks should diversify their portfolio investment strategies to include economic activities aligned with SDGs.

IV. Governments can encourage Islamic banks to invest and finance SDG-based economic activities by exempting their income taxes.

V.   To develop social responsibility standard that is SDGs based for Islamic financial institutions in the Muslim world, governments, or regulatory agencies such as Accounting, and Auditing Organization for Islamic Financial Institutions (AAOIFI) need to make sure Corporate Social Responsibility (CSR) reporting frameworks align with Sustainable Development Goals.

VI. For further research, it may be possible to extend the scope of the study to include other factors, such as regulations, cultures, and technological atmospheres, as well as the level of funding received from conventional banks or governments, in order to provide more comprehensive and generalizable results.

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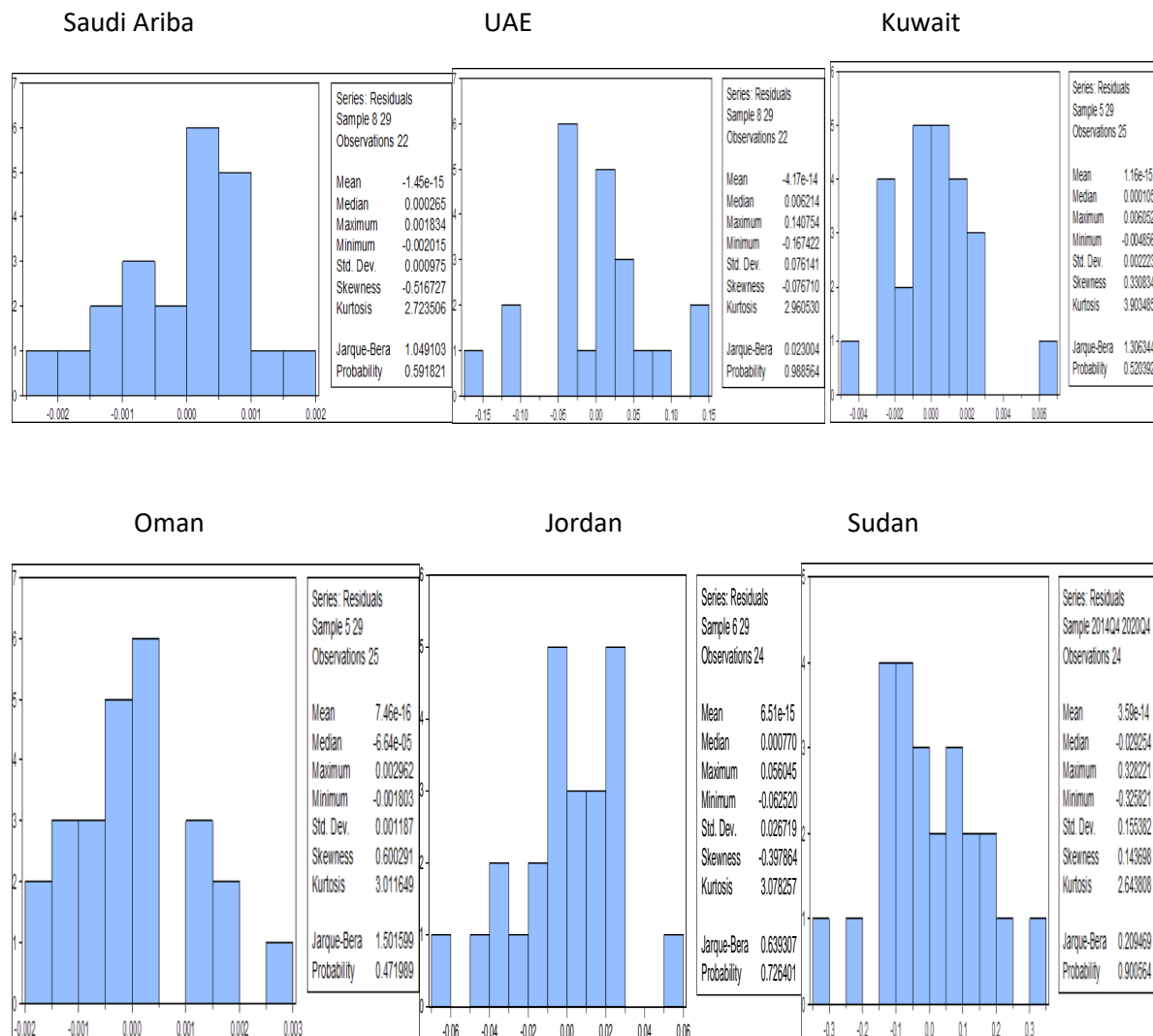
Appendix (I): Islamic Bankss' *Sharī`ah*-compliant financing by Economic Activities for Selecting countries (Million Dollar) 2013-2021

Sharī`ah-compliant financing by Economic Activities	Saudi Arabia	UAE	Oman	Kuwait	Jordan	Sudan
Total Value of *Sharī`ah*-compliant financing	**12,900,411.19**	**10,220,779.93**	**26,783,514.20**	**NA**	**158,781.30**	**255,550.97**
Sectoral distribution						
Agriculture, Forestry, Hunting and Fishing	107,141.89	13,188.11	135,810.00	NA	1,447.20	53,586.68
Mining and Quarrying	76,260	58,626.56	575,834.00	NA	32.20	0.00
Manufacturing	1,284,374.97	314,359.81	2,414,440.40	NA	9,170.90	25,422.25
Electricity, Gas, Steam and Air-Conditioning Supply	332,462.32	124,972.93	252,529.00	NA	23,558.60	3,941.42
Water Supply; Sewerage and Waste Management	1,280.82	4,780.96	0.00	NA	0.00	0.00
Construction	315,532.98	366,021.89	3,407,394.20	NA	17,780.00	0.00
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	903,285.93	821,339.97	1,516,457.90	NA	21,340.80	26,391.92
Transportation and Storage	282,348.38	346,091.60	207,556.20	NA	1,957.30	15,417.41
Accommodation and Food Service Activities	12,736.87	194,822.86	49,240.00	NA	851.80	0.00
Information and Communication	2,295.62	27,419.92	0.00	NA	161.20	0.00
Financial and Insurance Activities	232,454.61	571,073.19	113,277.00	NA	8,835.90	0.00
Real Estate Activities	1,068,326.88	1,452,503.42	1,131,599.00	NA	39,721.20	31,106.41
Professional, Scientific and Technical Activities	96,313.97	92,823.25	0.00	NA	0.00	1,313.74
Administrative and Support Service Activities	490,854.44	77,097.86	23,515.00	NA	0.00	47,843.50
Public Administration and Defence; Compulsory Social Security	38,804.52	471,385.04	0.00	NA	0.00	0.00
Education	878.46	100,808.60	1.00	NA	1,349.30	0.00
Human Health and Social Work Activities	8,336.39	157,416.43	0.00	NA	328.90	0.00
Arts, Entertainment and Recreation	2.87	98,600.26	0.00	NA	17.10	0.00
Other Service Activities (Export)	68,217.16	216,850.83	3,950,838.30	NA	441.20	25,865.52
Activities of Households as Employers	89,965.12	408,041.61	20.00	NA	0.00	0.00
Other Financing of Households	7,488,536.33	3,668,454.22	12,906,236.20	NA	31,787.70	1,645.12
Activities of Extraterritorial Organisations and Bodies	0.38	230.21	0.00	NA	0.00	0.00
Financing to Non-residents	0.00	633,870.42	98,766.00	NA	0.00	0.00

Note: The IFSB database does not contain data on Kuwait's economic sectoral distribution.
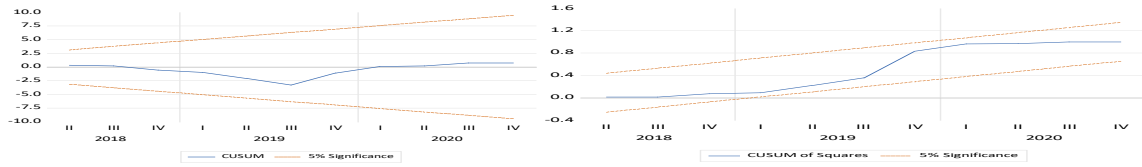Source: IFSB database.

Appendix (II): Outcomes for Normality tests which are skewness, kurtosis and Jarque–Bera test for each specified ARDL model
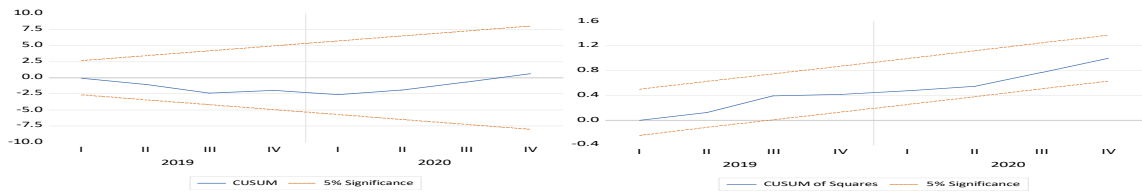
Saudi Ariba

Series: Residuals	
Sample 8 29	
Observations 22	
Mean	-1.45e-15
Median	0.000265
Maximum	0.001834
Minimum	-0.002015
Std. Dev.	0.000975
Skewness	-0.516727
Kurtosis	2.723506
Jarque-Bera	1.049103
Probability	0.591821

UAE

Series: Residuals	
Sample 8 29	
Observations 22	
Mean	-4.17e-14
Median	0.006214
Maximum	0.140754
Minimum	-0.167422
Std. Dev.	0.076141
Skewness	-0.076710
Kurtosis	2.960530
Jarque-Bera	0.023004
Probability	0.988564

Kuwait

Series: Residuals	
Sample 5 29	
Observations 25	
Mean	1.16e-15
Median	0.000105
Maximum	0.006052
Minimum	-0.004856
Std. Dev.	0.002223
Skewness	0.330834
Kurtosis	3.903485
Jarque-Bera	1.306344
Probability	0.520392

Oman

Series: Residuals	
Sample 5 29	
Observations 25	
Mean	7.46e-16
Median	-6.64e-05
Maximum	0.002952
Minimum	-0.001803
Std. Dev.	0.001187
Skewness	0.600291
Kurtosis	3.011649
Jarque-Bera	1.501599
Probability	0.471989

Jordan

Series: Residuals	
Sample 6 29	
Observations 24	
Mean	6.51e-15
Median	0.000770
Maximum	0.056045
Minimum	-0.062520
Std. Dev.	0.026719
Skewness	-0.397864
Kurtosis	3.078257
Jarque-Bera	0.639307
Probability	0.726401

Sudan

Series: Residuals	
Sample 2014Q4 2020Q4	
Observations 24	
Mean	3.59e-14
Median	-0.029254
Maximum	0.328221
Minimum	-0.325821
Std. Dev.	0.155382
Skewness	0.143698
Kurtosis	2.643808
Jarque-Bera	0.209469
Probability	0.900564

Appendix (III): Outcomes of ARDL models' Stability using Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMsq) Tests.

Saudi Arabia

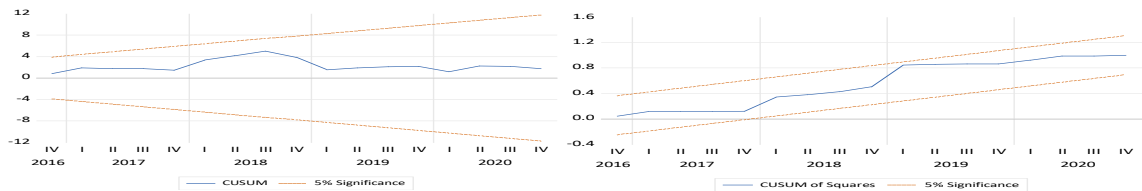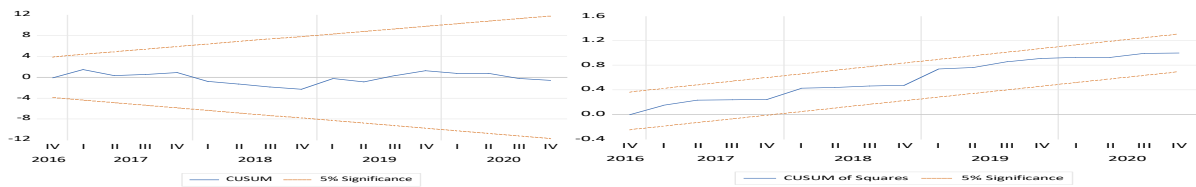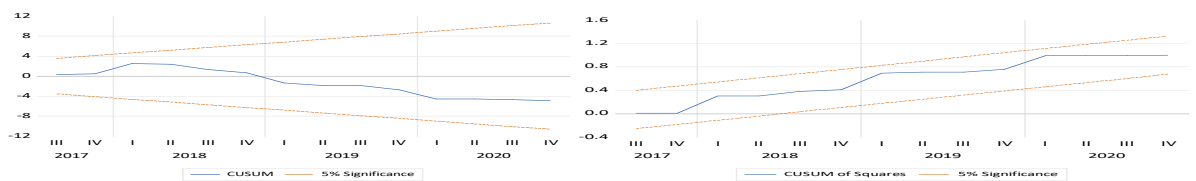## UAE

Kuwait

Oman

Jordan

Sudan