

The Issuing of the Sukuk Framework in Afghanistan and Its Contribution to Economic Development

Farid Ahmad Heravi

PhD Student at IIUM, Islamic International University Malaysian, IIBF, Islamic Banking and Finance, Malaysia

E-mail: Faridahw1986@gmail.com

http://dx.doi.org/10.47814/ijssrr.v5i9.486

Abstract

This article aims to provide an essential and significant proposal for the Sukuk issuance framework and explore its necessity in Afghanistan, to be Consistent with Shariah's requirements and in light of the other Muslim country's experiences, especially Malaysia. The problem is, how can Afghanistan increase its economic development by issuing sukuk, and struggle against poverty and unemployment, and what are the advantages of sukuk on the financial dimension of Afghanistan? The article is divided into two axes. Accordingly, the first axis of this article focused on the general analysis of Sukuk and contains the Islamic worldview of Sukuk, the concept of Sukuk, the basic principles of Sukuk, requirements of Sukuk, benefits of sukuk, common types of Sukuk, securitization, and the most important distinctions between Sukuk and conventional bonds. The second axis gives information on how Sukuk can be issuance in Afghanistan and its regulatory framework, and legal and economic challenges, and provides suggestions for overcoming these obstacles as well. It investigates the remarkable impact of Sukuk on economic growth in Afghanistan in all aspects such as (GDP) Gross Domestic Product, (GCF), Gross Capital Formation, poverty eradicating, unemployment reduction, obtaining an independent financial system, prevention of budget shortfalls, contribution economic development. The data were collected from primary sources such as a questionnaire which has been conducted between the scholars and experts of Islamic financing, and secondary resources such as books, publications, websites, and official reports. Consequently, the findings showed that Sukuk financing will have an extraordinary impact on the Afghanistan economic system like its remarkable influences on economic growth for (SEAC) countries of south Asia, and (GCC) The Gulf Cooperation Council countries, therefore the searcher suggests securitization in Afghanistan as well for financing growth and economic development.

Keywords: Sukuk Issuance; Afghanistan; Economic Development



Introduction

The issuer of a *Sukuk* sells a certificate to an investor group since it is prohibited to utilize the conventional Western interest-paying bond structure. The investor group then uses the proceeds from the sale of the certificate to invest in an asset in which it has a direct partial ownership interest. Additionally, the issuer must contractually promise to eventually repurchase the bond at par value. The Sharia-compliant bond, commonly known as a *"Sukuk,"* has emerged as one of the most dynamic capital-raising instruments in both the Islamic and conventional capital markets (zulkhibri, 2015). Why *Sukuk* are a good alternative to bonds? When you purchase bonds, you are essentially lending the issuer money for a set length of time. You'll be given a predefined interest rate, which is typically paid annually over that predetermined period. The bond's value is reimbursed at the end of the period, and you receive your money back. It means after the time period is over, the bond's value is reimbursed, and you receive your money back. However, because *Shariah* law prohibits the generation of money from money- المال المال لايل لايل 2014).

Islamic Worldwide of Sukuk: According to historical archives, Imam Malik's narration in Al-Muwatta (Echchabi, Abd.aziz & Idriss, 2016) was the first to address the topic of sukuk. In the seventh century, this mechanism was used during the Umayyad Caliphate. Attempts have been made in the past, Jordan in 1978 and Pakistan in 1980 were the first countries to issue modern sukuks emissions. These projects, on the other hand, have failed because of a lack of infrastructure and market transparency (Ali & Falahi, 2014). Malaysia Shell MDS Sdn Bhd issued the world's first Sukuk in 1990. Sudan's government issues the second Sukuk in 2000 (Paltrinieri et al., 2019). Following that, numerous Islamic countries adopted the practice. As a result, Sukuk issuance is steadily increasing every year. Domestic Sukuks denominated in local currency provide for even more than 70% of all Sukuk issuances. In 2001, the Central Bank of Bahrain released the first international Sukuk, which was denominated in US dollars so the first international sovereign Sukuk was issued by the Government of Bahrain in September 2001, it was a \$100M *Ijarah Sukuk* with a fixed rate of 5.2% with 5 years maturity. Global *Sukuk* issuance was approximately US\$116.717 million in 2017, with foreign Sukuk (mostly denominated in US Dollar) providing for around US\$37.648 million (IIFM, 2018). Central banks, governments, energy companies, and utility companies from Islamic countries with strong credit quality are the most common issuers of international Sukuk. Malaysia, Singapore, Dubai, Luxemburg, London, and Belfast all have exchanges where international Sukuk are listed or traded. Sukuk has been issued in a number of non-Islamic Islamic countries, including the United Kingdom, Singapore, and Hong Kong. They are substantially smaller than *Sukuk* issued by Islamic countries (Michael Chak Sham WONG: 2019)

Nowadays the main player of *sukuk* are the (GCC) The Gulf Cooperation Council countries and South East Asia Countries (SEA) in the global *sukuk* market like: UEA, Saudi Arabia, Bahrain, Qatar, Kuwait (GCC0) Malaysia, Indonesia and Singapore (SEA), but Malaysia plays the main role in issuing *sukuk*, also Pakistan and Japan from other part of Asia (zulkhibri, 2015). Other than Asian countries, the USA, the United Kingdom, Germany, Turkey, Egypt, and Gambia also contribute to the market. An overview of the global *Sukuk* markets. According to the standard and poor approximately \$116.4B^ of *Sukuks* were issued by corporation's sovereign entities and government-related entities in 2014. In 2015 the total global outstanding Sukuk was \$309.8B, and the global *Sukuk* issued was \$65B, moreover, the projected size of *Sukuk* issuance in 2021 is estimated at \$78.5BThe Malaysian domestic *Sukuk* market is the world's largest, with market size of \$68 billion, contributing for 67 percent of the whole global domestic *Sukuk* market and more than half of their entire global *Sukuk* market. The Dow Jones *Sukuk* Index, which aims to measure U.S. dollar-denominated, investment-grade *Sukuk*, added 17 new *Sukuk* in 2016, reaching \$13.5 billion in par value.



The UK government initially issued a sovereign Sukuk in 2014, followed by a second sovereign Sukuk in 2021. Dr. Monzar Kahf proposed the idea of issuing *liarah* certificates as the first Islamic financial instrument in 1997. Kahf views Malaysia and Bahrain's international sukuk issuances in 1999 as the inception of Islamic financial instruments. Malaysian sukuk accounted for about a third of all sukuk issuance around 32% in 2020, closely followed by Saudi Arabia, which accounted for around 28%. Nearly 60% of all global sukuk issued in 2020 will be sovereign sukuk issued by countries, and a further 30 percent related to the financial sector (statista, 2022). So It contributes the issuer whether it is government, big companies or banks to attract funds in quantities that exceed the capabilities of some governments or companies in financing their major projects, it is safer and more stable than bonds as it provides safe and effective sources of financing for projects, and it spares governments from privatizing their projects or selling them completely, and It has a good credit rating, for setting legal and sharia controls that are not subject to bonds operations, and helps in improving the profitability of financial institutions and companies and their financial positions, and can be used as a supporting capital to improve the capital adequacy ratio, and sukuk operations help in harmonizing the sources of funds and their use, which contributes to reducing the risk of asymmetry between the terms of the resources and their uses, and that they have special advantages; such as diversity, innovation, and the ability to work within controls and mechanisms of circulation that combine economic efficiency and legitimacy credibility, and its ability to play a pivotal and important role in financing development in its various aspects of industry, agriculture, trade and services, and it use as a tool of monetary policy according to the Islamic perspective, which contributes to absorbing liquidity, and then reducing inflation rates, and providing an opportunity for Islamic financial institutions to manage their excess liquidity, and contribute to addressing the deficit in the budgets of some countries, and their sufficiency, and the preventing of external borrowing or foreign aid which is dangers to the sovereignty of countries (Hayder, wasan, 2022).

Also *sukuk* has the important contributing for the society such as it increases the number of alternatives for investors, securitization helps in the growth of GDP without the need for additional investments, helps reduce the degree of control of the banking system as the sole provider of finance, and it strengthen the infrastructures of society, Keeping abreast of the international changes taking place in the financing market in order to satisfy the local investor instead of moving to consume these services abroad, and the impact of this on the balance of capital operations, Providing great opportunities to bridge the deficit in the state budget by providing real resources that do not negatively affect the general level of prices, and thus enable it to finance basic development projects at an inexpensive cost. Islamic *sukuk* would justify countries' adoption of less credit-restrictive monetary policies due to the reality of their sources of financing; because expansionary policies give greater confidence in the country's investment climate. Extensive use of Islamic sukuk leads to laying the foundations and infrastructure to make the particular economy a prestigious financial center with more attractive instruments (Hayder, Wasan, 2022).

The Challenges in The Development of *Sukuk* Market in Afghanistan Are as Following

Lack of awareness, the investors and common people don't have enough information about this industry, Lack of technical expertise in *Sukuk* productions in Afghanistan, and no existing enacted law regarding *Sukuk* and its legal framework for issuing them, no existing secondary market for selling and buying <u>Sukuk</u>, and there is some special terms of *Sukuk* certificates (Government or private company should issue), Also the instability of the security and political situations(*sukuk* in Afghanistan, 2017, March).

Problem Statement

Sukuk is one of the main and significant investment instruments in the Islamic economic system and banking. Islamic Sukuk also plays a great important role in the modern and post-modern



century in the direction of national and global economic growth, and most of the Islamic and non-Islamic countries have made progress from this economic standpoint in the national and global economic system. Today, those countries which have been invested through Islamic *Sukuk* play a leading role in the national and global economy and this is under their control and change as they wish. Issuing *Sukuk* based on the provisions of Islamic Sharia was one of the goals of Islamic economics and one of the important means for the development of society (Siddiqui, 2019).

Sukuk helps in the growth and advancement of the Islamic economy in theory and in practice all over the world. In theory, it is a continuation of the economic cycles beside insurance companies and Islamic banks, and in practice, its presence helps remove the embarrassment of investors who request them. The main problem is that Afghanistan is one of the poorest countries in the world, and the Afghan citizens are 100% Muslims, religiously, they need the Islamic money market in Afghanistan so that Islamic investment financial tools are applied in the public and private sectors for economic growth, investment of funds, job creation and employment, and decreases the Poverty. On the other hand, it is obvious that currently there is no financial market in Afghanistan or an opportunity to finance the investment of locals whose money is disrupted and foreigners who want to invest in Afghanistan, the solution is to trade and apply the modern and efficient financial instruments, and the best of these tools are *Sukuk* and dealing with them.

The knowledge gap that this article will fill in is that this is in fact a preliminary suggestion for issuing *Sukuk*, how to implement it, and its framework structure in the light of the experience of Malaysia and other Islamic countries in Afghanistan, to improve and grow its economic system (zolfaghari, 2017). This would be a solution to eradicate poverty, and unemployment, prevent young people from migrating to other countries and obtain an independent financial economy.

Research Objectives

Understand the background, concepts, terms, characteristics, and goals of *Sukuk*, and propose the issuing of *Sukuk* and its structure and legal framework in Afghanistan obtaining from the Malaysian experiences, and to know the challenges of issuing *Sukuk* in Afghanistan, and its capability platform for the investment of *Sukuk* in it as well, and discover the role of *Sukuk* on the individual and social economic growth of society, and illustrate the contributions of *Sukuk* into development Afghanistan's Financial System.

Research Questions

In the light of the research objectives the researcher is going to propose these questions to be answered at the end of the research:

- 1. What is the role of the issuance of *Sukuk* and its circulation in the growth of individuals and the social economy of the society?
- 2. What are the most challenges of issuing Sukuk in Afghanistan?
- 3. How can Afghanistan issue the *Sukuk* and invest in it in light of other Muslim countries' experiences, particularly Malaysia?
- 4. How can it contribute to the development of Afghanistan's financial system?
- 5. What effect shall the establishment of the *Sukuk* system in Afghanistan have on its financial system?



Literature Review

The Concept of *Sukuk: Sukuk* (Arabic: صکوک, plural of صدک sakk, "legal instrument, deed, check") is the Arabic name for a financial certificate but can be seen as an Islamic equivalent of bond. There are different definitions for *Sukuk* as an Islamic modern terms:

(Sukuk are financial hybrid instruments similar to bonds and also shares that are compliant with Islamic law. Since their inception in 2002, Sukuk markets have experienced dramatic growth rates attracting the attention of investors, analysts, and researchers alike) (Ahmed, Khalil: 2011) Hence, it may be claimed that Sukuk is an Islamic financial certificate that complies with Sharia law, similar to a bond in Western banking. Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) defines Sukuk as being: "Certificates of equal value representing undivided shares in the ownership of tangible assets, usufructs, and services or (in the ownership of) the assets of particular projects or special investment activities."(The AAOIFI Sharia's Standard (17) on investment sukuk)

Conditions of Sukuk

For a *Sukuk* to be considered compliant with Sharia law, it must meet three holistic conditions and requirements:

- 1. The certificates must reflect ownership of tangible property, usufructs, or services provided by the firm that generate revenue.
- 2. Payments to the investor are made from profits after taxes.
- 3. The value received at maturity should reflect the underlying asset's current market worth rather than the amount initially invested. (Siddiqui, 2019)

Benefits of Sukuk

These are some outstanding benefits among many advantages of *Sukuk* that *Sukuk* as Shari'ahcompliant instruments provide medium to long-term fixed or variable rates of return. Investors use it as a benchmark to evaluate the risk/return parameters of a *Sukuk* issuance because it is evaluated and rated by international rating agencies. It has quick and effective settlement procedures, predictable periodic income streams over the investment period, and the potential for *Sukuk* capital appreciation. Finally, *Sukuk* are marketable on the secondary market and are liquid instruments. (Zolfaghari, 2017).

The Main Purposes of Issuing Sukuk in Afghanistan Are

To finance public expenditure, bring idle cash into circulation and promote economic growth. And we use *Sukuk* because the fund raised from *Sukuk* could be utilized for but not limited to: (1) Budget financing, (2) projects financing, (3) Enhancement of Bank capital, and (4) infrastructure development both micro ¯o-economic impact of introducing the Ijarah, Istisna and Murabaha *Sukuk* in Afghanistan (*Sukuk* in Afghanistan, office of the economic advisor, 2017). it has a remarkable impact on both microeconomic and macroeconomics, first: The microeconomic impacts are the following:

- (1) The Above three *Sukuk* types are among the financial instruments.
- (2) These securities are fixed-income and have high liquidity in the secondary market
- (3) The more various the securities the more efficient they are. Second: The macroeconomic impact of these securities would be on consumption costs, government costs, and investment, particularly these factors can attract domestic and international investors, Moreover, and the securities could be introduced as an instrument of monetary policy_(Ministry of finance of Afghanistan, 2019).



General Types of Sukuk

Sukuk generally divided into two groups: First is Tradable Sukuk, such as Sukuk Al-IJarah, Musharakah and Mudarabah, second is Non-Tradable Sukuk for example Sukuk Salam and Sukuk Murabah. The Ijarah Sukuk concept is the most popular amongst issuers of global Islamic securities, and there are many more types which is no need to mention here and discuss all but the famous ones are reach 17 types as mentioned in AAIOFI sharia criteria. The number of Sukuk is increasing day by day in collusion with the advancement of technology and the opening of the valves of Islamic economics which many articles have been written in these fields, For example, green Sukuk, safety Sukuk, and pandemic, etc. have been created recently (Marwa, 2016).

The Similarities and Differences between Sukuk, Bonds

To prove the *Sukuk* with sharia compliance, need to discuss the similarities and differences between these two financial tools, so there are precisely mentioned the similarities and differences between them below. Table of Distinguishing *Sukuk* from Conventional Bonds from important aspects:

Categories	Conventional bonds	Sukuk(asset- backed)	
Ownership of Assets	A share of ownership in the asset, project, business, or joint venture that bonds finance is not given to the investor. They are a debt by the bondholder to the issuer.	<i>Sukuk</i> grants the investor a portion of ownership in the underlying asset.	
Investment Standards	Bonds can typically be used to finance any asset, project, business, or joint venture that complies with local legislation.	<i>Sukuk</i> must be structured on sharia-compliant assets.	
Issue unit	A portion of debt is represented by each bond.	A share of the underlying asset is represented by each <i>Sukuk</i> .	
Issue cost	The creditworthiness of the issuer determines a bond's face value (including its rating)	The market value of the underlying asset serves as the basis for the <i>Sukuk's</i> face value.	
Rewards and risks of investing	Bondholders are guaranteed to receive their principal back at the bond's maturity date along with periodical interest payments (often at fixed rates) during the lifetime of the bond.	<i>Sukuk</i> holders get a portion of the underlying asset's profits (and accept a portion of any losses)	
Costs' Effects	Costs associated with the asset, project, business, or joint venture that bonds fund typically have no impact on bondholders. Investor rewards are unaffected by the performance of the underlying asset.	Costs associated with the underlying asset have an impact on sukuk holders. Lower investor returns could result from higher costs, and vice versa.	

(Hasib, 2017).



Issuing Process of *Sukuk* **Certificate:** Because of the unique nature of *sukuk*, the financial instruments require a special issuing process. In the issuing procedure, the following steps are common:

- 1. A company that requires capital (known as the "originator" creates a special purpose vehicle). The SPV protects the underlying assets from creditors if the originator is in financial difficulties.
- 2. The special purpose vehicle issues and sells sukuk certificates to investors.
- 3. The originator purchases the necessary asset using the proceeds from the sale of the certificate to the investor.
- 4. The asset is purchased from the originator by the SPV.
- 5. The SPV establishes the asset's accessibility to the originator. The lease payments are made to the SPV by originator, which then distributes the money to the lease holders as lease income.
- 6. On the lease's expiration date, the originator buys the asset back from the SPV for its nominal value. SPV will disburse the proceeds to the holders (Khalil, 2011).

In summary, there are numerous ways to accomplish the same objective using Islamic financial instruments, and the following is only one of them. Investors obtain a certificate from the issuer as proof of ownership when they purchase Sukuk, and they are then entitled to periodic profit distributions on the principal invested. The principal investment will be returned to the Sukuk holder upon maturity.

The Sukuk (Islamic Bonds) Process (Securitization) Parties:

The following are the main parties involved in the *sukuk* process:

- 1. The originator. The issuing entity, also known as the authority owner of the assets to be securitized, might be individuals, groups, or countries. This authority will inventory its assets and gather all of its cash-returns financial assets into a pool or one investment account known as a bonds (sukuk) portfolio (portfolio asset), (Siddiqui, 2019).
- 2. The issuing agent: This party is in charge of managing the owned assets for and on behalf of the sukuk holders. The issuance procedure is usually handled by a special purpose corporation known as a Special Purpose Vehicle (SPV). The sukuk will be purchased from the owner firm to handle the Sukuk issuance process, as it handles all of the necessary procedures for the sukuk process for a fee or particular commission. This owner company may be assigned a number of functions, such as issuance manager or investment trustee, and it must be legally and financially separate from the authority from which it originated in order to ensure transparency and protect the rights of bond (sukuk) holders' investors (Siddiqui, 2019.
- 3. Holders of sukuks: the investors who purchase sukuk offered for subscription or an initial public offering (IPO) in assets put into sukuk in exchange for the original value of the sukuk and the proceeds from the activity of the assets put into sukuk at maturity. Financial institutions, local or international banks, individuals, or governments can all be sukuk holders.
- 4. Sukuk portfolio (portfolio asset). It is an investment bowl in which various assets are put into sukuk in favour of the originator with the aim of obtaining liquidity or cash for either the establishment of a new investment project or the expansion and development of the base of an existing project using Islamic financing formulas. The proceeds from such sukuk portfolios (portfolio asset) will be collected and deposited in a special account that will be utilized to settle sukuk holders' dues on maturity dates(Khalil, 2011).

The firm (the obligor or originator), the Special Purpose Vehicle (SPV), and the investors that purchase the Sukuk are, in essence, the parties within a Sukuk issue. The SPV is an independent entity that provides Sukuk certificates and is not connected to the originator in any way.



Auxiliary Parties

The process of sukuk securitization Auxiliary parties are those who agreed to provide specific services in connection with the sukuk procedure. The following are the most important parties:

- 1. Investment trustee: A financial intermediary responsible with safeguarding the interests of sukuk holders as well as supervising and monitoring the issuance manager to ensure compliance with the organization's investment process requirements outlined in the prospectus. It will also manage the documents and guarantees under an agency contract with defined fees that specify the prospectus with clear and precise directions (Haisb, 2017).
- 2. Underwriters: The authority has agreed to subscribe the remaining *sukuk* that have not been subscribed. Underwriters can undertake to reimburse the rights of *sukuk* holders after collection if the applicant makes the commitment free of charge and announces it in the prospectus.
- 3. Sharia supervisory board:

It is the authority that examines the issuance structure from a *Shari'a* perspective in terms of legitimacy, and it is the authority that determines if the *sukuk* procedure is legitimate and trustworthy. Furthermore, the Supervisory Body will establish *Shari'a* criteria to govern the *sukuk* process (securitization) and the contracts that govern the parties' relationships. In some cases, it will be required to have the authority to use *Shari'a* controls to oversee the issue authority and the issuance manager. In most cases, the *Shari'a* Supervisory Body is made up of Islamic clerics and jurists, as well as the country's Research and *Shari'a* Fatwa institutions.

4. These are specialized agencies, such as the Malaysian Credit Rating Agency in Malaysia, that examine the credit and financial worthiness of offered securities with guarantees, as well as the proportion of risks included in the issued securities, and set a fair price. They will also evaluate the client's efficiency in the al-Musharakha activity, as well as his integrity and honesty in order to protect the *sukuk* holders in the case of Islamic *sukuk*. It is important to note the need of developing a workable system for credit rating agencies that deal with *sukuk*, as well as having an umbrella for all countries that deal with *sukuk* in their financial systems, particularly in emerging Asian and Arab countries, followed by other countries. The house is being built. He would be responsible for the cost of resolving any discrepancy.(Siddiqui: 2019)

Methodology

A qualitative study was conducted among citizens of Afghanistan with a sample size of 50 people (out of which 23 responded) in which university scholars/lecturers, investors, bank and financial institution employees, and ordinary people were asked and approached via an online structured questionnaire for the purpose of collecting primary data. Secondary data was gathered from a variety of credible sources, including books, articles, official reports, and websites. The dimensions of awareness, agreement, preference, advantages, and financial effectiveness of *sukuk* were used to create the questionnaire. In the tables, the researcher has shown the input from the target audience in both percentage and absolute numbers for better comprehension and clarification, also, the amount of revenue, expenditures, and an annual budget of Afghanistan, the poverty rate, unemployment graph, and migration statistics from 2010 to 2022 are estimated in the form of tables, and at the end, the conceptual framework of the *Sukuk* issuance proposal has been drawn by this article in the form of columns. Some of the elements are listed below for additional elucidation.

- 1. Descriptive research design
- 2. The type of data:



- Primary data was acquired using a well-structured questionnaire that was based on the following parameters: Awareness, agreement, willingness, and choices.
- Secondary data is gathered from various credible sources, including books, articles, official reports, websites, and journals.
- 3. Sampling method: purposive.
- 4. Area of research: Afghanistan.
- 5. Target population: Scholars, employees, investors, bank workers, and regular folks are the core demographic.
- 6. Analysis tools: tables and percentages.

Data Analysis

Sukuk is one of the most important and new financial instruments in the Islamic economic system, and its issuance and circulation cause the economic progress of society in all dimensions, including completing the national budget, creating jobs, reducing poverty, attracting capitalists at all levels of investment, growth Economic, liquidity, etc., especially in the third world and backward countries such as Afghanistan. Below we examine the role of *Sukuk* in strengthening the various financial sectors and its issuance and legal framework in Afghanistan. Why is it important for Islamic countries to introduce *Sukuk*? A *Sukuk* is a sharia-compliant bond-like instrument used in Islamic finance. Both *Sukuk* and bonds offer investors payment streams, however a *Sukuk's* income cannot be speculative because it would make it no longer be halal. *Sukuk* can play a significant part in the development of an Islamic market and banking system as well. The main advantage of *Sukuk* is to comply with Sharia while improving the standard of living in Islamic society and developing the societies' economies (abrorov, 2020).

Sukuk Contribution to Economic Growth

Investment in *Sukuk* is considered one of the foundation pillars of economic development, especially in underdeveloped countries, thanks to its remarkable participation in increasing production. It is also one of the most effective means of changing the national economic structure so as to cope with structural imbalances. Along with the increasing investment size, the economic growth rate also improves through extra value-added, productivity, and labor employment. (marwa, 2016)

The Role of the Sukuk in the Collection and Mobilizing of Financial Resources Is as Follows

Sukuk are distinguished by their ability to collect and mobilize savings in a variety of categories and in a number of different ways, owing to their various maturities in the short, medium, and long term, their standard in terms of financial values, goals, and diversity. In addition to these features, *Sukuk* are not liable to interest-rate risk, simply because they never apply it. Indeed, *Sukuk* is not exposed to the inflationary risk but is positively affected by inflation. The reason is that these instruments represent real assets in the form of objectives and services, in such a way that their price increases with the general increase in prices, thus increasing *Sukuk's* return. (Abdelghani Echchbi: 2018).

The Role of a Sukuk in Financing an Investment Project Is as Follows

The focus on internal means to provide financial resources and link them with actual development applications constitutes the best choice for developing countries. In this regard, *Sukuk* may represent a fruitfully effective method thanks to its ability to achieve both goals. While serving as a resource



mobilization procedure, it helps ensure their application to the real investment areas. Still, the major challenge in the field of the Islamic finance industry lies not only in financial innovation ability to mobilize financial resources but also in how to apply these resources and bring them closer to meeting economic development purposes (abrorov, 2020).

Sukuk can be used to finance infrastructure and large-scale project works that require huge financial resources capacity to be mobilized. In effect, Sukuk is a financial product that allows excellence to meet the country's needs to finance infrastructure and vital projects, rather than relying on treasury bills and internal or external debt. For instance, the government can use the ijarh *Sukuk* to finance such public project works as financing the construction of bridges, airports, roads, dams, buildings, and other infrastructure projects. More recently, global *Sukuk* markets have experienced a significant expansion to finance major projects, boost the respective countries' economies and attract money from foreign investors to be reinvested in various projects likely to help stabilize the country's economic situations, maintain its welfare, and prosperity (Michael, Bhatti, 2019).

Sukuk in Afghanistan

Islamic finance has become a global phenomenon. In recent years, there has been a significant surge of interest in Islamic finance in the leading conventional financial centers of the world, such as London, New York, Hong Kong, and China. Western financial institutions are also increasingly considering financing and investing in Islamic products, particularly by issuing *Sukuk*. About s6 Islamic countries also issued *Sukuk* and reached prosperous economic levels through it. Unfortunately, Afghanistan has not yet been able to issue and trade this financial instrument yet. Afghanistan planned to offer Islamic *sukuk* for the first time in 2013 as it prepared for a decrease in international aid following the withdrawal of foreign soldiers in 2014. Afghanistan also planned to sell *Sukuk* once foreign aid ended. A longer-maturity *Sukuk* offering will happen at the end of 2013, and draft laws will be submitted to the government "soon." Following his predecessor's resignation in June due to the loss of funds from Kabul Bank, the largest commercial lender, progress halted in 2011. On the other hand, the nation of Afghanistan, which was invaded twice in the past four decades and riven by civil war as well, is looking for alternative financing as it prepares to become self-sufficient by 2025.

According to data from the central bank in 2013, Afghanistan's total foreign exchange reserves in 2020 amounted to 9 billion and 694 million dollars held in US financial institutions, most are at the Federal Reserve Bank of New York (FRBNY), and the total banking assets have increased to \$4 billion from \$100 million a decade ago, with 10 percent complying with Islamic principles. ((Bloomberg Business Week / 11 January 2022). Also, there were 2 days of training of *Sukuk* for delegates of the ministry of finance of Afghanistan in Malaysia in 2019 by the ISRA consulting experts. The following goals were to be accomplished during the two days of training:

- 1. To give an overview and comprehension of the *Sukuk's* foundations.
- 2. To seek guidance from the appropriate regulators, including the Securities Commission Malaysia, Central Bank of Malaysia, and Malaysian Exchange House, on information pertaining to *sukuk*.
- 3. To facilitate the sharing of knowledge and best practises for comprehending the processes involved in the issuance and management of *Sukuk*. (ISRA: 2019).

The Afghan debt market will have its start with *sukuk*. The reduction of reliance on foreign aid will definitely be good, and *Sukuk* investors will have access to an exciting new market that will offer interesting diversification opportunities. The sale of the *sukuk* would aid in stabilizing the Afghan capital market. *Sukuk* is crucial for the growth of the nation's financial system because it is compliant with *Shariah* law. The adoption of *Shariah*-compliant banking laws in Afghanistan should encourage local investors who avoid lending that does not adhere to Islamic principles. A government *Sukuk* has the potential to attract considerable sums from Afghan citizens cautious of the country's traditional and



conventional banking system. Afghanistan is ranked around 7th poorest country in the world by the CIA, with a gross domestic product per capita income of \$500 in 2021, compared with an estimated \$3,000 for neighboring Pakistan. Global sales of Islamic bonds, which pay returns on assets in accordance with the religion's ban on interest, reached US\$711.3 billion in 2021, 12.7 percent higher than a year ago in 2020 (website of ministry of finance of Afghanistan, 2019).

Establishment of Sukuk in Afghanistan: After studying, the status of the Sukuk in Afghanistan as well as in the international context, the researcher is going to discuss the (printing house of Sukuk in Afghanistan), In fact, this printing house does not print contemporary and real sharia compliant Sukuk, but under the title (Sukuk printing press) only prints government securities (bonds) and documents and makes them available to citizens. Sukuk State Printing House is being renovated Afghanistan's oldest state-owned printing press, Sukuk, has been renovated and will cost 54 million euros to build with the help of Germany and the Afghan government by 2018. This printing house is one of the oldest printing centers in Afghanistan, which was established 130 years ago during the reign of Amir Abdul Rahman Khan. This printing house printed the first Afghan banknote and most government documents are printed in it. The *Sukuk* printing house suffered the most damage during the country's civil war and its equipment was stolen. Despite these injuries, the printing house resumed operations in 2001 and earned 154 million Afghanis last year. It is said that the building is to be rebuilt by 2018 with the help of Germany and at the expense of the Afghan government Along with the German Development Agency (GTZ), the Ministry of Finance should allocate more funds for its revitalization. The cost of building and reactivating the printing house has been estimated at € 54 million, with Germany promising to pay 25 million and another 29 million to be paid by the Afghan government, The President pointed out that this printing house could be a good source of income for the Government of Afghanistan, and therefore its capacity to print the certificates of schools and universities and other important and valuable securities should be improved. Currently, this printing house is very important for Afghanistan, and with its launch, the country's identity cards and secure documents will be printed and produced in accordance with international standards. Identity cards, passports, and securities are now printed by it.

This Sukuk printing house will increase the efficiency of public administration, while raising government revenues, and will lead to economic development. And by strengthening it, the falsification of documents, including IDs and testimonies, will be prevented, and in addition, it will make things easier for the government and also for the people, and right now; The *Sukuk* State Printing House publishes about eighty government documents, most of which belong to the Ministry of Finance and Customs. And such great achievements as the printing of demographics (ID cards) for the national election process and also the printing of entrance exam papers is one of the great achievements of this enterprise. The department has been relocated to Badam Bagh (an area in Kabul city) from its former location, which was Paul Artel (an area in Kabul city), and serves as the director of the *Sukuk* Press and Mint under the Ministry of Finance. (Reported by Ofogh News Agency on 3 august 2016).

Articles of Association of Sukuk Printing House :

In 1987, for the printing of the Sukuk printing house, the official magazine entitled (Statute of the Sukuk printing house) with serial number 648 was approved, and it included 55 articles.

This is the table (01) which illustrates the brief profile of a state-owned company :

Information regarding <i>sukuk</i> printing house in Kabul city Afghanistan			
Company Name	Sukuk Printing House		
Address	Bagh Bala, District 4, Kabul, Afghanistan		



Contact number		0202415014		
Type of activity		printing of securities and non-		
		securities		
TIN Number		9000453655		
Year of Establish	ment	1950		
Main activity		Supply of securities and non-		
-		securities printing services,		
		engraving and coining.		
Current mode Active				
Number of employees		196		
Website:		sukuk@mof.gov.af		
Administrative organization		Chairman of the Board,		
		members of the Board, Board of		
		Directors, members of the		
		Board.		
	Large shareholders		Ministry of Finance	
Area of activity		Kabul		
Last balance provided		2019		
Total assets of	-	Total	Total revenue	
2019	for 2019	expenditures	for 2019	
		for 2019		
1,054,991,475	52,797,312	90,289,200	149,048,450	
Afghani	Afghani	Afghani	Afghani	
Error! Hyperlink reference not valid.				

Error! Hyperlink reference not valid.

Sukuk Legislation

The legal structure for governments that want to issue sovereign Sukuk should be properly designed. To be effective, the legal framework must be written in a way that ensures compliance with essential Shari'ah principles while also reflecting the legal, accounting, and public debt management characteristics of Sukuk. Furthermore, the legislative framework for sovereign Sukuk should define their legal status and treatment for public debt and cash management objectives (Hayat, 2014).

Legality Problems of Sukuk Issuing in Afghanistan

The adoption of *Sukuk* has faced legal and regulatory problems, every country governed by its own legal independent system of Sariah board such as in Afghanistan Sariah Supervisory Council (ASSC). The first draft of *Sukuk* law was prepared by MoF in 1392(2014) but after that, no further action has been taken regarding the *Sukuk* law. The reason behind this issues is the lack of *Sukuk* experts and unfamiliar with the relevant government department with *Sukuk* industry (sukuk in Afghanistan: 2017)

Insecurity and political problems and other government concerns have also led to a lack of attention to this important phenomenon. But in year 1982 in the time of republic democratic government of Afghanistan, an official Gazette with the serial number of (514) was published by the name of (law of the taking *sukuk*), (official gazette:1982), it was included two chapters and seven articles but this law was belong to the interest bonds no sharia compliant *sukuk*, although its name is the law of *sukuk* (law of taking *sukuk*, 1982), and still there is no enacted law especially for *sukuk* (Islamic bonds), and there should be approved a law then starting the issuing of the *sukuk* under the legal framework of that law. However there is a draft of law which has been written in 2017 and consists of six chapters, (1) Definition and General provisions, (2) Purpose and governing scope, (3) Issuing *Sukuk*, (4) Afghanistan Sariah



Supervisory Council, (5) The *Sukuk* instrument, and (6) Special Purpose Vehicle (SPV), but it has not been enacted yet.

Developing SUKUK Market in Afghanistan Consulting Services

Sukuk markets are seen as a source of long-term financing. To fully utilize the potential of Sukuk markets, policy makers urge to work for the development of domestic markets and access to international markets. In developing a domestic market, policy makers use a framework similar to a bond market. That is to develop: (a). a well-functioning money market (b). Well-functioning primary market (c). Market infrastructure (d) and an efficient legal and regulatory framework. This is a request sent by Afghanistan to the Islamic Development Bank in 2021, unfortunately because of the change of government system the procedure has not completed.

In November 2020 the government of Afghanistan had the following plan for the *sukuk* issuance in 2021 but unfortunately the changes of political system did not give the chance such improvement. Islamic republic of Afghanistan- developing *sukuk* market in Afghanistan consulting services, grant finance no. AFG- 1015: The Ministry of Finance (Afghanistan has received funding from the Islamic Development Bank for the Developing *Sukuk* Market in Afghanistan Project's cost and plans to use some of the revenues for consulting services. The services include consultancy services to draft (in English) three deliverables (a) Initial Market Study (b) National *Sukuk* Policy and (c) *Sukuk* Implementation Guidelines to promote the role and use of *Sukuk* for Afghanistan's development. The project is expected to be implemented over a period of 12 months with the expected start date of the assignment in January 2021. The detailed Terms of Reference (TOR) for the assignment are attached to this request for expressions of interest.

The Ministry of Finance (Afghanistan) now invites eligible consulting firms ("Consultants") to express their interest (EOI) in providing the services. Interested consultants must provide specific information which demonstrates that they are fully qualified to perform the services in undertaking critical market study and developing customized/market-based *Sukuk* policy and implementation guidelines for Afghanistan. The shortlisting criteria are: Experience, capability, and credibility of the project team with regards to advising on policy issues of *Sukuk* policy, guidelines, actual *Sukuk* structuring, and issuance of capital markets instruments. Understanding of relevant international best practices, expert-level knowledge of *Sukuk*, its practice, and markets. Track record of the proposed team members and a commitment to their availability for the term of the consultancy service. The ability to demonstrate communication skills in local languages, both written and verbal, will be added advantage. Experience in local market research and fact-finding about the viability will be an advantage. Ability to travel to Afghanistan, as frequently as needed, or stay in Afghanistan for the period of the assignment. (Website of ministry of finance, https://www.mof.gov.af/index.php/en)

Economic Impact of *Sukuk* in Afghanistan

Sukuk is a useful long-term financial instrument. It plays a fundamental role in the economy of the country. If the Sukuk strategy and policy is successfully executed and implemented, it will boost public confidence in the Afghan government and its other economic measures. This will open the door to generating billions amount of money to fund infrastructure projects, which in turn provide thousands of job opportunities and raise per capita income, both of which would boost GDP. All individuals who have money but have lack investing opportunities will also gain from that as well, either directly or indirectly. We would create a secondary market for marketable securities and expand the security market in our country by issuing Sukuk. The establishment of the Security Exchange Commission, which would oversee its operations, is intended to supervise the security market. The Government of Afghanistan spent billions of dollars on National Reserved Assets, and on average, the Central Bank of Afghanistan auctions 25 million US dollars each week to stabilise the local currency against the foreign exchange market.



This will take Afghanistan's financial industry in to international secondary markets to gain more and more money, by this the Afghanistan's economic ratting will hike which will encourage international significant corporations to come and invest. FDI or Foreign Direct Investment plays a positive role in the economy of any country. An increase in FDI is an indication of a thriving economy, especially in a country like Afghanistan. It indicates that people are interested in investing, which will lead to job opportunities, reduced unemployment—a major source of concern for a nation—increased incomes, which will increase demand. As demand rises, production will start rising, increasing GDP, and gradually there will be financial stability, progress, and development. (Khan, 2019).

The researcher ha conducted a questionnaire among the scholars, investors, employees in the bank, this is the table (02) which shows the level of interest of the participants about *Sukuk* and their attitudes towards *sukuk* issuance.

Options	All Response 23 Number percentage		
Awareness concerning theoretical and practical framework of <i>sukuk</i> .	17	73.9	
Awareness regarding types of sukuk.	14	60.9	
Supporting issuance of <i>sukuk</i> and its investment in Afghanistan.	18	78.3	
Awareness of the advantages of <i>sukuk</i> particularly in backward countries.	13	56.5	
The main obstacles/ challenges for not issuing sukuk in Afghanistan is Lack of specialists and experts of sukuk, and political instability.	15	65.2	
The main advantages of sukuk are Increasing the liquidity and preventing the inflation, Reducing the general budget deficit, and providing the opportunities of investment for small investors.	18	78.3	
The more effective financial areas for issuing and circulating sukuk in Afghanistan nowadays area the area of mining and economic development growth	8	34.8	
The best experience for the Sukuk issuance mechanism in Afghanistan is the useful experience of Malaysia.	11	47.8	

The above table shows that almost all of the respondents to this questionnaire expressed interest in investing in *Sukuk*, according to the results of the survey, and the reasons for their interest are it is based on the sharia compliance, profit and loss sharing, it cause the economic development and financial growth, , provides investment for the small investors, All individuals who have money but lack investing



opportunities will directly benefit from it, and the major obstacle/challenges for investment as per the respondents are lack of specialists, experts and political instability.

Whereas *sukuk* has the remarkable financial impact on the general budget of the countries and prevent from the deficit of general budget so the researcher has drawn the general budget of Afghanistan in below to shows the role of the *sukuk* issuing in this section, and issuance *sukuk* will affect the overall economy of Afghanistan. Developments in the state of the general budget for Afghanistan 2010-2022: This is what the researcher will explain about the deficit experienced by Afghanistan during the period 2010-2022 with the support of the countries of the world, especially America and NATO countries in the following table: Table (03) the state of the general budget of the state of Afghanistan, and the total revenues and public expenditures during the period (2010-2022):

Year	Total public revenue	Total public expenditure	Budget balance
		A	
2010	63,619	93.26%	197.5 billion
2011	71,120	95.61%	215.9 billion
2012	92,976	95.54%	241.6 billion
2013	84	86.55%	354.077 billion
2014	109,33	90.41%	428.378 billion
2015	119	80.99%	457.8 billion
2016	125,513.00	82.97%	461.7 billion
2017	169	90%	429 billion
2018	189	94%	360 billion
2019	208	95%	339 billion
2020	208	96%	428 billion
2021	241	%90	473 billion
2022	231		231 billion

Unit: (Billion Afghan Rupee)

Sours: Official page of ministry of finance.

Because Afghanistan is a poor country and its ranked seventh in the world poorest countries in 2022, issuing *sukuk* and deal with it will reduce poverty and unemployment from Afghanistan.

Table No (03) Shows the rate of poverty and unemployment and the large number of statistics on asylum in other countries, and proves that they are at an unimaginable level in these years. These statistics show the weakness of the economy and the financial crisis.

Year	Poverty rate	Unemployment rate	Asylum statistics (million)
2010	35,8	7,8	2,900000
2011	35,8	7,9	3.000000
2012	35,8	7,9	2,700000
2013	39,1	8,5	2,600000
2014	39,1	8,7	2,600000
2015	40	8,9	2,700000
2016	55	8,8	2,800000
2017	54,5	8,8	3,000000
2018	42	11,1	3,000000
2019	47,3	11,1	2,900000



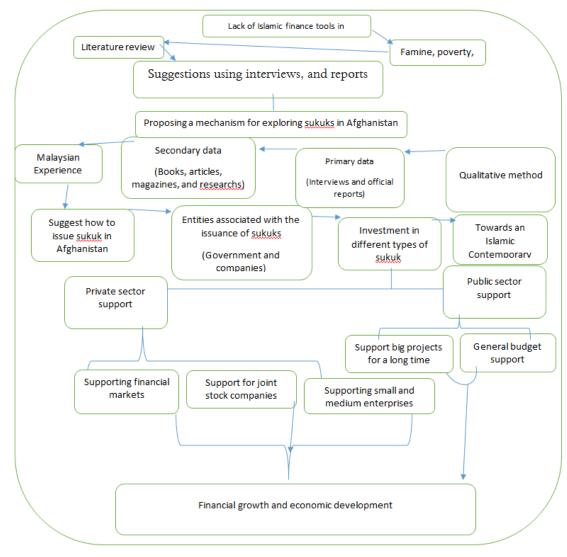
International Journal of Social Science Research and Review

2020	47,3	11.1	3,000000
2021	55	13.2	3,200000
2022	72%	47%	6,000000

It is clear that the issuance of high *sukuk* has a great impact on eradicating poverty, reducing unemployment and preventing long-term migration. Whereas the issuance of *sukuk* and its use in Islamic countries, especially Malaysia, has had a significant impact on economic growth and financial prosperity; therefore, it will have a significant impact in Afghanistan as well.

Conceptual Framework of Issuing Sukuk in Afghanistan:

The conceptual frame work for issuing *sukkuk* in Afghanistan has been drawn in the bellow table:



Findings of research

After researching, I realized that one of the essentially factors of economic development in other Islamic countries is the issuance of <u>sukuk</u> and its investment, and this has led to the financial growth



Findings of Research: After researching, I realized that one of the essentially factors of economic development in other Islamic countries is the issuance of sukuk and its investment, and this has led to the financial growth of those countries. But in Afghanistan, this new Islamic financial instrument has not yet been issued and invested in, despite the fact that Afghanistan is economically backward and always suffers from unemployment, poverty, public budget deficits, and lack of personal income, increasing immigration statistics. Certainly, the issuance of *sukuk* and its proper and legal exploitation will lead to financial progress and prosperity in Afghanistan.

Conclusion and Recommendation

Afghanistan is a poor country that is still in a financial crisis, and it is facing many problems in terms of unemployment, poverty, increasing immigration statistics, lack of personal income, and national budget deficit. Especially in 2022, the graph of poverty and food shortages has increased dramatically due to the change of government system, the poverty reached to 72% whereas the unemployment reached to 47% as clearly have shown in the previous table. On the other hand the Muslim countries those issued the sukuk and deal with especially Malaysia are progress in financial terms and developing day by day. The significant recommends from researcher are as follow: Issuing the Sukuk Law: MoF(ministry of finance) &DAB (Da Afghanistan Bank) should work together to finalize the Sukuk law, and getting financial support from IDB, IMF and World Bank, and spreading Awareness, MoF/DAB should work together to establish a strategy for public awareness, and hiring Sukuk Expert: MoF/DAB could hire a technical expert through financial support of IDB, IMF, and World Bank, and these expertise should increase the capacity of Afghan professionals. Also recommends that MoF should issues the Al-Ijarah Sukuk certificates as experiment. For launching this production the MoF/DAB should establish the legal and regulatory framework for Sukuk industry in Afghanistan, but the significant issue at first is to finalize the sukuk law and add some more information regarding the following items, one article regarding the permissibility of Sukuk out the financial market, or information about the Sukuk trade should added, one article about the violation of law, add more articles regarding Special Purpose Vehicle, it should be exempted from registration fees, income tax, and sale tax. Add one article regarding specific Fatwa on Sukuk Productions in Afghanistan. The researcher recommends that GoIRA should hire a technical expert in Sukuk, in order to increase the capacity of MoF, DAB and MoJ employees as well.

References

- Abrorov, sirojiddin (2020), THE IMPORTANCE OF SUKUK IN THE DEVELOPMENT OF ECONOMY: AS AN EXAMPLE OF ITS IMPACT ON THE INCOME OF THE MALAYSIAN POPULATION, journal of critical reviews, Vol-7, issue 2, (2020).
- Hayat, Usman, Malik, Adeel (2014), Islamic finance: ethics, concepts, practice, literature review, the CFA, Institute Research Foundation, www.cfainstitute.org.
- Siddiqui, shoaib Alam, (2019), A study on the feasibility of sukuk in Afghanistan, International Journal of Multidisciplinary Research and Development, Volume 6; Issue 6; June 2019; Page No. 86-9.
- Hasib, Ahmad (2017), M. Kabir Hassan, and Blake Rayfield, when and why firms issue sukuk? Journal of emerald, 6 September, 2017. www.emeraldinsight.com/0307-4358.htm
- Hayder Ali Kadhim, Wasan Khifah,(2022) HNSJ (Humanitarian and natural science journal), ISSN: 2709-0833, volume 3, issue 6.



- Zolfaghari, pegah (2017), An Introduction to Islamic Securities (Sukuk), working paper PhD, Uppsala University, faculty of law.
- Khalil. Khalil Mohammed (2011) sukuk: definition, structure and accounting issues, USIM, MPRA paper no: 33675, posted 25 September, 2011.
- Khan ,A,A.(2019) "Sukuk are not yet launched in Afghanistan but it is going to be launched soon", https://www.linkedin.com (accessed on 19/04/2019)
- Michael Chak Sham WONG, Waleed Irfan BHATTI, Developing International Sukuk in East Asia: Implications from Hong Kong Sukuk, Journal of Asian Finance, Economics and Business Vol 6 No 4 (2019) 9-16.
- Ahmed, Khalil, (Sukuk: Definition, Structure and Accounting Issues) USIM, 2011, Online at https://mpra.ub.uni-muenchen.de/33675/ MPRA Paper No. 33675, posted 25 Sep 2011 13:19 UTC).
- Ramzi Mahmoud (Islamic sukuk in light of banking capital and islamic transactions, and the secrets of sukuk in Egypt and world, Publisher: (menshatul maaref bil eskandariah) The Origin of Knowledge in Alexandria, (2013).
- Marwa Ben Salem, Sukuk issuance and economic growth: the Malaysian case, journal of Islamic economic, banking and financing, Vol-12, No. 2, april june, (2016).
- Abdelghani Echchbi, the impact of sukuk financing on economic growth: the case of GCC countries, international journal of financial services management, Vol.9, No.1, January (2018),
- Ehsanullah Mohammadi, Shoaib Alam Siddiqui, and Saifullah Mohammadi, A study on the feasibility of Sukuk in Afghanistan, International Journal of Multidisciplinary Research and Development, Volume 6; Issue 6; June (2019); Page No. 86-90.
- Echchabi A, Abd.aziz H., Idriss U. (2016). Does sukuk financing promote economic growth? An emphasis on the major issuing countries. Turk. J. Islam. Econ. 3, 63–73.doi: 10.15238/tujise.2016.3.2.63-73.
- Ali M.I. Falahi I.R. (2014). Islamic banking and finance: principles and practices. Marifa Academy Private Limited, p161.
- Paltrinieri A., Hassan M.K., Bahoo S. & Khan A. (2019). A bibliometric review of sukuk literature, International Review of Economics and Finance.
- ISRA, Training for afghan delegates of ministry of finance of Afghanistan, Error! Hyperlink reference not valid. Ministry of finance of Afghanistan, https://www.mof.gov.af/index.php/en, 22 decmber (2019).
- Ministry of finance of Afghanistan, https://mof.gov.af > sites > default > files > محکوک (2016). Ofogh News Agency in 3 august i Ofogh News Agency in 3 august in 2016.
- Marwa Ben salem, Mohamed fakhfekh, Najib, Hachicah, sukuk issuance and economic growth: the Malaysia case, journal of Islamic economic, banking and finance, Vol-12, No.2, April-June (2016).
- Sukuk-in-Afghanistan.pdf, https://www.moore.af, media > files > Research, (2017) march. Office of the economic advisor.



- Ministry of justice, Afghanistan democratic republic, official gazette, (law of taking sukuk), serial number(514), number(10), year (1982).
- Statista, official page, May 23, (2022), distribution of total sukuk issuance globally 2020, by country.
- Zulkhibri, Muhamad (2015), A synthesis of theoretical and empirical research on *sukuk, Islamic Research and Training Institute, Islamic Development Bank, Jeddah, Saudi Arabia* Received 29 March 2015; revised 1 October 2015; accepted 22 October 2015, Available online 7 November 2015 at www.sciencedirect.com, bursa Istanbul review.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (http://creativecommons.org/licenses/by/4.0/).